Millennium Challenge Account of Mongolia (MCA-M)
Peri-Urban Rangeland Project (PURP)

Baseline Report for Phase I Areas

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Innovations for Poverty Action

Table of Contents

List of Tables

Appendices

List of Figures

List of Acronyms

Acronym	Definition
CPR	Centre for Policy Research
ESA	MCA-M/MCC Environmental and Social Assessment Unit
ESOC	MCA-M Environment and Social Oversight Consultant
GIS	Geographic Information System
IPA	Innovations for Poverty Action
MCA	Millennium Challenge Account
MCA-M	Millennium Challenge Account-Mongolia
MCC	Millennium Challenge Corporation
MNT	Mongolian Tugrug
MSRM	Mongolian Society for Range Management
PIU	MCA-M Project Implementation Unit
PSM	Propensity Score Matching
PURLS	Peri-Urban Rangeland Leasing Survey
PURP	Peri-Urban Rangeland Project
RCT	Randomized Controlled Trial
USD	United States Dollar
USDA	United States Department of Agriculture

I. Executive Summary

The Millennium Challenge Corporation (MCC) funded the Peri-Urban Rangeland Project (PURP) to help the Government of Mongolia promote a shift to more intensive and sustainable forms of agriculture among the local herding population. The goal is to raise the income of herders through this shift in practices. This baseline report for the Millennium Challenge Account-Mongolia (MCA-M) PURP has three primary objectives:

1. To describe the Peri-Urban Rangeland Leasing Survey (PURLS);

2. To present the data that was collected via the PURLS in order to make the data available for other research efforts and the planning of other programs; and

3. To motivate and describe the currently proposed research design for Phase 1 of the PURP.

A. Project Background and Description

The main goal of the MCA-M PURP is to improve the livelihoods of semi-nomadic herding households living the areas surrounding Mongolia's larger cities. Since the transition to a market economy in the 1990s, the number of livestock in Mongolia has more than doubled, putting a strain on the common use grasslands in peri-urban areas. Overgrazing has led to severe degradation of the rangeland, on which these herders depend. This, combined with subsequent declining animal health and productivity, has served to decrease incomes.

One of the purposes of MCA-M is to directly address these challenges by instituting changes to property rights as a means to increase household income and reduce poverty. Through the PURP, MCA-M provides groups of herder households with long term, exclusive use leases of rangeland plots; training in rangeland and herd management; and infrastructure in the form of wells and building materials for fences and animal shelters. By giving herders long-term rights to the land, including the ability to exclude use by other herder groups, MCA-M expects that the herders holding rights to an individual plot will have greater incentives to reduce over-grazing and make long-term investments in the land and their herds. Assignment of the rights to groups rather than to individual households along with the training on collective herding and marketing is intended to encourage cooperation and build upon traditional norms of pasture management. To support these efforts, a new national rangeland law and development of local enforcement mechanisms will standardize land use regimes across regions and allow for more consistent and transparent enforcement of the exclusive rights. The main activities of the PURP and the timeline for implementing them are outlined in Table ES1, below.

Table ES 1. Project Activity Timeline

Project Activities	Start	End
Legal Reform	January 12, 2009	*Ongoing*
Rangeland Mapping	March 2009	December 2010
Lease Development and Signings	September 2010	March 2011
Installation of Infrastructure	September 2010	*Ongoing*
Provision of Training	February 2011	*Ongoing*

Evaluation Activities	Start	End
PURLS Baseline Data Collection	November 2010	January 2011
PURLS Follow-Up Data Collection	November 2012*	December 2012*

*Planned Activities

B. Data Collection

The Peri-Urban Rangeland Leasing Survey (PURLS) is the key data collection activity, designed to collect basic socio-economic figures as well as information on key herding related outcomes from the households participating in the study. As an extension, the PURLS data collection also gathers information on group dynamics and the local administrative jurisdictions through surveys of the leaders of the herder groups and the local administrative units (soums). Three separate data collection instruments – the Household Questionnaire, the Herder Group Leader Questionnaire, and the Soum Governor Questionnaire – were developed to collect information from these different levels.

The PURLS baseline data collection was carried out between November of 2010 and January of 2011 by MEC, a local Mongolian firm under contract to MCA-M. Socio-economic information was collected from a number of herder households spread across Tuv, Darkhan-Uul, Orkhon, Selenge, and Bulgan aimags.[1] Of the 3,811 households targeted, 3,289 were successfully interviewed, for an overall completion rate of 86.3 percent. Table ES2 provides a tabulation of the number of surveys targeted, completed, and the coverage rate for each survey. Locating chosen households for the household survey proved to be particularly challenging due to the rough terrain, the high mobility of the nomadic herder households/individuals targeted, and the less than ideal contact information contained in the sampling frames. However, despite these

[1] Aimags are Mongolian provinces.

challenges, 86.3 percent of the targeted households were surveyed. For the Herder Group Leader Survey and the Soum Governors Survey, 93.4 and 100 percent of the targeted surveys were completed successfully.

Table ES 2. PURLS – Response Number by Respondent Type

Respondent Type	*Targeted Number*	*Number Interviewed*	*Percent Surveyed*
Households	3,811	3,289	86.3
Herder Group Leaders	317	296	93.4
Soum Governors	72	72	100.0

C. Summary of Household Survey Results

The household data was collected on three types of households:

- *Project Households:* Households that were part of the 279 herder groups selected by MCA-M for inclusion in the PURP program.
- *Applicant Households:* Household that applied for the program but who were deemed ineligible by MCA-M based on the project criteria.
- *Non-Applicant Households:* A randomly chosen subset of households who did not apply for the program but who live in the areas in which the program is being implemented.

Using the PURLS data, we describe the overall sample of herder households, and in particular compare the households that were selected for the project to the other two types of surveyed households. Across a wide range of characteristics, the groups of households are, in fact, quite different.

1. Summary of Herder Group Characteristics by Area

The average herder group in the sample contains 13.7 individuals and 3.3 households, with herder groups in Bulgan province containing nearly 4 households and those in Darkhan-Uul containing close to 3. The average household owns 236 animals and earns 9,100,821 tugrugs per year from all income sources, nearly twice the national average of 4,663,260 tugrugs. The average milk-yield per household cow is approximately 3.4 liters, and households in more urbanized areas, especially the capital, appear to have a smaller number animals overall but higher productivity per animal. The average household in the study migrates approximately 33 kilometers a year, with individuals in more urbanized areas covering much less ground than those in more distant provinces. Urban areas also have much higher access to electricity and infrastructure. Meanwhile, households in all provinces express similar levels of interest in investing in agricultural infrastructure.

2. Basic Household Characteristics

The PURLS data reveals that herder households are quite similar in terms of their basic sociodemographic characteristics such as household size and composition, the age of the head of household and household head gender. All three types of households have, on average roughly 4 members and the composition of adults and children is also similar. Project and Applicant households tend to have slightly younger heads of household (46 years) than do Non-Applicant households (50 years). Men head households in the vast majority, about 90%, of cases – including project households. This is despite the fact that the project utilized selection criteria intended to favor the inclusion of households headed by women.

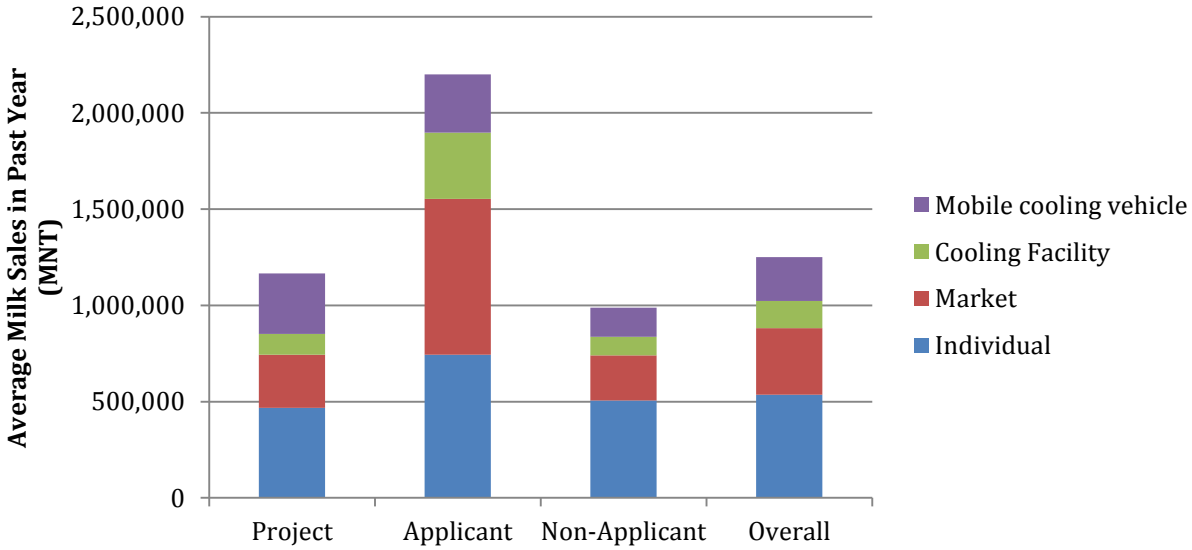
The level of education of household heads is relatively uniform across the three groups, with averages ranging from just under 8 years of formal schooling to just over 9 years. However, in terms of training that is relevant for project related activities, there appears to be larger variation among the three groups. Members of the Project and Applicant groups both have significantly higher rates of training than the Non-Applicant group in both livestock husbandry and business matters. The prevalence of either kind of training among members of Non-Applicant households is about a third to half that of Project and Applicant households.

3. Income and Expenditures

One of the main goals of the PURP is to increase incomes among herder households. As such, the PURLS collects detailed information on income and expenditures. A clear finding of the baseline study is that households across all of the groups—Project, Applicant and Non-Applicant—obtain the majority of their income from herding activities. Agriculture is thus a critical part of their livelihood strategies and a topic worthy of extensive analysis.

Both Project and Applicant households obtain higher revenues from livestock related activities than Non-Applicant households. The average Non-Applicant household's revenue from livestock related activities is about 70% that of Applicant and Project households. The variation across groups when it comes to expenditures follows a similar pattern.

Figure ES 1. Milk Sales by Destination



Milk sales are one of the single most important sources of animal product revenue for herder households. Project and Applicant households are significantly more successful than Non-Applicant households in terms of the amount of revenue they generate from milk sales on an annual basis. Figure ES1, above, reports PURLS data on milk sales, by destination. Applicant households outperform even Project households by a considerable margin. The average Applicant household generates nearly twice as much revenue from milk as the average Project household or Non-Applicant household.

The reasons for these differences are not entirely clear. Higher milk revenues could be a result of three separate factors:

- Higher milk production due to a higher number of milking animals or more productive milking animals.
- A higher percentage of milk sold compared to milk produced.
- A higher unit price obtained for the product sold.

As the baseline report makes clear, the data suggest that all three factors may play a role.

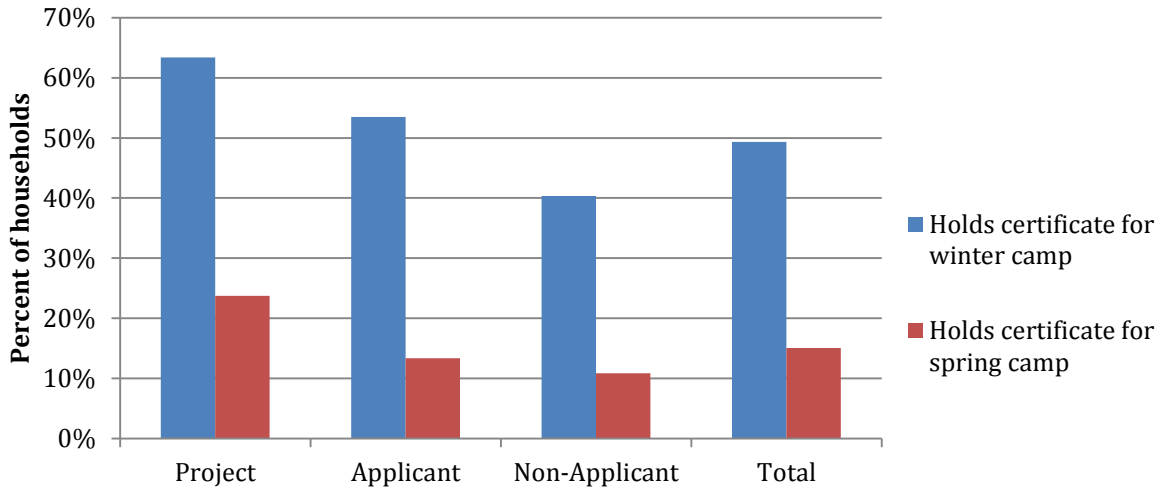
When it comes to income generated from non-agricultural sources, the differences between the groups are less stark. These sources of income include wages and salaries from non-agricultural jobs, pension benefits, welfare support, private business profits and investment income. All three groups in the study appear to have fairly similar levels of income in all non-agricultural categories.

In terms of expenditures, however, Non-Applicant households are clearly subsisting at a lower level than their counterparts in the Project and Applicant groups. Project households appear to be slightly more affluent than Non-Applicant households in both absolute and per capita terms. They consume slightly less than the Applicant group in absolute terms but slightly more in per capita terms. Project households spend significantly more on schooling and school fees than do households in the other two groups. This finding may explain the lower dropout rate among school-aged children in Project households.

4. Camp Characteristics

Project households tend to possess certificates for their camps much more frequently than households in the other two groups (Figure ES2). This suggests that at the time the PURP was implemented, Project households may have already had stronger, more widely recognized claims to the land they resided upon and the rangeland they utilized than the non-project groups.

Figure ES 2. Certificate Ownership

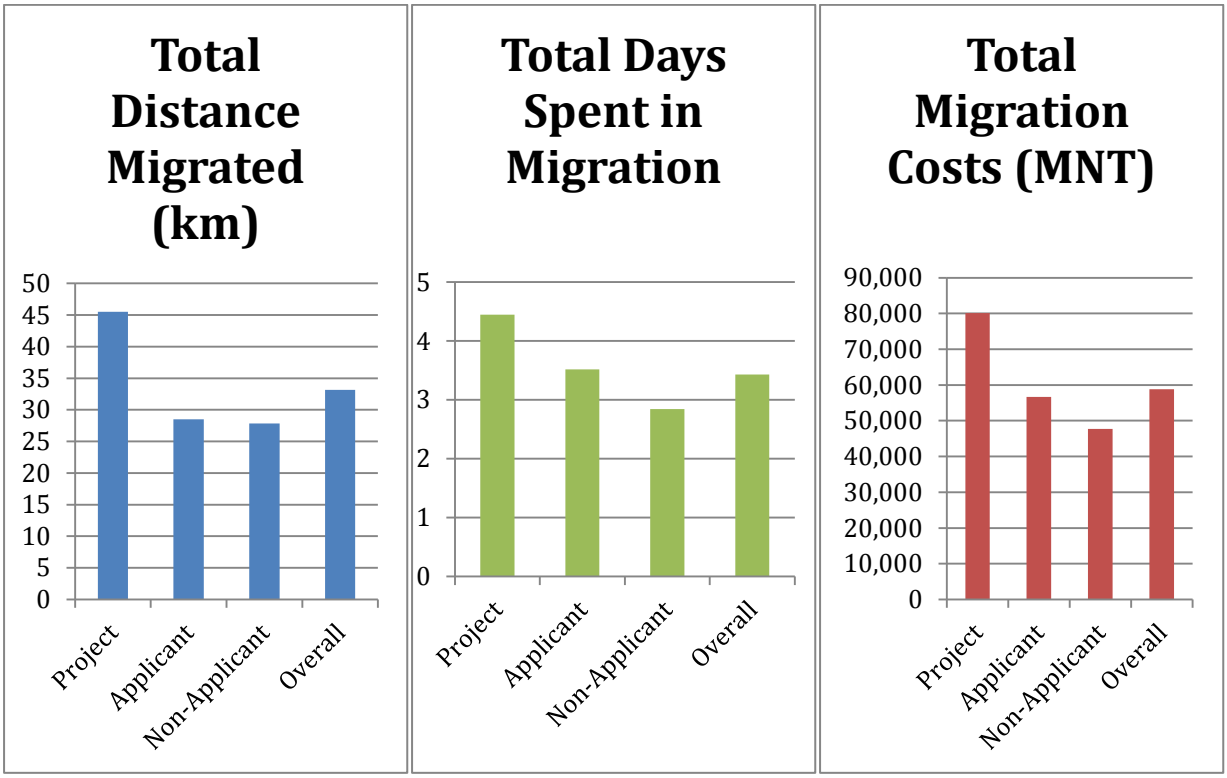


Despite the fact that Project households appear to have relatively strong ownership claims to their camp sites, the infrastructure on their sites appears to be less well developed, on average, than that of the Applicant and Non-Applicant groups. Only slightly more than 17% of Project households reside on winter camps that have access to the electric grid. In contrast, over 24% of the Applicant group households and 40% of the Non-Applicant households live on sites with access to grid electricity. Project and Applicant households are also slightly less likely to reside in winter camps that have access to the mobile phone network. Roughly 75% of Project and Applicant households have winter camp access to mobile networks, compared to 81% of Non-Applicants.

5. Migration

One explanation for the differences in access to infrastructure may be that Project households tend to reside in more distant, isolated areas. As a result, Project households also migrate more frequently and over greater distances than the households in the other two groups. Project households are different from Applicants and Non-Applicants on all available measures of migration—distance migrated, days spent in migration, and cost of migration. Figure ES3 reports on these measures. Project households, on average, travel 46km per year in migration. The average distance traveled by Applicant and Non-Applicant households is 28km. The average Project household spends 4.5 days in migration; this is about one day more than Applicant households and almost two days more than Non-Applicant households. The migration costs are, unsurprisingly, also higher for Project households with the average cost being just over 80,000 MNT, compared to 56,000 MNT and 47,000 MNT for Applicant and Non-Applicant households, respectively.

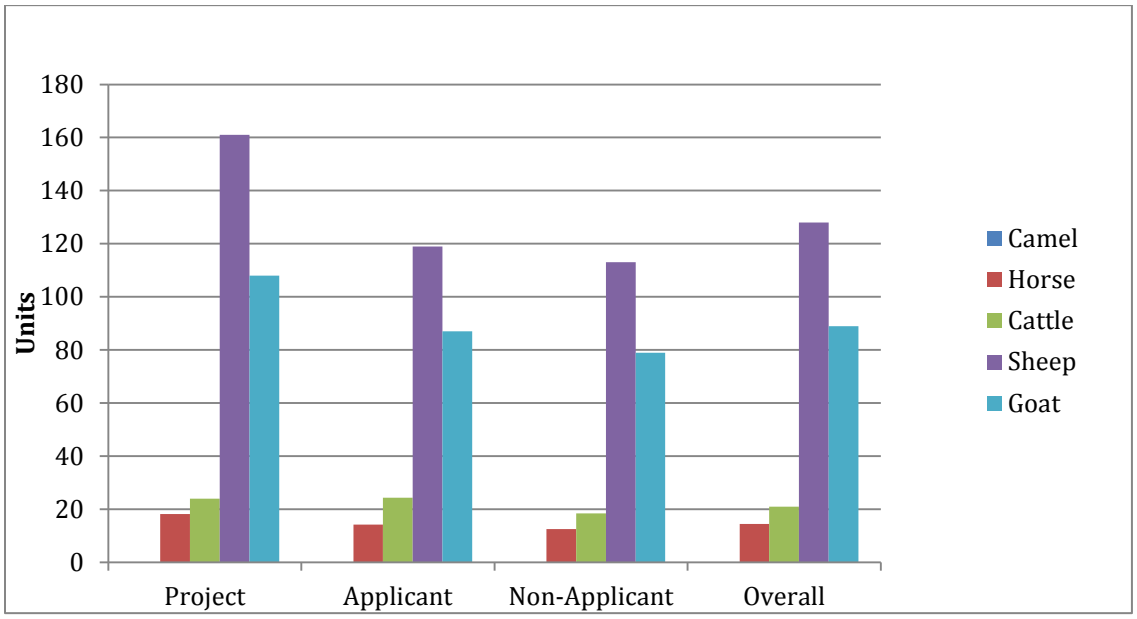
Figure ES 3. Migration Distance, Time, and Cost in 2010



6. Livestock numbers and animal health

Information about herd composition and size and animal health is critical to being able to evaluate the PURP. The baseline data indicate that the vast majority of households in all three groups vaccinates and treats their animals for parasites. However, less than half have a standing contract with a firm or individual that provides regular veterinary services. There do not appear to be substantial differences among groups in terms of the rate and frequency of vaccination and other animal health treatments.

Figure ES 4. Number of Livestock (Beginning of 2010)



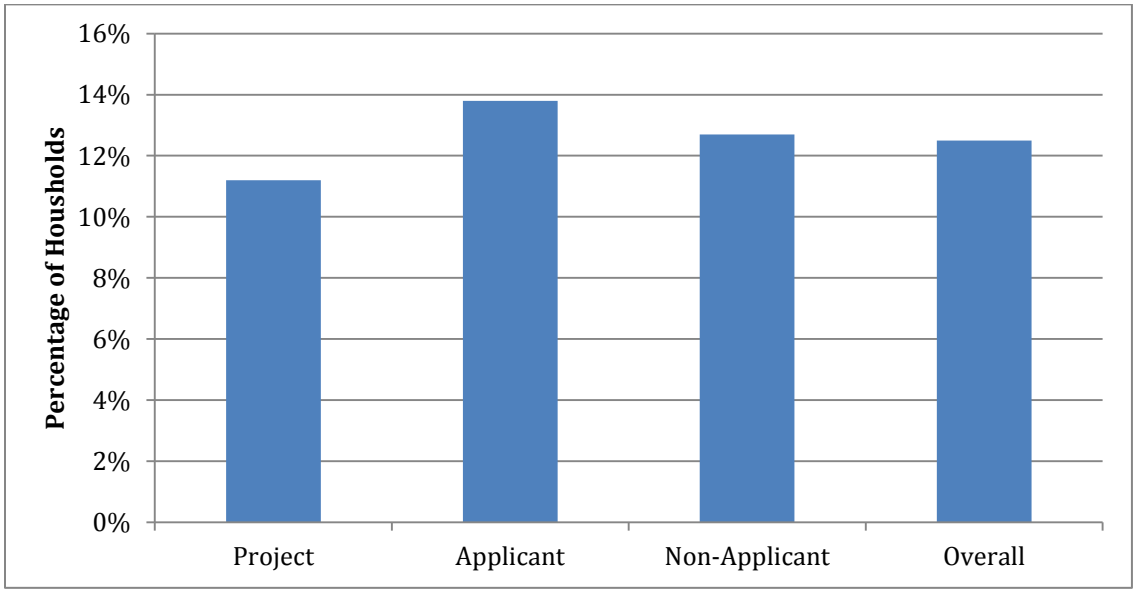
Herd composition is also fairly similar among all three groups (Figure ES4). Project households have larger herds overall – nearly 254 animals on average, as opposed to 200 in the Applicant group and 168 in the Non-Applicant group – but the composition of their herd is fairly similar in terms of the percentage of sheep, goats, cattle, and horses. Sheep are by far the most common herd animal in all groups.

Livestock mortality rates are also fairly similar across Project and Applicant groups. The Project households lost a larger absolute number of animals due to the fact their herds are larger to begin with but the final mortality rate is quite similar. Non-Applicant households, on the other have, experienced significantly higher mortality rates, perhaps owing to their more precarious overall economic situation. It is also important to bear in mind that the winter of 2009-2010 was particularly harsh, the most severe that Mongolia experienced in several decades. Mortality rates calculated in the PURLS baseline might therefore be atypical and not representative of normal or steady state mortality rates.

7. Land Conflicts

One measure of the security of a household's claim to the land they use is the number of reported land conflicts. Given that only herder groups who obtained consent from neighboring households were selected as project beneficiaries, it is perhaps not surprising that Project households demonstrate a substantially lower number of land conflicts, on average, than members of the other two groups. As Figure ES5 shows, just slightly over 11% of Project households had experienced a land conflict of any sort during the past 5 years, as opposed to nearly 14% of Applicant households and nearly 13% of Non-Applicant households. A similar pattern emerges if we look at the average number of conflicts reported on a household-by-household basis. The average Project household that experienced conflicts reported approximately 2.1 conflicts, as opposed to 2.8 for Applicant households and 2.6 for Non-Applicant households. It would appear that Project households were more secure in their claims to the rangeland and camps that they occupied, even before PURP activities began or leases were emitted.

Figure ES 5. Households with Pastureland Disputes in Last Five Years



8. Expectations of and attitudes toward PURP

The PURLS also included questions designed to tap households' expectations about and attitudes toward the PURP. Somewhat surprisingly, the exclusive rangeland usage right that comes with the PURP lease appears to be one of the least valued components of the project, in the view of beneficiaries. More than 96% of Project households expected that the project would benefit them by helping them improve their livestock practices. Roughly 93% thought that improved well access would benefit them and a similar percentage expected benefits from shelter construction and closer collaboration with their herder group. However, a comparatively lower number,

slightly over 84%, expected to derive benefits from the rangeland lease itself. Similarly, the majority of Project households was motivated to join the PURP in order to develop better farming practices, work more closely with their herder group, and improve their pastureland quality. Other considerations were largely secondary for the majority of beneficiaries.

D. Summary of Gender Analysis

The preceding analysis has focused on overall levels of variables in the PURLS as well as comparisons between household types. In this section we turn to a description of gender differences. Specifically, we look at differences between households with female and male heads of household, across a range of variables.

Table ES 3, below, reports numbers of female and male heads of households, by household type. As is evident in the table, men lead the vast majority of all three categories of household. Fewer than 10 percent of project of applicant households have female heads while just over 10 percent of non-applicant heads of household are women.

Table ES 3. Gender by Head of Household

Gender of Head of HH	Project		Applicant		Non Applicant		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Female	93	9.6	52	9.4	195	11.1	340	10.4
Male	871	90.4	499	90.6	1,557	88.9	2,927	89.6
Total	964	100	551	100	1,752	100	3,267	100
Gender of Head of Herder Group[1]								
Female	13	4.8						
Male	256	95.2						
Total	269	100						

[1]Only able to identify 91% of herder group leaders

Table ES 3 also provides a gender breakdown of herder group leaders. Recall that leases and other resources in the PURP are distributed at the herder group level. Similarly to heads of households, it is clear that the majority of herder group leaders are male. In fully 95% of those herder groups for whom we can identify the gender of the leader, the leader is a man.

While men lead the majority of households, it does not appear that the gender of the head of household has an effect on the likelihood of household members having previous training. Table ES 4 breaks down our two training variables by gender. Households headed by men and women have very similar numbers of members with training in livestock husbandry and business operations. Just fewer than 14% of female headed households have members with livestock husbandry training, compared to 14.4% of those headed by men. When it comes to business training, 8.8% of households with female heads have at least one household member with

training, while 7 percent of households with men as heads of household have members with business training.

Table ES 4. Previous Training, by Gender of Household Head

			No	Yes	Total
Had any Training in Livestock Husbandry	**Female Heads of HH**	Frequency	293	47	340
		Percent	86.18	13.82	100
	Male Heads of HH	Frequency	2,501	422	2,923
		Percent	85.56	14.44	100
Had any Type of Training in Business Operations	**Female Heads of HH**	Frequency	310	30	340
		Percent	91.18	8.82	100
	Male Heads of HH	Frequency	2,720	206	2,926
		Percent	92.96	7.04	100

Table ES 5 and ES 6 reports figures for expenditures per household member, the first table looking at just food and second one at overall expenditures. When it comes to food expenditures, the yearly household mean is considerably higher for households with female heads. Female headed households spend, on average 205,173 MNT per household member, compared to 134,225 MNT for households with male heads. However, these differences appear to be driven by a small number of outliers, as indicated by the relatively similar median expenditures. Likewise, total household expenditures per household member do not seem to be appreciably different, on average, in male versus female-headed households. Mean total expenditures are somewhat higher in households with women as heads of household. However, when examining the medians, the difference is considerably smaller. Indeed, households with male heads have a higher median total expenditure.

Table ES 5. Expenditure on Regular Food in a Year per HH Member, by Gender of Head of Household

	Observations	Mean	Median
Female Heads of HH	340	205173.1	133874.2
Male Heads of HH	2927	134255.7	103658.7
Total	3267	141636.1	106000

Table ES 6. Total Expenditure in a Year per HH Member, by Gender of Head of Household

	Observations	Mean	Median
Female Heads of HH	340	1698878	1074698
Male Heads of HH	2927	1502399	1095375
Total	3267	1522846	1094235

Households with female heads report higher annual incomes per household member than those with heads of household that are men (Table ES 7). This is the case both for regular income and the category of irregular household income. Households with female heads report an annual regular income per household member 158,685 MNT higher than that in the average male headed household. Irregular income is just over 50,000 MNT higher in households with female heads. Total average yearly income per household member is about 210,000 MNT higher in female headed households.

Table ES 7. Income per Household Members, by Gender of Head of Household

	Female Heads of HH		Male Heads of HH		Total	
	Mean	Median	Mean	Median	Mean	Median
Regular Income in a Year per HH member	577212	415933	418527	139200	435041	176500
Irregular Income in a Year per HH member	316772	110000	265813	90000	271116	91667
Total Income in a Year per HH member	893984	612000	684340	344667	706158	387143

There appear to be virtually no head of household gender differences in the number of land certificates owned by households. Table ES 8 breaks down land certificate ownership by gender. These figures suggest that households headed by men and women are roughly equal in their existing claims to the land, at least as measured by the existence and number of land certificates per household member.

Table ES 8. Number of Land Certificates Owned by HH, percent, by Gender of Head of Household

Number of Land Certificates Owned by HH	Female Heads of HH	Male Heads of HH
0	61.47	61.02
1	33.24	32.73
2	4.41	5.33
3	0.59	0.61
4	0.29	0.27
Total	340	2927

When examining differences in terms of herd sizes between households with women as heads of household and those with men (Table ES 9), we note two things. First, the average heard size is considerably larger amongst households with men as heads. Female-headed households have, on average, 115 animals compared to 209 for male-headed households. In other words, herd sizes are almost twice as large, on average, in male-headed households. However, when we look at the average number of livestock per household member, the difference between male and female-headed households is much smaller; the former having 55 animals per household member and the latter 50. The explanation for this lies in the differences in household size reported by female and male-headed households; male-headed households tend to be larger.

Table ES 9. Livestock Numbers - Average Total Herd Size and Average per Household Member, by Gender of Head of Household

		Total Number	Average for each HH Member
Female Heads of HH	Observations	340	340
	Mean	114.7	49.9
	Median	47	18
Male Heads of HH	Observations	2927	2927
	Mean	208.7	54.5
	Median	116	28.3
Total	Observations	3274	3268
	Mean	198.5	54
	Median	106	27

Table ES 10 shows the educational attainment of heads of households, broken down by gender. Educational levels are fairly equal between men and women with a few notable differences. Male heads of household are more likely to both have some secondary education and to have completed secondary education. Roughly 37% of male household heads have an incomplete secondary education, compared to 27% of women. When it comes to a completed secondary education 24% of males have achieved this level while a little under 19% of female heads of household have completed secondary education.

Table ES 10. Education of Head Household

	Female		Male	
Education Level	**Frequency**	**Percent**	**Frequency**	**Percent**
No education	23	6.76	106	3.63
Primary	96	28.24	455	15.57
Incomplete secondary	91	26.76	1,079	36.91
Complete secondary	64	18.82	712	24.36
Vocational	39	11.47	329	11.26
Incomplete tertiary	1	0.29	2	0.07
Complete tertiary	26	7.65	240	8.21
Total	340	100	2,923	100

E. Summary of Soum Governor Survey

The soum governor survey was developed to collect data on soum level dynamics that may not be fully captured by the household and herder group data collection instruments. Given that the project is being implemented on a soum-by-soum basis, it is reasonable to expect that project impacts, not measurable at the household level, might accumulate at the soum level. Moreover,

variation in soum level administrative capacity and governance style might lead to variation in the management, and consequently the success, of the PURP in different soum contexts.

The complete questionnaire for the Soum Governor Survey is provided in Appendix E in Section XI. It includes basic questions on demography, migration, agricultural practices, land related conflicts, as well as soum government opinions regarding the PURP's strengths and weaknesses. The questionnaire was administered to all soum governments participating in the PURP as well as adjacent soums that did not directly participate in the project.

Table ES3 provides basic descriptive statistics gathered from the soum governor survey and compares project soums to the non-project soums that were surveyed. A rather noteworthy difference between project and non-project soums is the number of land disputes occurring during the 12 months prior to the survey. Soum governments in project areas reported more than four times as many disputes (22.5) on average than did non-project soums (4.5). The number of lease usage certificates and land lease certificates is also much higher in project soums than in non-project soums. Project soums also appear to have more donor driven projects, more resident companies and enterprises, as well as more livestock related enterprises than non-project soums. Project soums appear to have more demands form a wider variety of parties placed on their land, which may explain the higher frequencies of conflicts.

Table ES 11. Results from Soum Governor Survey

	Project Soum	**Non-Project Soum**
	Mean	**Mean**
Proportion of soum impacted by desertification	30.56	38.13
Pasture degradation trend past 5 years	3.90	4.10
Number of land disputes past 12 months	22.54	4.55
Number of land lease/usage certificates	471.46	350.39
Number of lease certificates	94.88	34.39
Number of donor/development programs	2.32	2.06
Number of enterprises	106.66	43.94
Livestock production/sale enterprises	8.10	4.03

F. Impact Evaluation Design

As the preceding summary of the baseline data makes clear, there exist important differences between Project, Applicant and Non-applicant households at the start of the PURP. The observed differences make it difficult to evaluate the project by comparing them. For example, we may

find that the PURP appears to be very successful but this conclusion would be wrong if in fact the large project effects are due simply to the comparison group being worse off to begin within. Or, we may find the opposite—that the PURP had little or no effect. But again, such a finding would be incorrect if, for example, the comparison group was much better off at baseline. In the first case, the PURP might in reality have had no effect and in the second, the PURP may have improved things considerably among project households, bringing them up to the level of the comparison group, thereby making the effect look small.

MCA-M did not allocate project benefits to applicants in a randomized fashion. Instead, only those applicants who were able to obtain consent from all the herder households residing within two kilometers of their proposed rangeland tract were ultimately allocated leases. A common strategy for conducting an evaluation in such a setting is to use statistical "matching" techniques. Propensity Score Matching, or PSM, is among the more well known of these matching techniques in the evaluation field. This is the currently proposed methodology for evaluating the Phase I PURP with the details described in the design document. The PSM research design reduces the observed difference between project households and Applicant and Non-Applicant households by using the data from the PURLS to match project households to similar households in the Applicant and Non-Applicant groups. Because households are matched to other households with similar characteristics, the average differences between the groups should be reduced significantly. As a result, the only difference between the project and comparison households after matching should be that the project households participate in the PURP, allowing us to attribute any differences in the follow-up surveys to the project.

Table ES4 demonstrates the effects of the PSM research design. For this analysis, we have pooled the applicant and non-applicant households, referring to them as non-project households, and conducted the matching process. We then present the overall difference between households in these two groups from the PURLS data and then the differences in characteristics after matching households using the PURLS data. The average differences are significantly reduced for each of the three presented variables. For example, without matching, the average distance between project households' winter camp and the nearest town is 71.6 km, a difference of 8.15 km when compared to the non-project households. If we restrict the sample, however, to just those households in each group that could be matched using the PSM methodology, the difference in distance falls from 8.15 km to 0.42 km. The latter difference is very small, and statistically not significant. Differences in other variables fall similarly.

Table ES 12. Comparison of Households Before and After Matching

Variable	Sample	Mean		Difference
		Project	**Non-Project**	
Distance from winter camp to town (km)	Unmatched	71.6	63.45	8.15***
	Matched	72.92	72.5	0.42
HH possess spring land certificate (%)	Unmatched	23.75	11.46	12.28***
	Matched	23.43	20.83	2.6
Total number of goats 2009	Unmatched	108.4	81.07	27.33***
	Matched	114.98	118.6	-3.62

*Note: *** significant at .1%; ** significant at 1%; * significant at 5%.*

G. Conclusions and Next Steps in the Evaluation

The collected data show large differences between households selected for the project and those that were not selected. However, the research team has demonstrated how the proposed Propensity Score Matching research design will narrow these differences, allowing for a more credible comparison. Overall, the available data validates the proposed research design outlined in the project design report[2], and suggests that the evaluation is progressing largely as expected.

Data collection for the evaluation of Phase I of the PURP will include a second survey of all respondents in this baseline survey. This longitudinal survey will be administered in fall and winter of 2012. All households that participated in the original survey will be tracked and re-interviewed. Following the PSM methodology described above, we will construct a matched sample of project and non-project households using the baseline PURLS, and we will estimate the effects of Phase I of the project using data collected in the second round via the matched sample. The resulting estimates will provide valuable information on the project and will also inform the evaluation of Phase II areas.

[2] *Mongolia Peri-Urban Rangeland Project Impact Evaluation Strategy*. Innovations For Poverty Action Report to the Millennium Challenge Corporation, September, 2012.

II. Introduction

A steady stream of poor rural Mongolians are abandoning traditional nomadic herding practices and migrating to the cities in search of better lives. The bulk of these migrants are moving to Mongolia's three biggest cities – Ulaanbaatar, Erdenet, and Darkhan – where they either settle in underdeveloped urban areas, called ger districts, or peri-urban pasture land areas. In peri-urban pasture lands, Mongolia's tradition of open access pasture use, combined with an increase in migrants' herds, has led to significant overgrazing and land degradation. In response, there has been growing interest in new strategies to encourage investment, improve long-run land use, and boost agricultural productivity.

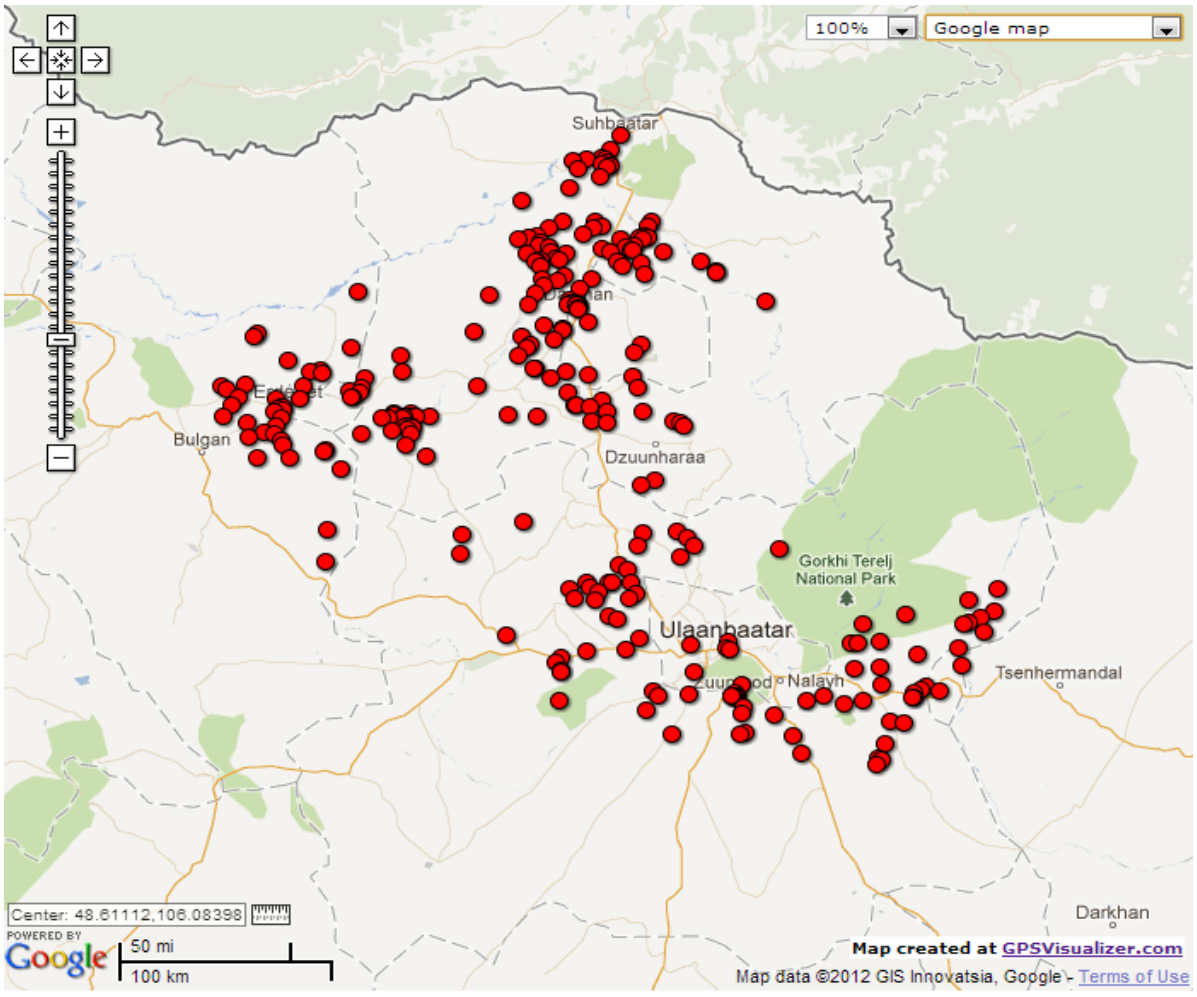
Mongolia's rangeland is currently only loosely regulated, emphasizing accessibility. Open access to rangeland has been a tradition in this region of the world for thousands of years. Even when the government emphasized the use of livestock collectives during the Soviet era, rangeland use still followed traditional open use practices. In the 1990s, Mongolia switched to a market based economy and the majority of the country's livestock was privatized.[3] However, rangeland remained state property that could not be privately owned, and the right of farmers to use these lands is stipulated in the constitution.

The combination of open pastureland usage and private livestock ownership has led to a situation akin to that described in ecologist Garrett Hardin's classic 1968 article, "The Tragedy of the Commons".[4] The idea is that individuals acting in their own self-interest lack incentives to limit the grazing of their herds on the land, despite the fact that doing so is in the long-run common interest to prevent the resource in question – the rangeland – from being depleted. The problem arises because the benefits of grazing one's herd on the common land are private, while everyone shares the costs associated with overgrazing. Thus, individual herders have an incentive to increase their herd sizes to levels not sustainable by the land. As a result, the number of livestock in the country has more than doubled in the two decades since the fall of the Soviet Union. In many areas of the country, especially the peri-urban areas surrounding Mongolia's larger cities, the explosion in livestock numbers has exceeded the biological carrying capacity[5] of the rangeland and has thus contributed further rangeland degradation and desertification.[6]

[3] Fernandez-Gimenez, M.E. (1999). Sustaining the steppes: A geographical history of pastoral land use in Mongolia. Geographical Review, 89, 315–342.
[4] Hardin, Garrett. 1968. The tragedy of the commons. Science 162: 1243-48.
[5] "Carrying Capacity" is usually defined as the maximum number of livestock possible on a given piece of land, while still allowing for maintenance or improvement of the production of vegetation or related resources. It may vary from year to year on the same area due to climate and other factors.
[6] Cheng, Y., Tsubo, M., Ito, T., Nishihara, E., and Shinoda, M. (2011). Impact of rainfall variability and grazing pressure on plant diversity in Mongolian grasslands. Journal of Arid Environments 75, 471–476.

One of the goals of Millennium Challenge Account with Mongolia (MCA-M) is to directly address these challenges and increase household income and reduce poverty through changes in property rights. Through the Peri-Urban Rangeland Project (PURP), MCA-M provides herder households with long term, exclusive use leases of rangeland plots; training in rangeland and herd management; and infrastructure in the form of wells and materials for fences and animal shelters. By giving herders long-term rights to the land, including the ability to exclude use by other herder groups, MCA-M anticipates that the herders holding rights to an individual plot will have greater incentives to reduce over-grazing and make long-term investments in the land and their herds. As a consequence, MCA-M expects the project to cause improvements in land and herd quality and increases in the productivity of herders awarded these rights.

Figure 1. PURP Phase I Project Herder Group Areas (Highlighted in Red Dots)



The MCA-M PURP is being implemented in two phases. The first phase of the project began in 2009 in areas around Mongolia's three largest cities: Ulaanbaatar, Erdenet, and Darkhan. The

project households are plotted in Figure 1. The second phase of the project began two years later, focusing on areas surrounding two of Mongolia's smaller regional cities, Choibalsan and Kharkhorin. In this report, we provide a summary of the initial round of the data collection for Phase I, including a description of the characteristics of herder groups based on that data and the implications for the proposed research design. The data collected for this project provides a rich source of information on households in various types of herder groups. Since the information will be publicly available, an important component of this report is to describe these data so that they might be used in other research or planning activities. A separate baseline report will be produced for Phase II at a later date.

In the remainder of the report, we proceed as follows. First, we provide a brief description of the project in Section III, then we provide an overview of the methodology MCA-M used to choose herder groups in Section IV. In Section V we describe how the sample for the survey was selected and how the survey was conducted. We then provide a summary of the collected data in Sections VI and VII. The purpose of Sections VI and VII is to demonstrate the information that is available to the public for other uses, to describe the sample that is being used for the evaluation, and to explain the choice of the proposed Propensity Score Matching (PSM) research design by demonstrating the existing differences between herder households that were selected for the program and those that were not. In Section VIII, we describe the purpose, methodology and results of the Soum Governor Survey. In Section IX we describe the PSM methodology and proposed analysis plan. Finally, next steps are presented in Section X. A series of Appendices and a Bibliography follow in Sections XI and XII, respectively.

III. The MCA-M Peri-Urban Rangeland Project

The MCA-M PURP is an innovative project designed to deal with the problems associated with overuse of rangelands that are currently being exacerbated by an increase in herd sizes and migration closer to urban areas in Mongolia. The project attempts to integrate the strengths of private, common use, and centrally-regulated regimes through the following three elements:

- *Exclusive Rights to Range Land***.** The project provides each group of individual households with exclusive, 15 year usage rights to a specific piece of rangeland. The contracts that govern these rights are designed to create strong incentives to invest in the land's productive capacity and enable herders' to adopt more sedentary agricultural practices associated with greater yields. Since these groups have a legal guarantee that they will reap the long-term benefits of investments in the land, the project should increase investment, improve herd management, and increase productivity. Moreover, the project should lead to a reduction in land degradation because herder households should also have an incentive to prevent overgrazing.

- *Extend Rights to Collective Groups***.** By extending the lease rights to collective groups of herders rather than to individual households and providing training on collective herding and marketing, the project builds upon traditional norms of pasture management, encouraging cooperation and collaboration among close herder groups.

- *National Laws.* One of the planned outcomes of the project is the creation of a new national rangeland law and the development of local enforcement mechanisms. If these are realized, the project will standardize land use regimes across regions and allow for more consistent and transparent enforcement of the new approach to rangeland management.

The overall MCA-PURP program includes the following components, a timeline for which is provided in Table 1:

- *Legal reform:* A panel of legal, technical, and social experts was convened to draft a new rangeland and pasture use law. The law will modify the open-range land use regime of Mongolia and establish an improved, national legal vehicle through which long-term leasing right to pastureland can be extended to private herding organizations. Regulatory and enforcement mechanisms will also be created as a corollary to the law. Although work on this component began well before any of the other project activities, to date the Mongolian parliament has not approved the passage of the draft law. Following the 2012 elections, the law will ideally be passed within the next few months.

- *Rangeland mapping:* The rangeland surrounding the three peri-urban areas targeted by the study was mapped along with their associated resources and geographic, climatic and biological features. These maps were used to determine those areas most affected by land degradation and which rangeland tracts were best suited for project activities.

- *Lease Titles and Contracts:* In combination with local officials, the Ministry of Food, Agriculture and Light Industry, and CPR, MCA-M developed a 15-year lease to be offered to herder households. These leases are contracts between the herder groups and the local soum governments.

- *Installation of Infrastructure:* As part of the project, every selected herder group will have a well installed. The households will be trained in the use and maintenance of the well. Herder groups will also be provided with materials for the construction of winter shelters, feeding equipment, and fences. Herder groups will be required to pay back approximately 50% of the value of the funds used to install the wells (up to a limit) and 100% of the value of the construction materials. The repayment terms are generous: no interest will be charged over a 15 year period.

- *Provision of Training:* Herder groups and local officials will receive a series of trainings centered on five main topics:
  - Leaseholder rights, commitments, and responsibilities
  - Rangeland, environmental and water resource management
  - Livestock management and productivity
  - Livestock business management and marketing of animal products
  - Collaborative management of herds, pasture, and forage

The MCA-M PURP is to date one of the largest and best-funded efforts designed to address the issues of rangeland degradation and income loss due to overgrazing. Overall, 392 herder groups (representing approximately 1300 households) are participating in the project. Approximately 234 of these groups (representing 978 households) are located in the Phase I Areas. These groups have signed the leases for their peri-urban rangeland tracts and have begun participating in the training programs.

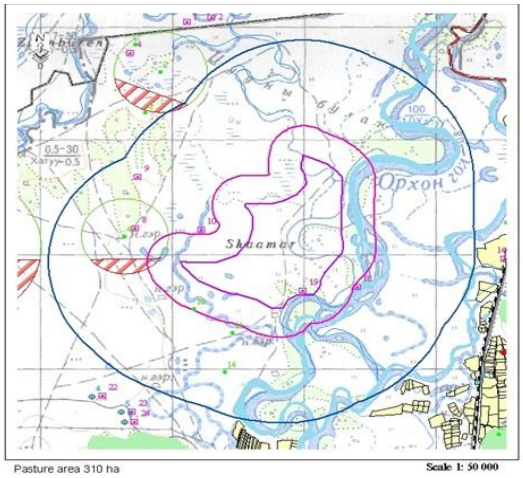
Table 1. Project Activity Timeline

Activities	Start	End
Legal Reform	January 12, 2009	*Ongoing*
Rangeland Mapping	March 2009	December 2010
Lease Development and Signings	September 2010	March 2011
Installation of Infrastructure	September 2010	*Ongoing*
Provision of Training	February 2011	*Ongoing*

IV. Selection Process in Phase I Areas

Table 1 shows the timeline for the activities associated with the selection process. The selection process began in March of 2009 when the PURP Project Implementation Unit (PIU) hired a local contractor to investigate, identify, and map potential rangeland tracts in the project areas – with the project areas being defined as any land within with an approximately 30km radius of Mongolia's three main urban centers, Ulaanbaatar, Darkhan and Erdenet. The local contracting firm hired for this task was the Centre for Policy Research (CPR). CPR provided the PIU with general information regarding the characteristics of rangeland and herder households in these areas. Moreover, the firm helped the PIU identify 665 broad tracts of land that were suitable for project activities. The primary suitability criteria included access to well water within an average depth of 50 meters of the surface, regular usage by local herders, and a relatively high quality of pasture and forage. Tracts of land deemed to have met these criteria were mapped using geographic information system (GIS) software, including the location of important resources. Figure 2 is an example of an individual tract. The inner pink line denotes the land tract that will be leased with exclusive use rights. The outer pink line is a 500 meter buffer zone surrounding the tract and the outer blue line represent a 2 kilometer buffer zone surrounding the tract. The buffer zones are included to highlight potential resources, camps, and population that may be affected by the lease.

Figure 2. Example of Land Tract Map



Shortly after land tracts were identified, MCA-M began outreach activities. CPR and the PIU held a series of workshops with local government officials and herder families in order to disseminate information about the project and encourage participation. Herder households were provided with instructions on how to apply for project assistance. They were encouraged to form herder groups and submit applications. Representatives from CPR worked with these groups to help them map the boundaries of their rangeland tracts and prepare their other documents. The groups could only apply for tracts of land within

Figure 3. Public Outreach Session with Herders

the 665 areas previously defined as suitable by CPR and the PURP PIU. At the same, time local soum[7] officials were encouraged to form selection committees comprising both local officials and citizens. These committees would be responsible for reviewing and scoring all applications submitted by herder groups within their soum.

Table 2. Selection Process Timeline

Activities	Start	End
Rangeland Tract Mapping	March 2009	August 2009
Public Outreach	August 2009	December 2009
Herder Group Application	October 2009	October 2009
Review and Selection Process - soum committees	October 2009	September 2009
ESA review and field verification	March 2010	October 2010
Final selection	September 2010	March 2011
Leases signed	September 2010	March 2011
Well Installation	May 2011	Ongoing
Supplying Seeds for Plantation and Fence Installation	December 2011	April 2012
Herder Group Training	May 2011	Ongoing)

The deadline for herder group applications was October 15th, 2009. Six hundred and seventy-six herder groups applied for leases and project assistance. Of these, 468 were given passing scores by the soum selection committees and short-listed for project assistance. Several of these were subsequently disqualified by CPR or the PIU as some of the project requirements, such as land tract size or water access, were apparently overlooked by several of the selection committees. See Tables 3 and 4 below for a detailed description of project requirements and selection criteria. The criteria listed in Table 3 are strict cut-offs. A herder group that does not meet the requirements listed in Table 3 is not eligible for project assistance. Table 4 includes softer, continuous criteria. Herder groups were awarded a certain number of points according to the degree to which the met each of these criteria.

[7] A soum is roughly equivalent to a US county and is an administrative subdivision below the aimag (province) level.

Table 3. Minimum Criteria for Short-Listing Groups

1.	A herder group/farm comprises 4-6 herder households
2.	Herder household members must be registered in the specified region, or used pastures for more than 180 days in the specified region
3.	Must have consensually agreed to balance number of livestock with pastureland carrying capacity (contract condition)
4.	No household shall own more than 1000 sheep units
5.	Members of the herder group must be Mongolian citizens
6.	Each household must derive a minimum of 60% of its income from herding
7.	Herder group must provide a guarantee for the health of their livestock

Since only 300 positions within the project were available, the original project plan called for selecting beneficiaries from the pool of short-listed applicants through a business plan competition. The herder group that submitted the top ranked business plan in each soum would have been granted automatic entry into the project while the rest of the short-listed herder groups would have moved on to participate in a public lottery process, organized on a soum-by-soum basis, which would have randomly allocated the remaining leases among the qualified applicants.

Unfortunately, neither the business plan nor the lottery process steps were ever fully carried out because an investigation by the MCA-M and MCC Environmental and Social Assessment (ESA) Units in conjunction with the MCA-M Environment and Social Oversight Consultant (ESOC) revealed that the World Bank Operational Policy on Involuntary Resettlement (O.P. 4.12), to which MCC and MCA-M are legally required to adhere, had not been fully respected in the early stages of project implementation. The policy stipulates that households and individuals cannot be forced to relocate or involuntarily denied access to resources they previously enjoyed as a result of a development aid project.[8] A number of herder households residing on the land tracts claimed by short-listed herder groups complained that they had not been made aware of the project or its goals of granting exclusive use rights to the land they normally resided upon.

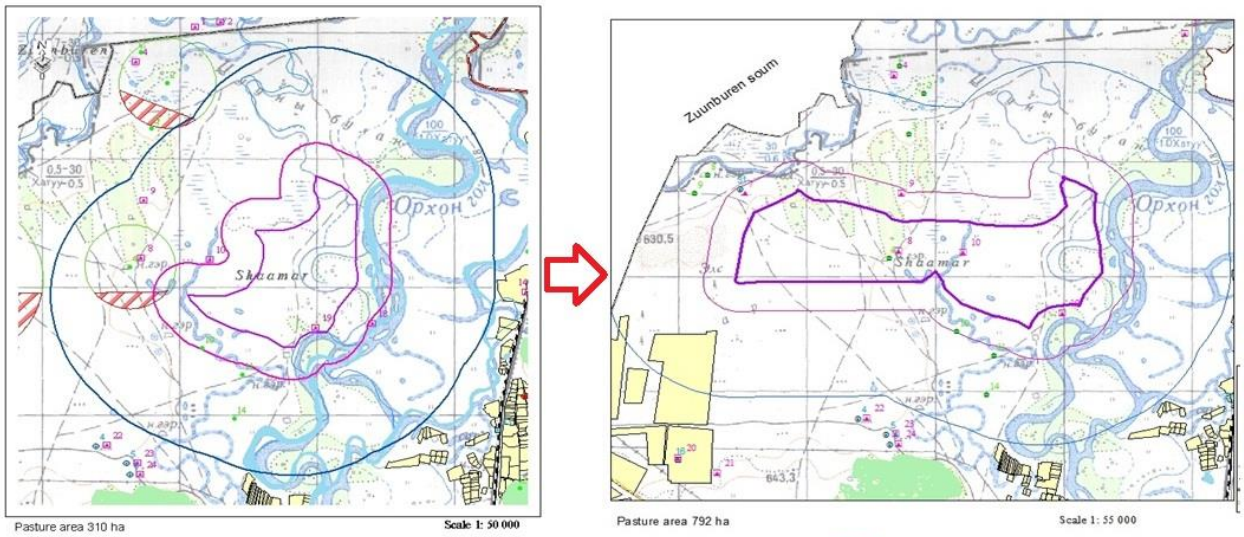
[8] For the full text of O.P.4.12 see: http://go.worldbank.org/96LQB2JT50.

Table 4. Criteria for Scoring Short-Listed Herder Groups

Socio-economic criteria
Good and exemplary history and ability of cooperation
Collaborative supply of livestock products (milk, meat, hides, cashmere, etc.) to the market
Majority of household members collaboratively utilize the same pasture
Herder group has had a leader for a minimum of 1 year
The leader of the herder group has been living on pastureland site of group
At least two-thirds of the households in the herder group have been the same for last 3 years
Sustainable livestock management capability
Amount of herder income that originates from animal husbandry
Majority of households in a group have more than 3 years of experience managing livestock operations of dairy cows, multi-purpose (dairy/meat) cattle or meat livestock of high yields
All households in a group have experience in meat or milk livestock herding/handling
Number of low-income or female-headed households
Percentage of herder households in a group who are low-income or female-headed
Percentage of adult members of the group registered as residents of the specified region
Current farming situation
Livestock genetic quality
Number of herder households who own genetically improved livestock (meat or dairy)
Average annual milk yield of pure and cross breed dairy cows of herder group
Experience of milk and meat supply to the nearby market
Household experience of milk supply to nearby markets during the winter and spring for last 3 years
Household experience of meat supply to nearby markets during the whole year for last 3 years
Fodder preparation
Majority of households have been able to feed livestock (dairy, multi-purpose and meat animals) for last three years with concentrate feed, silage and stored hay/forage.
Herder group has at least one shelter for livestock
Herder group owns hay making and fodder preparation machinery or equipment
Herder group owns a milk processing equipment

To ensure compliance with O.P. 4.12, MCA-M embarked on an extensive field verification process in the summer of 2010 in which each short-listed herder group's land tract was inspected for potential involuntary resettlement issues. Every effort was made to restructure the boundaries of short-listed land tracts so that involuntary resettlement would be minimized and Non-Applicant herder households would not be pushed off land they normally utilized. (See Figure 4 below for an example of a track modification designed to exclude camps of neighboring households and natural resources such as rivers and wells.) Only 279 of the short-listed herder groups remained eligible after the process was completed. Since the number of available contracts in the program exceeded the number of qualified applicants, the business plan competition and lottery were abandoned and all 279 groups were offered leases and project assistance.

Figure 4. Example of Modified Land Tract Boundary



The original map incorporates fertile lands on the riverfront that are claimed by multiple groups. The second map excludes these disputed riverfront areas and embraces a larger area of less fertile inland rangeland. The inner pink line represents the lease tract; the outer pink line is a 500m buffer and the outer blue line is a 2 km buffer.

V. Data Collection

Any strategy for evaluating the effects of the Phase I PURP project requires comparing households in the 279 herder groups selected for treatment to households that did not receive the treatment. Given the limited amount of existing data and the way in which the selection process unfolded, area households fall into three categories:

1. Households selected as beneficiaries of the program.

2. Households that applied for the program but did not receive it – either because they were not short-listed or because they were unable to modify their application in order to comply with the resettlement policy.

3. Households residing in the areas under consideration, but who, for whatever reason, did not submit an application and were never considered for selection.

These categories then served as the basis for choosing the sample of the Peri-Urban Rangeland Leasing Survey (PURLS). Specifically the sample of households for the survey was defined as follows:

1. *Project Households:* All households that were part of the 279 selected herder groups.

2. *Applicant Households:* All households who submitted an application as part of a herder group but whose group application was not selected.

3. *Non-Applicant Households:* A randomly chosen subset of households residing within 2 kilometers of selected households (neighboring households) and other herder households living within the project area but further than 2km from a beneficiary (non-neighboring households).

In addition, both the leaders of individual herder groups as well as the governors of the soums in which the project tracts are located were surveyed to provide additional information on subjects such as social dynamics within the herder groups.

The PURLS baseline data collection was carried out between November of 2010 and January of 2011 by MEC under contract with MCA-M. Socio-economic information was collected from 3,289 herder households spread across Tuv, Darkhan-Uul, Orkhon, Selenge, and Bulgan aimags.[9] While 86.3 percent of the targeted sample was eventually surveyed, locating targeted households was particularly challenging due to the rough terrain, the high mobility of the nomadic herder households/individuals targeted, and the incomplete contact information contained in the sampling frames. Finally, it is important to note that baseline data collection started before the final list of beneficiaries was determined. At that time, 317 eligible herder groups remained of the initial set of applicants and, as a result, the survey sample included the 28 groups that would eventually be disqualified (but that had not been identified at the time of the baseline survey).

Overall, the coverage rate for the household survey was quite high with 86.3 percent of targeted households completing a survey. The average interview took approximately 77 minutes to complete. For Project and Applicant households, the enumerators sought to survey all households in each category. Since each household had submitted an application as part of a larger herder group, the identity of the individual households was determined from these applications yielding a total of 1,172 Project households and 622 Applicant households. As shown in Table 5, enumerators were able to survey 83.4 percent of Project households and 55.5 percent of Applicant households. The response rate for Applicant households was substantially lower because the PIU's contractor did not maintain detailed contact records for some of the

[9] Aimags are Mongolian provinces.

rejected households and, furthermore, a significant number of the rejected Applicant households refused to participate in the survey.

Table 5. PURLS Data Collection – Response Number by Respondent Type

Respondent Type	*Targeted Number*	*Number Interviewed*	*Percent Surveyed*
Households	**3,811**	**3,289**	**86.3**
Project Households	1,172	978	83.4
Applicant Households	622	345	55.5
Non-Applicant Households	2,017	1,966	97.5
Neighboring Households	317	327	103.2
Non-Neighboring Households	1,700	1,639	96.4
Herder Group Leaders	**317**	**296**	**93.4**
Soum Governors	**72**	**72**	**100.0**

The list of neighboring households was developed by the PURP-PIU, identifying all households that did not apply for the program but that lived within 2 km of a household selected for the project. Of the 317 herder groups that remained eligible for project selection at the time of the survey, the PIU was able to identify lists of neighbors for 287. From this list, one neighboring household was chosen for each herder group along with a second and third choice should the first choice be unavailable for the survey. Unfortunately, the survey protocol was not strictly followed, resulting in some of the "backup" neighbors being surveyed even when not required, resulting in more surveys being administered than initially planned.

For the Non-Neighbor households, a "census" list of all herder households residing in the project areas had previously been developed by the PURP PIU's rangeland mapping contractor, Centre for Policy Research (CPR). This list was deemed the best frame available—short of official census data, which could not be obtained due to legal restrictions—for the purpose of selecting a random sample of the general herder population. From this list, 1,700 households were randomly chosen. The census list was stratified by soum and the number of randomly selected households to be targeted from each soum was weighted proportional to the number of the 317 potential beneficiary herder groups located in each soum. For example, if 32 (10.1%) of the 317 potential beneficiary herder groups were located in soum X, then 170 (10%) of the 1700 sample of randomly selected herder households would be targeted for soum X. For every household targeted in a particular soum, three households were drawn from the list, with the understanding that enumerators would probably be unable to locate some households and that substitutes would

have to be ready to replace these households. The size of the sample was determined to be the largest possible given the available budget. As with the Neighboring Households, the coverage rate for Non-Neighboring Households is quite high – with 96.4 percent of the targeted number of households surveyed after replacements and back-ups were utilized.

The identification of herder group leaders and soum governors was much more straightforward. For the herder group leader portion of the PURLS data collection, the research team interviewed the leaders of all 317 herder groups that remained in the potential beneficiary group. A list of these leaders was provided by the PIU. For the soum governor portion of the PURLS data collection the research team interviewed the governors of all 41 soums where the project was being implemented as well as the governors of an additional 31 non-project soums. Non-project soums were included to provide insight into how soum level dynamics differed in areas where the project was not being implemented. The coverage rates on this portion of the survey were 93.6 and 100 percent respectively.

Three different instruments were employed: the Household Questionnaire, the Herder Group Leader Questionnaire, and the Soum Governor Questionnaire. All three questionnaires are provided in Appendices C, D, and E of this document. And the topics for each are summarized in Table 6.

Table 6. PURLS Survey Questionnaires – Types and Content

Household Survey	***Herder Group Leader Survey***	***Soum Governor Survey***
• Household expenditure and income • Loans, support and assistance received • Migration patterns • Infrastructure & pastureland quality at seasonal camps • Household livestock information • Livestock hay-making and forage production and purchases • Land disputes • Future investments • Opinion regarding the MCA Peri-Urban project	• Basic herder group information • Information on herder group members • Plans for excess livestock • Existing assets and plans for new assets (wells, fences, equipment, etc.) • Plans for land usage • Herder group activities • Pastureland and forest management plans	• Demography and migration in Soum • Services available • Soum-wide livestock and land information • Land disputes • Donor programs and development projects

VI. Household Survey Results by Area

Table 7 below provides a general overview of the study population and its key features, broken down geographically by aimag (province). The average herder group in the sample contains approximately 3.3 households. This statistic varies somewhat by aimag, with herder groups in Bulgan aimag containing nearly 4 households and those in Darkhan-Uul containing just slightly more than 3. With respect to the number of individuals in the herder group, the pattern is quite similar with an average of 13.7 in the overall sample, and a higher number in Bulgan and a considerably smaller number in other aimags (this is a function of the respective number of households in the herder groups residing these aimags rather than underlying variation in household characteristics). With respect to herd size, the average herder group owns 876 animals while the average herder household owns approximately 236. There is considerable geographic variation in herd size, with herder groups and households in the areas nearest urban centers – Darkhan-Uul, Orkhon, and Ulaanbaatar – owning fewer animals than those in more remote aimags.

With respect to income, the average household in the study generates 9,100,821 tugrugs from all income sources, including 2,512,366 tugrugs in earnings from wages and other non-agricultural sources and 6,588,455 tugrugs from agricultural sources. This is nearly twice the national average of 4,663,260 tugrugs recorded by the Mongolian National Statistics Office (NSO) for the year in which the baseline study occurred.[10] This difference could be due in part to methodological differences between the PURLS and the NSO's data collection. However, the PURLS income sections were based on NSO categories and the two data sources should therefore be largely comparable. These figures suggest that households in the PURLS study are markedly better off than the national average in terms of income and consumption. The average household head in the sample has attended school for approximately 8.9 years, which is slightly below the current national mandated requirement of 9 years of primary and secondary schooling for all children.

The average milk-yield per household cow is approximately 3.4 liters but there exist significant differences in milk yield across the aimags. For example, cows in Ulaanbaatar produce 4.3 liters, on average while those in Bulgan produce on average 2.6 liters of milk. Combined with the herd figures above, these numbers suggest that households in more urbanized areas, especially the capital, have smaller herd sizes but more productive animals. This is noteworthy given that one of the goals of the PURP is to shift farmers into precisely this type of intensive, highly productive agricultural model.

[10] Statistical Yearbook of Mongolia 2006, National Statistical Office, Ulaanbaatar, 2010

Table 7. Summary of Survey Results by Aimag

	Bulgan	Darkhan-Uul	Orkhon	Selenge	Tuv	UB	Total
Number of Households in Herder Group	3.9	3.1	3.4	3.3	3.2	3.3	3.3
Number of Individuals in Herder Group	15.0	13.2	14.1	13.8	13.2	13.4	13.7
Average Animals in Herder Group	905	660	746	960	998	437	876
Average Animals per Household	240	139	209	282	290	96	236
Average Non-Agricultural Income Per Household	2,180,223	3,368,634	1,940,510	2,136,005	2,653,931	3,087,565	2,512,366
Average Non-Agricultural Income Per Household Member	631,958	856,525	594,032	576,837	766,477	890,492	706,231
Agricultural Revenue	5,564,927	7,071,937	5,275,749	8,200,801	6,052,734	5,076,955	6,588,455
Years of Schooling of Household Head	8.3	9.6	8.0	8.6	8.8	9.8	8.9
Milk Yield (estimation of average daily yield per cow in liters)	2.6	3.4	2.8	3.5	3.2	4.3	3.4
Average Distance Migrated per Year (km)	45	9	45	37	43	9	33
Percent whose Winter Camp has Access to Electrical Grid	14	58	14	21	30	57	31
Percent whose Winter Camp has Access to Mobile Network	50	86	86	84	75	83	78
Percent whose Winter Camp has Access to Well	26	73	64	62	71	62	62
Percent Planning to Invest in Wells in Next Five years	49	59	57	63	61	64	61
Percent whose Winter Camp has Access to Animal Shelter	91	91	93	94	91	89	92
Percent Planning to Invest in Animal Shelter in Next Five years	57	71	51	72	59	56	63
Percent Planning to Invest in Fencing in Next Five years	44	55	47	49	52	45	49
Total Households	316	223	194	1,096	900	539	3,268

The average household in the study migrates approximately 33 kilometers a year, moving between camps. Unsurprisingly, migration differs between households living in more urbanized versus more isolated areas. Those herders living near Ulaanbaatar and Darkhan-Uul migrate much less than those in more distant aimags such as Bulgan and Orkhon. Similarly, access to electricity, well water, and the mobile network varies greatly by geography. Again, as one would expect, urban areas tend to have higher access to electricity and mobiles. There is less geographic variation when it comes to access to animal shelters and future infrastructure investment plans, with households in all provinces expressing roughly similar levels of interest in a wide variety of investments.

VII. Household Survey Results by Household Type

This section reports the findings of the baseline PURLS at the household level. Data was collected on three types of households:

- *Project Households:* Households that were part of the 279 herder groups selected by MCA-M for inclusion in the PURP program.
- *Applicant Households:* Household that applied for the program but which were deemed ineligible by MCA-M based on the project criteria.
- *Non-Applicant Households:* A randomly chosen subset of households which did not apply for the program but which live in the areas in which the program is being implemented.

Using the PURLS data, we describe the overall sample of herder households, and in particular compare the households that were selected for the project to the other two types of surveyed households. Across a wide range of characteristics, the groups of households are, in fact, quite different.

Here we provide descriptive statistics on the socioeconomic background of households, their income and expenditures, other economic activity and plans, the characteristics of camps and migration activity, livestock and herding practices, land conflicts, and attitudes toward the PURP. Because these groups were not randomly generated, we want to pay special attention to any differences between groups of households; as such differences will affect our ability to estimate project effects later on.

All monetary figures are listed in Mongolian tugrugs (MNT). The exchange rate between the tugrug and the US dollar was approximately 1,247 tugrugs to the dollar during the period when the baseline PURLS data were collected.[11]

A. Basic Household Characteristics

Table 8 provides information on basic household characteristics. These numbers suggest that the herder households enrolled in the project are fairly similar to non-project households in terms of their basic characteristics. Project households have 4.12 members on average, which is slightly lower than the Applicant households who applied unsuccessfully for the project and slightly higher than the random sample of herder households in the Non-Applicant category. Household composition is also similar across groups, with Project households being made up of, on average, 2.76 adults and 1.37 children.

Table 8. Basic Household Characteristics

	Project Mean	Applicant Mean	Non-Applicant Mean	Overall Mean
Number of Household Members	4.12	4.14	4.11	4.12
	(1.5)	(1.6)	(1.7)	(1.6)
Household Members Over 18	2.76	2.79	2.87	2.82
	(1.2)	(1.1)	(1.2)	(1.2)
Household Members Under 18	1.37	1.35	1.23	1.29
	(1.2)	(1.2)	(1.3)	(1.3)
Years of Schooling of Household Head	8.79	9.21	8.79	8.86
	(3.5)	(3.8)	(3.7)	(3.7)
Age of household head	45.8	46.4	49.9	48.1
	(13.4)	(14.0)	(14.2)	(14.1)
Percent of Household Heads that are Male	90	91	89	90
	(.9)	(1.2)	(.8)	(.5)
Percent of Children that Dropped Out of School	1.3	2.2	1.9	1.8
	(.3)	(.5)	(.3)	(.2)

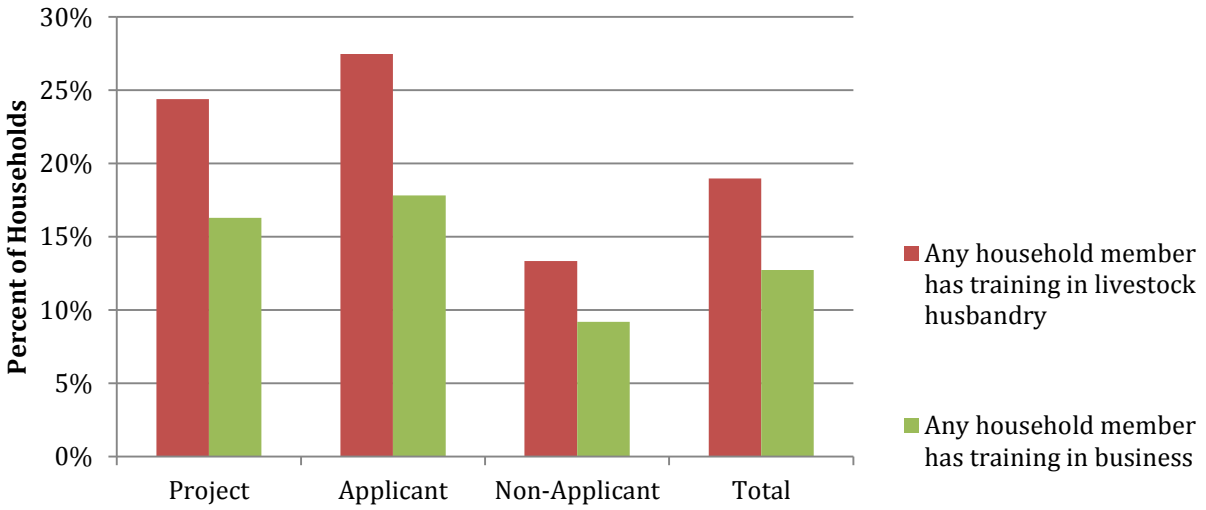
Note: Standard deviations are reported in parentheses.

[11] Exchange rate information was take from http://www.xe.com

It is overwhelmingly the case that households tend to be headed by men. This is equally true for Project households, despite the fact that the PURP utilized selection criteria intended to favor the inclusion of households headed by women (see Table 4 in Section III). Heads of household in the Applicant group tend to have slightly more years of schooling and higher levels of education, however. Both Project and Applicant heads of household are, on average, younger than those of Non-Applicant households. One noteworthy characteristic of Project households is that they report much lower school dropout rates among their children.

In terms of training that is relevant for project related activities, there appears to be larger variation among the three groups. Figure 5 reports the percentage of households in each group in which at least one household member has training in animal husbandry techniques and business related matter. Members of the Project and Applicant groups both have significantly higher rates of training than the Non-Applicant group. This is true both for livestock husbandry training and business training.

Figure 5. Training of Household Members



B. Agricultural Income and Expenditures

All of the households in the study obtain the majority of their income from herding activities. Agriculture is thus a critical part of their livelihood strategies and at topic worthy of extensive analysis**.** Table 9 and Figure 6 report on revenues from the sale of livestock and livestock products, and household expenditures on livestock.

Table 9. Agricultural Revenue and Expenditures in 2010 (MNT)

	Project Mean	Applicant Mean	Non-Applicant Mean	Overall Mean
Revenue from Sales of Livestock	2,375,414	2,369,668	1,673,728	1,997,457
	(3,821,846)	(4,114,992)	(3,678,304)	(3,812,089)
Revenue from Sales of Livestock Products	5,163,360	5,884,692	3,849,604	4,578,924
	(5,536,309)	(7,656,183)	(5,911,135)	(6,189,483)
Expenditure on Livestock	1,003,077	791,166	679,644	793,644
	(6,728,296)	(1,480,240)	(2,339,994)	(4,080,285)

Note: Standard deviations are reported in parentheses.

Both Project and Applicant households obtain higher revenues from livestock related activities than Non-Applicant households. The average Non-Applicant household revenue from livestock related activities is about 70% that of Applicants and Project households. The variation across groups when it comes to expenditures is similar.

Figure 6. Annual Livestock Revenue and Expenditures

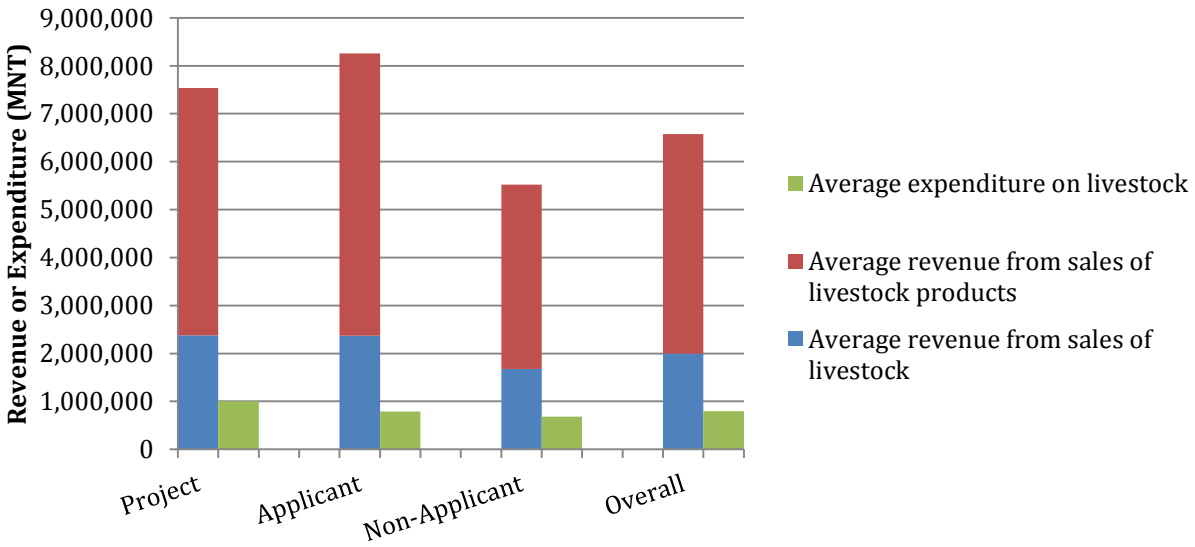
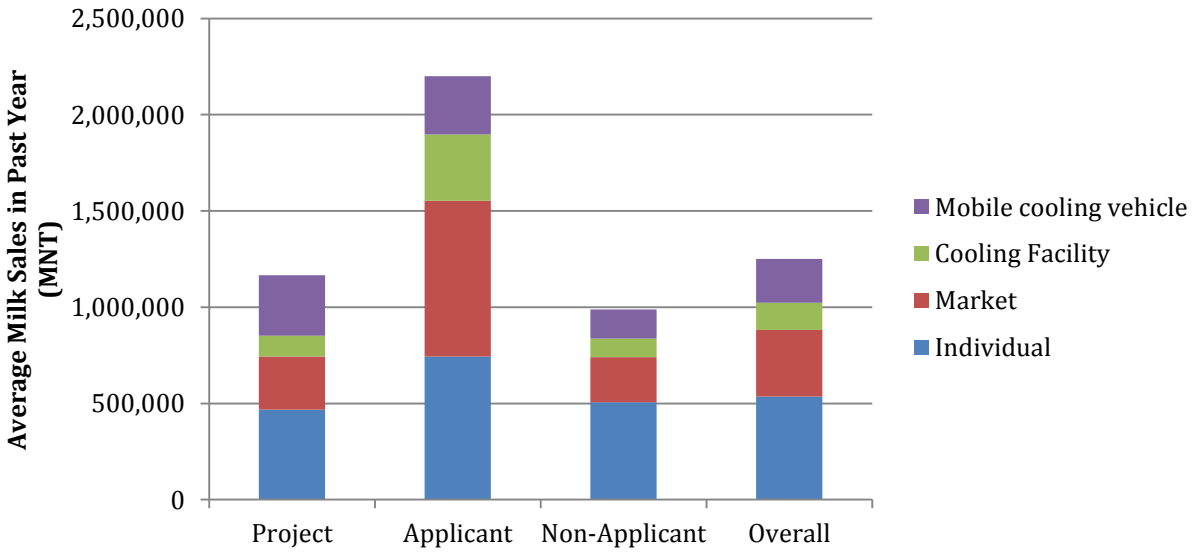


Figure 6 might initially lead the casual observer to conclude that herding is a high value added, high return industry but one should bear in mind that the livestock related "expenditures" variable listed here includes only direct investments in animals and animal related products. It does not include the opportunity cost of unpaid household labor invested in herding activities nor

does it include corollary costs such as the transportation and storage costs associated with delivering animals and animal products to market.

Milk sales are one of the single most important sources of animal product revenue for herder households. Looking at Figure 7, below, we see that there exist marked differences between the three types of household on this measure. Applicant households appear to be significantly more successful than both Project and Non-Applicant households in terms of the amount of revenue they generate from milk sales on an annual basis. The average Applicant household generates nearly twice the revenue from milk as the average Project household or Non-Applicant household.

Figure 7. Milk Sales by Destination



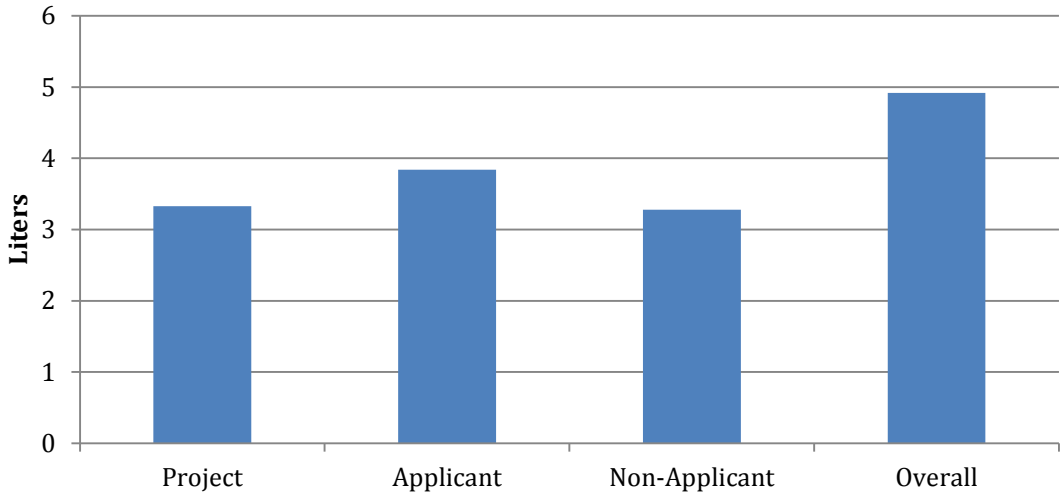
It is not entirely clear why this is the case. Higher milk revenues could be the result of three separate factors:

- Higher milk production due to a higher number of milking animals or more productive milking animals.
- A higher percentage of milk sold compared to milk produced.
- A higher unit price obtained for the product sold.

The data suggest that all three factors may play a role. While Applicant households do not appear to own significantly higher numbers of cattle or milk cows, Figure 8 does suggests that the animals they own are significantly more productive in terms of the volume of milk they yield on a daily basis. The average Applicant household milk cow produces nearly a full liter more than their counterparts in the Project and Non-Applicant groups. Applicant households also appear to

sell significantly more milk, both in absolute terms and as a percentage of the milk produced, than do households in the other groups.

Figure 8. Average Daily Milk Yield



The fact that Applicant households deliver more milk to the market and to central cooling facilities (see Figure 7) suggests that part of their success in making sales may be due to the fact that they have better access to markets and milk storage facilities. The PURLS data appear to provide some support for this idea. Applicant households' winter and summer camps are significantly closer to major towns and central cooling facilities than those of the other two groups. For example, Applicant households are on average 7km closer to a major town from their summer camp than households in the other two groups. Project households' winter camps are on average more than 12km further from town and Non-Applicant winter camps are 7km further from town, than Applicant winter camps. This seems a reasonable explanation for the greater volume of sales to these sources.

However, a closer examination of the data reveals that the difference in revenue between households is not merely a function of the volume of milk sold to different sources. Price also plays a significant part. Applicant households receive significantly higher prices for their product, especially during the milking season, when prices drop. The higher price Applicant households receive may indicate that they produce a higher quality product or it may be the result of personal relationships and/or pre-existing contracts with their customers. Unfortunately, the PURLS data do not allow one to explore this difference in greater depth. It may be worth modifying and expanding the survey instrument during future iterations of data collection in order gain more clarity on the subject.

C. Non-Agricultural Income and Expenditures

On the non-agricultural income front, the differences between the groups are less stark. As can be seen in Table 10, all three groups in the study appear to have fairly similar levels of income in all categories. In contrast to the figures on agricultural income, households in the Non-Applicant group actually seem to perform slightly better than households in the other groups on a number of income categories, including pension income, most sources of welfare income, and overall regular income. The Non-Applicant group does marginally less well in term of irregular sources of income.

In terms of expenditures, however, Non-Applicant households are clearly subsisting at a lower level than their counterparts in the Project and Applicant groups, as Tables 11 and 12 illustrate. The average Project household consumes 5,987,657 tugrugs of goods and services on an annual basis– approximately 1,667,669 tugrugs of consumption in per capita terms. This is equivalent to approximately 4,802 USD of consumption in household terms and 1,337 USD in per capita terms, using the prevailing exchange rate at the time of the survey. Project households appear to be slightly more affluent than Non-Applicant households in both absolute and per capita terms. They consume slightly less than the Applicant group in absolute terms but slightly more in per capita terms. Project households spend significantly more on schooling and school fees than do households in the other two groups. This finding is consistent with the lower school dropout rate among Project household children, noted in Table 8 above.

Table 10. Yearly Household Income (MNT)

	Project Mean	Applicant Mean	Non-Applicant Mean	Overall Mean
Regular Household Yearly Income	**1,271,037**	**1,511,193**	**1,578,069**	**1,476,411**
	(2,057,694)	**(2,195,275)**	**(2,151,395)**	**(2,135,383)**
Wage, Salary or Similar Income	654,001	781,866	743,452	723,492
	(1,859,810)	(1,927,311)	(1,879,456)	(1,881,852)
Monthly Pension Benefits	461,158	566,380	679,222	595,976
	(860,817)	(1,015,267)	(1,038,540)	(989,785)
Welfare Support	168,788	179,914	177,426	175,302
	(359,428)	(518,133)	(443,237)	(434,416)
Irregular Household Yearly Income	**1,217,832**	**1,070,060**	**917,026**	**1,031,350**
	(4,133,253)	**(2,691,307)**	**(2,177,026)**	**(2,967,627)**
Non-Regular Wages	158,589	125,071	177,945	163,436
	(1,447,902)	(1,055,297)	(824,013)	(1,081,035)
Profit from Private Business	446,392	363,819	247,471	325,833
	(2,717,372)	(2,062,349)	(1,804,516)	(2,156,184)
Income from Monthly Rent	63,437	48,543	14,278	34,551
	(868,780)	(514,645)	(239,578)	(546,242)
Money Transfer from Others	113,554	128,664	95,997	106,687
	(610,724)	(580,556)	(383,187)	(495,643)
Interest from Savings Accounts	40,535	19,083	9,885	20,467
	(809,689)	(166,819)	(85,900)	(449,853)
Human Development Fund	319,178	331,062	337,505	331,001
	(167,455)	(192,199)	(220,846)	(201,721)
Other Income	86,085	67,051	44,575	60,626
	(679,007)	(578,788)	(512,282)	(577,442)
Total Household Yearly Income	**2,488,869**	**2,581,253**	**2,495,095**	**2,507,762**
	(4,763,017)	**(3,577,582)**	**(3,186,703)**	**(3,779,059)**

Note: Standard deviations are reported in parentheses. Regular Household Income includes stable sources of income that are received on a regular monthly, quarterly, or yearly basis, etc. Irregular Household Income includes one-off, isolated, non-guaranteed transactions, such as cash from sale of a household asset, income from a short-term job, profits from a business, etc. These aggregate categories are listed in bold and their sub-categories are listed below them.

Table 11. Yearly Expenditures (Non-agricultural) in 2010 (MNT)

	Project Mean	Applicant Mean	Non-Applicant Mean	Overall Mean
Regular Food	466,114	496,869	534,022	507,775
	(348,245)	(363,435)	(414,278)	(388,540)
Goods and Services	2,974,005	3,255,229	2,650,786	2,847,680
	(3,013,179)	(4,132,135)	(2,573,320)	(3,025,042)
Irregular Purchases	2,547,537	2,393,665	2,020,908	2,238,703
	(4,241,765)	(3,069,464)	(3,081,905)	(3,469,348)
Total	5,987,657	6,145,764	5,205,716	5,594,157
	(5,953,638)	(6,088,766)	(4,663,092)	(5,340,056)

Note: Standard deviations are reported in parentheses. Regular food includes food items that are purchased in relatively stable quantities on a regular weekly or monthly basis. Irregular Purchases includes one-off, isolated transactions such as celebrations, hospital fees, or entertainment.

Table 12. Yearly Expenditures per Household Member in 2010

	Project Mean	Applicant Mean	Non-Applicant Mean	Overall Mean
Regular Food	125,906	133,628	152,752	141,608
	(104,055)	(104,392)	(172,252)	(145,216)
Goods and Services	781,807	842,215	698,690	747,407
	(809,365)	(991,077)	(685,649)	(783,390)
Irregular Purchases	759,956	656,077	559,654	634,997
	(2,353,321)	(987,642)	(936,556)	(1,508,236)
Total	1,667,669	1,631,921	1,406,282	1,521,219
	(2,642,040)	(1,693,739)	(1,385,376)	(1,892,679)

Note: Standard deviations are reported in parentheses. Regular food includes food items that are purchased in relatively stable quantities on a regular weekly or monthly basis. Irregular Purchases includes one-off, isolated transactions such as celebrations, hospital fees, or entertainment.

D. Loans

All the groups in the study appear to have access to financial services. The majority of households in all three groups have taken out at least one loan over the past 5 years and the vast majority of these loans (more than 95%) were taken from formal bank institutions. Table 13 reports data on the number of loans and their value among PURLS respondents. The average Project household took out 2.67 loans with a total value of close to 6.2 million tugrugs (a value of nearly $5,000 USD at prevailing exchange rates) over the past 5 years. The figures for households in the Applicant and Non-Applicant categories are similar. Comparing this with the income and consumption figures reported above, it seems that the average household in the study is able to borrow a very significant percentage of their annual income and expenditure from formal financial institutions. Thus, at first glance, it would not appear that the herders in the study are severely capital constrained.

Table 13. Loans in the Last Five Years

	Project	Applicant	Non-Applicant	Overall
	Mean	Mean	Mean	Mean
Number of Loans Taken Out	2.67	2.76	2.56	2.63
	(1.58)	(1.76)	(1.50)	(1.58)
Total Value of Loans (MNT)	6,177,323	6,557,601	5,585,431	5,947,744
	(9,916,439)	(12,235,018)	(12,153,253)	(11,522,629)

Note: Standard deviations are reported in parentheses.

E. Investment Plans

The PURLS also collected data on herder households' future investment plans. Herder households enrolled in the PURP appear to view pure and crossbred cows as the single most appealing investment. Animal shelters and wells rank second and third, respectively, with fencing ranking a distant fourth. Herders in the Applicant and Non-Applicant groups report similar investment plans. The amounts that these groups plan to invest in each category vary considerably, however.

This trend makes it clear that the assistance PURP will address a real, universally perceived need that herders have to invest in wells, shelters, and fencing. However, the project does not address the highest priority investment need that herder households have – i.e. the need to invest in higher quality cow breeds.

Table 14. Plans to Invest in Next Five Years

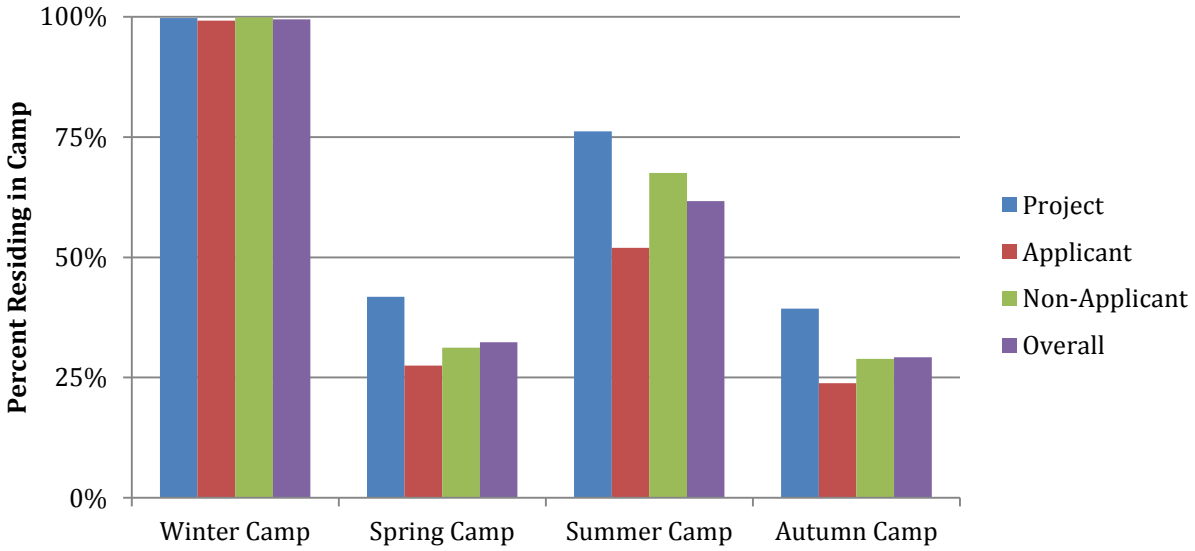
	Project		Applicant		Non-Applicant		Overall	
	Percent[1]	Mean[2]	Percent	Mean	Percent	Mean	Percent	Mean
Well	66.9	4,091,935	54.6	4,155,117	68.6	4,499,568	60.6	4,204,938
	(1.5)	(4,419,816)	(1.2)	(5,376,273)	(2.)	(3,976,701)	(.9)	(4,806,566)
Animal Shelter	68.4	2,073,446	59	1,500,055	66.2	2,423,743	63	1,854,782
	(1.5)	(3,345,173)	(1.2)	(4,785,170)	(2.)	(5,277,382)	(.9)	(4,491,909)
Fencing	55.4	2,836,353	43.1	2,034,207	55.6	2,776,131	48.9	2,462,233
	(1.6)	(4,763,322)	(1.2)	(3,770,274)	(2.1)	(4,211,904)	(.9)	(4,242,456)
Forage crops	50.2	2,010,263	38.9	2,202,288	51	2,181,077	44.3	2,134,781
	(1.6)	(3,783,414)	(1.2)	(6,163,481)	(2.1)	(4,329,158)	(.9)	(5,111,012)
Purchasing Pure and Crossbred cows	75.9	4,826,673	63.9	4,280,126	73.5	4,966,806	69.1	4,583,032
	(1.4)	(7,511,738)	(1.2)	(6,728,732)	(1.9)	(6,200,125)	(.8)	(6,900,546)
Purchasing Mongolian Cows	13.6	2,104,206	15.6	2,100,090	13.7	2,471,045	14.7	2,164,127
	(1.1)	(3,179,052)	(.9)	(6,981,939)	(1.5)	(3,500,423)	(.6)	(5,657,755)
Purchasing Other Livestock	21.1	2,488,639	27.5	2,693,197	21.8	3,523,873	24.6	2,768,965
	(1.3)	(3,751,072)	(1.1)	(4,532,665)	(1.8)	(7,032,134)	(.8)	(4,833,790)
Other	9.7	6,608,667	8.5	6,584,586	14.1	8,540,299	9.8	7,099,465
	(1.)	(8,078,606)	(.7)	(9,900,511)	(1.5)	(11,084,579)	(.5)	(9,743,607)

[1]Percent of households planning to make this investment.
[2]Average amount for those planning to invest.
Note: Standard errors reported in parentheses in the percent column; standard deviations reported in parentheses in the mean column.

F. Camp Information

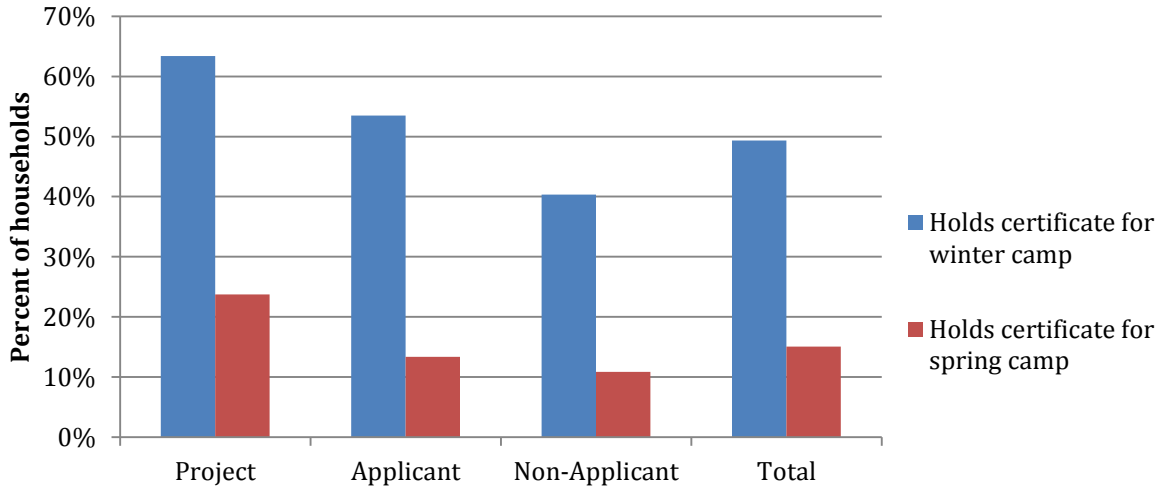
Mongolian herder households are semi-nomadic and tend to move with their herds between several relatively stable campsites throughout the year. The vast majority of households in the study move between at least two camps while some reside in up to four separate camps throughout the year. Figure 9 shows the distribution of seasonal camps across the different household types. Essentially all households have winter camps. The prevalence of other seasonal camps across household types is quite similar. However, Project households do tend to be more likely than others to have spring, summer and autumn camps.

Figure 9. Camps Residency in 2010



The ownership rights to campsites and the infrastructure on them are usually held informally but recently the Mongolian government has begun issuing certificates for specific campsites, allowing individual households to hold long-term usage rights to a plot of land containing houses, barns, shelters and other key infrastructure. These plots of land are usually quite small, just 50-100 square meters. As Figure 10 shows, Project households tend to possess certificates for their camps much more frequently than households in the other two groups. This is suggestive of importance differences between Project and other households in terms of the strength of claims to the land. One interpretation of the data is that Project households had stronger, more widely recognized claims to the land they reside on and the rangeland they utilize, prior to the implementation of the PURP. This is consistent with the selection process described in Section IV of the report, above. Only those households and herder groups with relatively strong claims to the land they utilize would have been able to successfully pass the MCA-M ESA field verification process.

Figure 10. Certificate Ownership



Despite the fact that Project households appear to have relatively strong ownership claims to their camp sites, the infrastructure on their sites appears to be less well developed on average than that of the Applicant and Non-Applicant groups. As Figure 11 demonstrates, only slightly more that 17% of Project households reside on winter camps that have access to the electrical grid, compared to more than 24% of the Applicant group households and 40% of the Non-Applicant households. Roughly 75% of Project households and a similar number of Applicant households reside in winter camps that have access to the cell phone or mobile networks, as can be seen in Figure 12. Non-Applicant households appear to have better mobile network access, with over 81% of households having winter camps with access.

One explanation for these differences, already noted in the previous section, is that Project households tend to reside in more isolated areas. Such areas are less populated and thus there is less competition for and pressure on camps and rangeland. Such areas are also less likely to have access to the electric grid, cell phone networks, and other modern amenities. Project campsites and land tracts may therefore be ideally suited for the project in the sense that households in these areas exhibit less conflict and competition for resources but they may also be less than ideal in the sense that they are isolated and lack access to modern infrastructure. As noted in sub-section B (Agricultural Income and Expenditures) above, households that are located closer to markets, cooling facilities other sales points tend to have higher revenue from agriculture, generally, and milk in particular.

Figure 11. Access to Electrical Grid

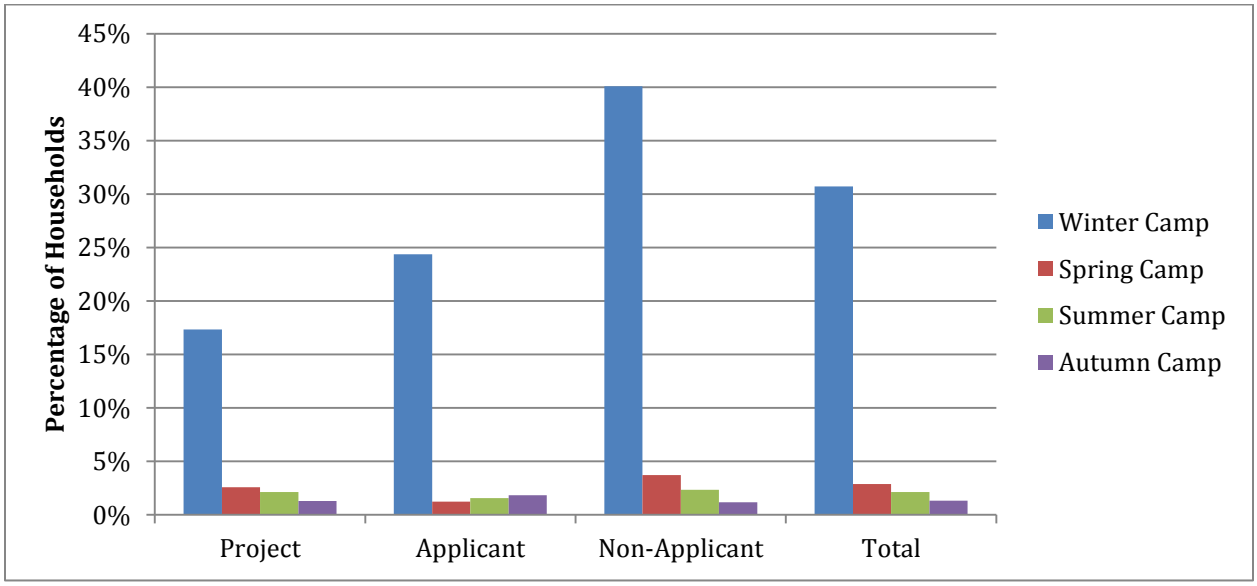
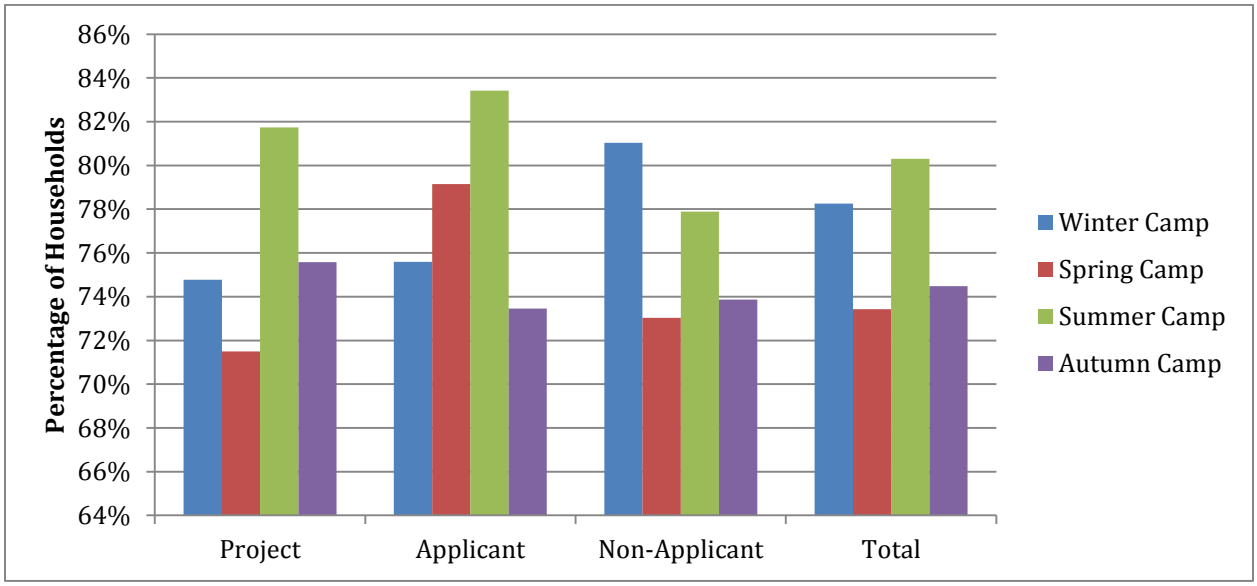


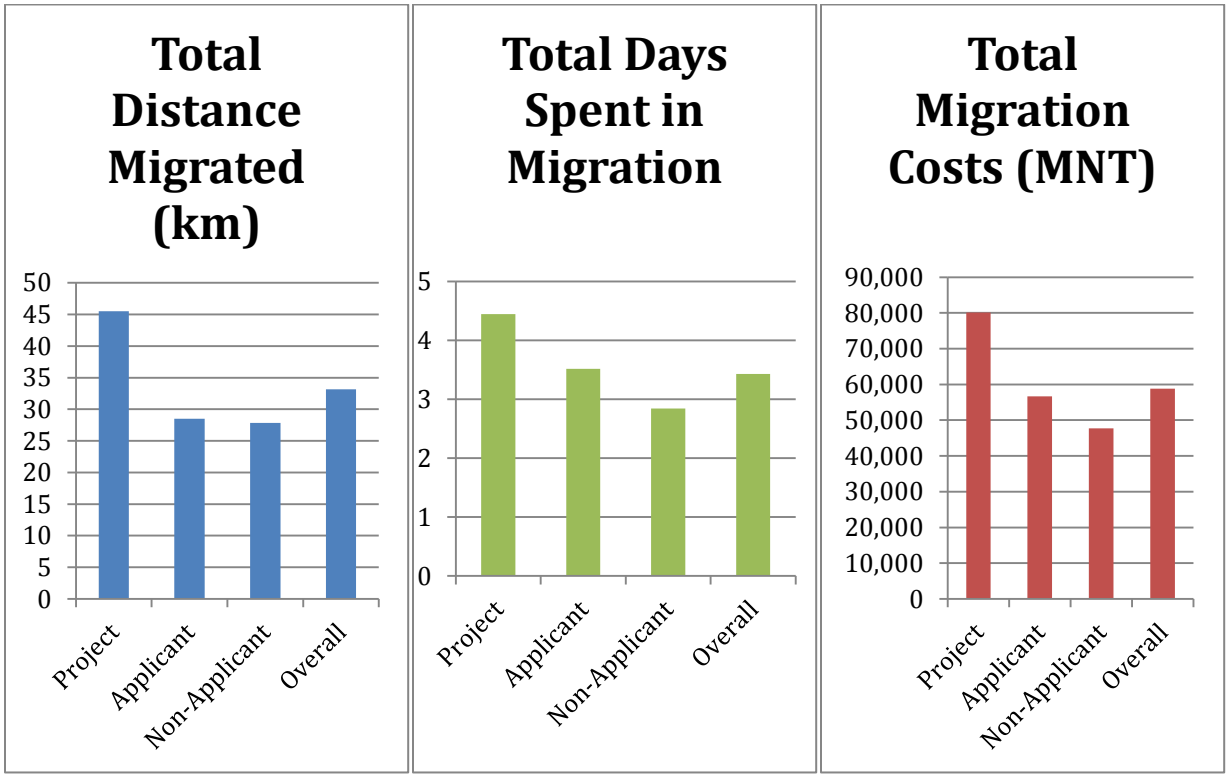
Figure 12. Access to Mobile Network



G. Migration

Migration trends among the three groups further underscores the differences between Project and non-project groups. Figure 13 reports on the total distance and number of days spent in migration, as well as the total yearly cost of migration. Project household camps are located in more distant areas and as a result these households migrate greater distances, spend more time in migration and have higher costs associated with moving between camps than do the households in the Applicant and Non-Applicant categories.

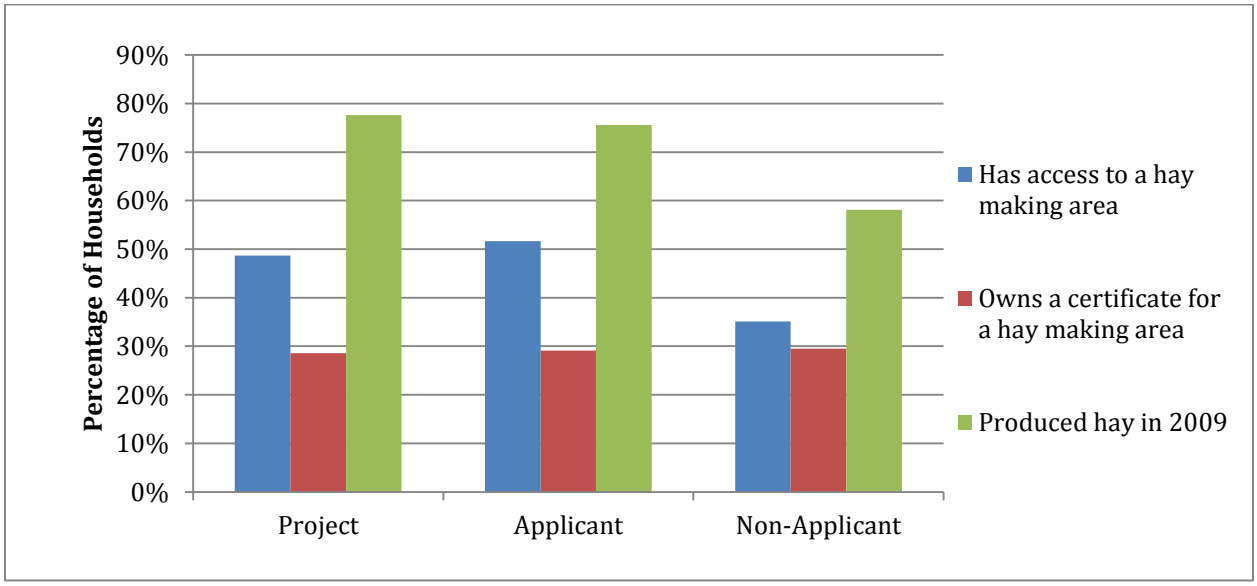
Figure 13. Migration Distance, Time, and Cost in 2010



H. Hay Production and Use

In terms of their hay production and consumption patterns, the differences between groups are much less stark. A significant minority of households in all groups has access to an area reserved for making hay. A smaller minority possesses a certificate for their hay making area. Both the Project and Applicant groups produce hay at a much higher frequency than members of the Non-Applicant group (see Figure 14).

Figure 14. Access to Hay Making Resources



Similarly, as the numbers reported in Table 15 make clear, Project households and Applicant households produced and purchased significantly more hay than their counterparts in the Non-Applicant group.

Table 15. Hay Production and Use in 2010

	Project Mean	Applicant Mean	Non-Applicant Mean	Overall Mean
Size of Hay Producing Area (ha)	28	16.1	11.5	18.2
	(230)	(34)	(34)	(137)
Hay Produced (tons)	11.9	40	10.3	16.7
	(19.4)	(372)	(37)	(168)
Amount Spent on Hay Production (MNT)	309,863	402,955	227,064	289,356
	(626,745)	(1,130,679)	(455,625)	(692,943)
Amount Spent on Purchasing Hay (MNT)	725,282	1,192,755	856,371	880,041
	(1,411,443)	(1,808,381)	(1,236,250)	(1,388,075)

Note: Standard deviations reported in parentheses.

I. Livestock Numbers and Animal Health

Table 16 contains information on animal health indicators. The vast majority of households in all three groups vaccinates and treats their animals for parasites. However, less than half have a standing contract with a firm or individual that provides regular veterinary services. There do not appear to be substantial differences among groups in terms of the rate and frequency of vaccination and other animal health treatments.

Herd composition is also similar among all three groups. Figures 15 and 16 report data on these variables. Project households have larger herds overall – nearly 254 animals on average, compared to 200 in the Applicant group and 168 in the Non-Applicant group – but the composition of their herd is fairly uniform in terms of the percentage of sheep, goats, cattle, and horses. Sheep and goats are by far the most common herd animals in all groups with cattle and horses the third and fourth most common animals. Figures 15 and 16 provide more detail on these topics.

Table 16. Percent of Households that Treated Animals

	Project	**Applicant**	**Non-Applicant**	**Overall**
	Percent	**Percent**	**Percent**	**Percent**
Any Animals Vaccinated	76	82	79	79
	(1.4)	(1.7)	(0.1)	(0.7)
Any Animals Treated for Parasites	86	88	83	85
	(0)	(1.4)	(0.9)	(0.6)
Have Contract with a Vet	44	46	38	41
	(1.6)	(2.1)	(1.2)	(0.9)

Note: Standard errors reported in parentheses.

Livestock mortality rates are also fairly similar across Project and Applicant groups, as Figure 17 shows. The Project households lost a larger absolute number of animals due to the fact their herds are larger to begin with but the final mortality rate is quite similar. Non-Applicant households, on the other have, experienced significantly higher mortality rates, perhaps owing to their more precarious overall economic situation. It is also important to bear in mind that the winter of 2009-2010 was particularly harsh, the most severe that Mongolia experienced in several decades. Mortality rates calculated in the PURLS baseline might therefore be atypical and not representative of normal or steady state mortality rates.

Figure 15. Number of Livestock (Beginning of 2010)

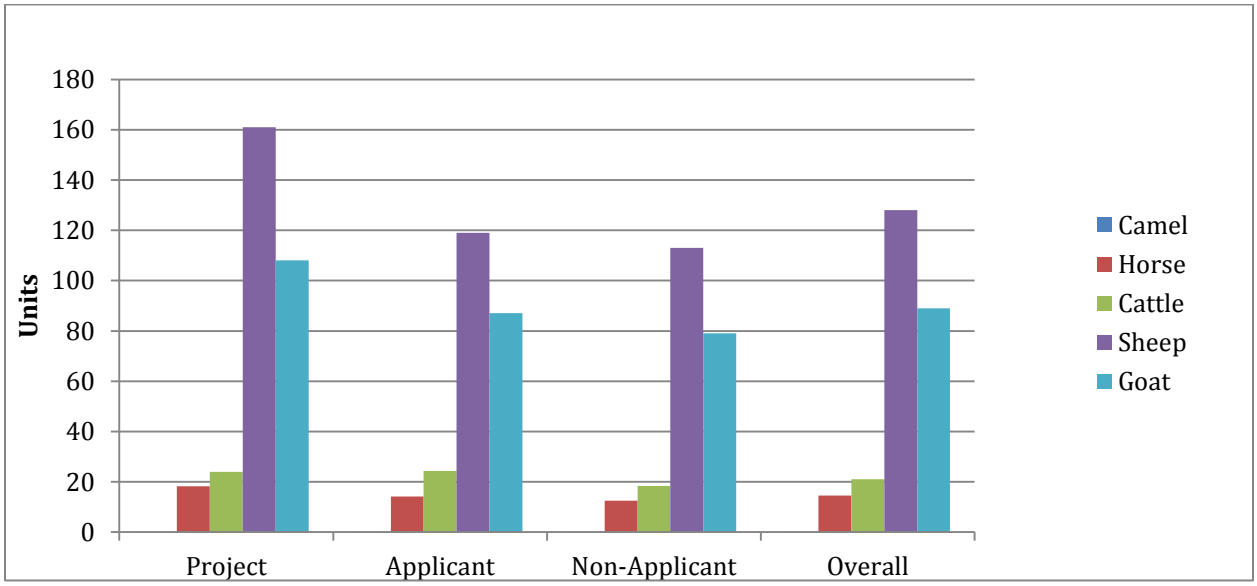


Figure 16. Total Livestock (Beginning of 2010)

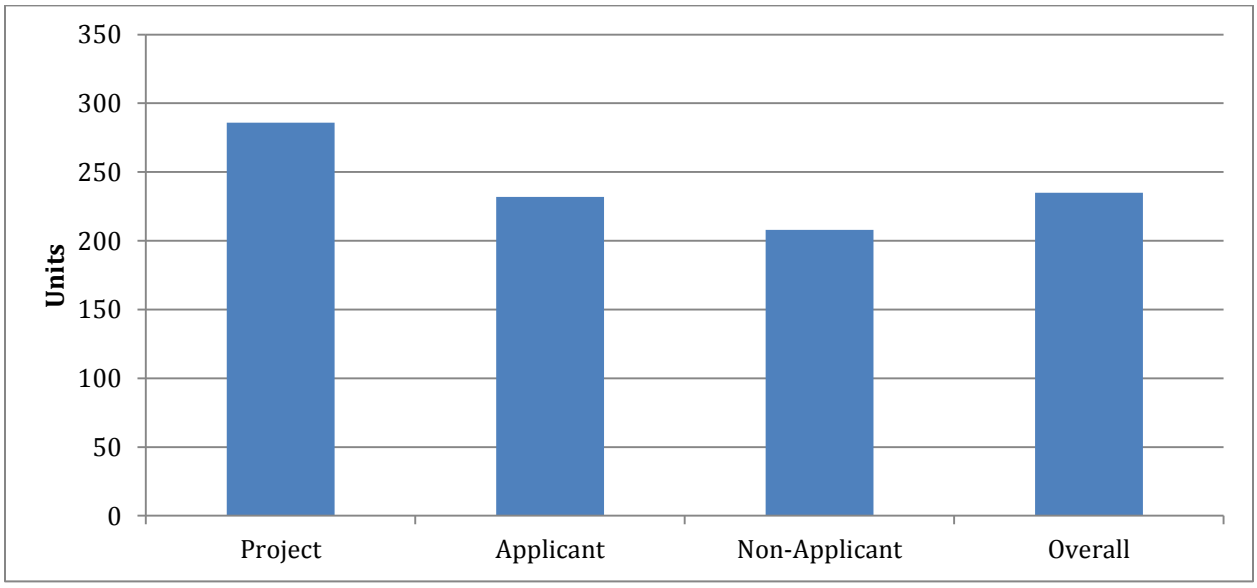
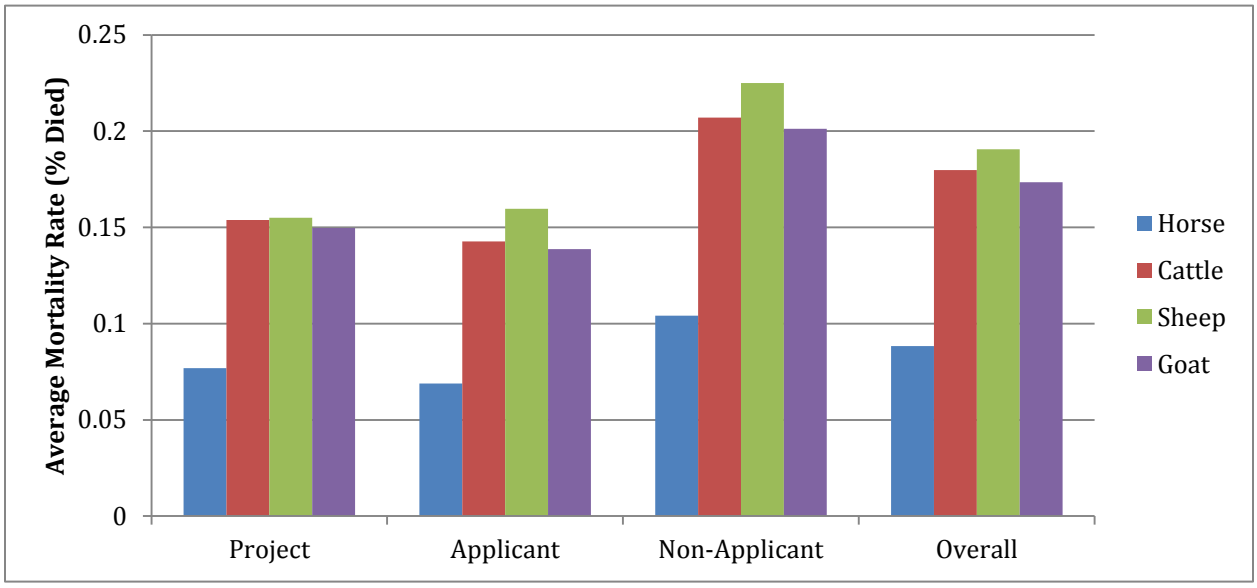


Figure 17. Mortality Rate Due to Illness or Natural Disaster as a Fraction of early-2010 Animal Populations



J. Expectations, Opinions, and Information about PURP

The PURLS also contained several questions tapping herders' opinions on the PURP. Table 17, below, contains responses to these questions. Surprisingly, the exclusive rangeland usage right that comes with the PURP lease seems to be one of the least valued components of the project in the view of beneficiaries. More than 96% of Project households expected that the project would benefit them by helping them improve their livestock practices. Ninety-three percent thought that improved well access would benefit them and a similar percentage expected benefits from shelter construction and closer collaboration with their herder group. A relatively smaller number, slightly over 84%, expect to derive benefits from the rangeland lease itself.

Table 17. Opinions of Project Benefits (Percent expecting benefit)

	Project	Applicant	Non-Applicant	Overall
	Percent	Percent	Percent	Percent
Better Collaboration with Households in Herder Group	92.8	94.2	91.5	92.4
	(0.9)	(1)	(0.7)	(0.5)
Improved Intensive Livestock Practices	96.2	97.1	91.7	94
	(0.6)	(0.7)	(0.7)	(0.4)
Rangeland Lease	84.4	85.3	71.9	78.2
	(1.2)	(1.6)	(1.2)	(0.8)
Well Access	93.7	95.8	91.9	93.1
	(0.8)	(0.9)	(0.7)	(0.4)
Assistance Repairing or Building Animal Shelters	92.9	96.3	93	93.5
	(0.8)	(0.8)	(0.6)	(0.4)
Other	7.6	10.9	7.9	8.3
	(0.9)	(1.4)	(0.7)	(0.5)

Note: Standard errors are reported in parentheses.

Similarly, as Table 18 illustrates, the majority of Project households were motivated to join the PURP in order to development better farming practices, work more closely with their herder group, and improve their pastureland quality. Other considerations were largely secondary for the majority of beneficiaries.

Table 18. Motivations for Joining PURP

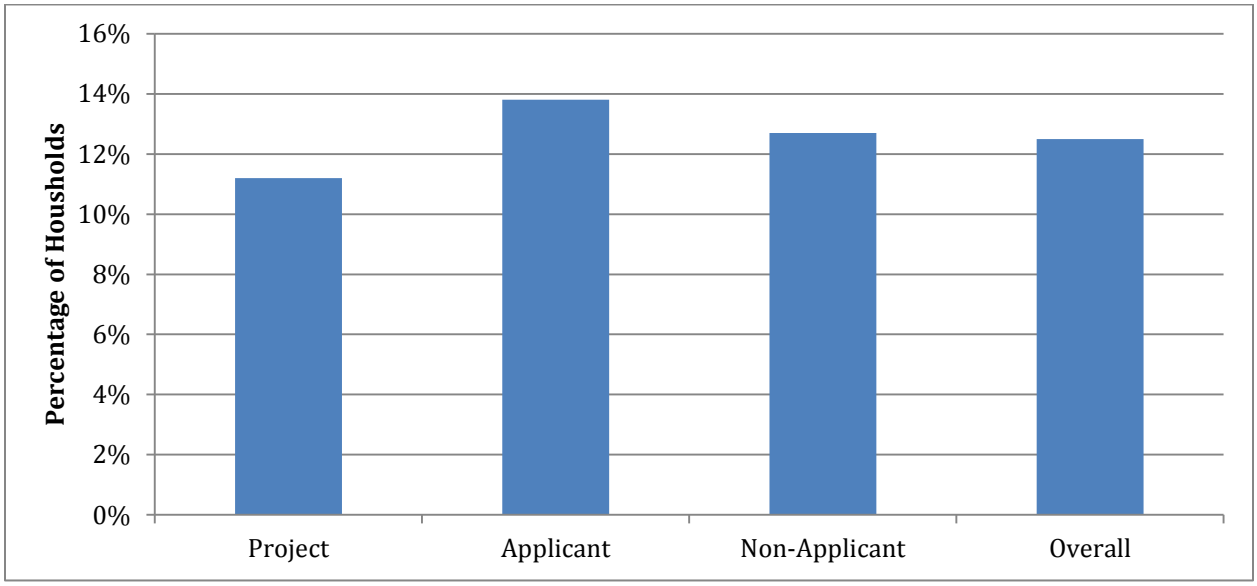
	Project	Applicant	Non-Applicant	Overall
	Percent	Percent	Percent	Percent
Desire to Herd Jointly with a Group	53.8	49.7	60	52.8
	(2.2)	(3.6)	(24.5)	(1.9)
Improve Pasture Quality	55.7	52.1	100	54.9
	(2.2)	(3.7)	(0)	(1.9)
Protect Environment	19.2	19.7	33.3	19.4
	(1.9)	(3)	(33.3)	(1.6)
Support to Build Fencing	15.6	9.3	0	13.7
	(1.7)	(2.2)	(0)	(1.4)
Support to Build Well	36.2	34.3	33.3	35.6
	(2.2)	(3.6)	(33.3)	(1.9)
Learn From/Share with Others	13.8	8.8	50	12.7
	(1.6)	(2.2)	(28.9)	(1.3)
Develop Better Farming Practices	65	53	25	61
	(2)	(3.5)	(25)	(1.8)
Other	38	35	33	37
	(2.2)	(3.5)	(33.3)	(1.9)

Note: Standard errors reported in parentheses.

K. Conflicts

Given that only herder groups who obtained consent from neighboring households were selected as project beneficiaries, it is perhaps not surprising that Project households are less often engaged in land conflicts, on average, than members of the other two groups (see Figure 18). Just slightly over 11% of Project households had experienced a land conflict of any sort during the past 5 years. The numbers for Applicant and Non-Applicant households are 14% and 13%, respectively. A similar pattern emerges if we look at the average number of conflicts reported on a household-by-household basis. The average Project household that experienced conflicts reported approximately 2.1 conflicts, as opposed to 2.8 for Applicant households and 2.6 for Non-Applicant households. Given the discussion in Section IV on the selection process as well as the data reported on camp characteristics (Section VII, sub-section F) , it would appear that Project households had fewer land conflicts and were substantially more secure in their claims to the rangeland and camps that they occupied, before PURP activities began or leases were emitted.

Figure 18. Households with Pastureland Disputes in Last Five Years



VIII. Gender Analysis

The preceding analysis has focused on overall levels of variables in the PURLS as well as comparisons between household types. In this section we turn to a description of gender differences. Specifically, we look at differences between households with female and male heads of household, across a range of variables.

Table 19 below reports the number of female and male heads of households, by household type. As is evident in the table, men lead the vast majority of all three categories of household. Fewer than 10 percent of project of applicant households have female heads while just over 10 percent of non-applicant heads of household are women.

Table 19. Gender by Head of Household

Gender of Head of HH	Project		Applicant		Non Applicant		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Female	93	9.6	52	9.4	195	11.1	340	10.4
Male	871	90.4	499	90.6	1,557	88.9	2,927	89.6
Total	964	100	551	100	1,752	100	3,267	100
Gender of Head of Herder Group[1]								
Female	13	4.8						
Male	256	95.2						
Total	269	100						

[1]Only able to identify 91% of herder group leaders

Table 19 also provides a gender breakdown of herder group leaders. Recall that leases and other resources in the PURP are distributed at the herder group level. Similarly to heads of households, it is clear that the majority of herder group leaders are male. In fully 95% of those herder groups for whom we can identify the gender of the leader, the leader is a man.

Table 20 illustrates the gender of survey respondents. Though less than 10% of all household heads were female, this did not translate into males dominating the interviews as well. Overall 42% of main respondents were female, while 52% of all respondents were female. While the higher representation of females among survey respondents than among household heads could have many causes, it does serve to highlight the fact that looking at the gender of the household head is not necessarily indicative of who has influence in the household.

Table 20. Gender of Interview Participants[1]

	Percent Female	Percent Male	Total
Main Respondent	41.7	58.3	100
Secondary Respondent	70.0	30.0	100
Total	51.6	48.4	100

[1]Secondary is any household member who actively participated in the interview, but was not considered to be the primary respondent.

While men lead the majority of households, it does not appear that the gender of the head of household has an effect on the likelihood of household members having previous training. Table 21 breaks down our two training variables by gender. Households headed by men and women have very similar numbers of members with training in livestock husbandry and business operations. Just fewer than 14% of female headed households have members with livestock husbandry training, compared to 14.4% of those headed by men. When it comes to business training, 8.8% of households with female heads have at least one household member with training, while 7 percent of households with men as heads of household have members with business training.

Table 21. Previous Training, by Gender of Household Head

			No	Yes	Total
Had any Training in Livestock Husbandry	**Female Heads of HH**	Frequency	293	47	340
		Percent	86.18	13.82	100
	Male Heads of HH	Frequency	2,501	422	2,923
		Percent	85.56	14.44	100
Had any Type of Training in Business Operations	**Female Heads of HH**	Frequency	310	30	340
		Percent	91.18	8.82	100
	Male Heads of HH	Frequency	2,720	206	2,926
		Percent	92.96	7.04	100

Table 22 and 23 reports figures for expenditures per household member, the first table looking at just food and second one at overall expenditures. When it comes to food expenditures, the yearly household mean is considerably higher for households with female heads. Female headed households spend, on average 205,173 MNT per household member, compared to 134,225 MNT for households with male heads. However, these differences appear to be driven by a small number of outliers, as indicated by the relatively similar median expenditures.
Likewise, total household expenditures per household member do not seem to be appreciably different, on average, in male versus female-headed households. Mean total expenditures are somewhat higher in households with women as heads of household. However, when examining the medians, the difference is considerably smaller. Indeed, households with male heads have a higher median total expenditure.

Table 22. Expenditure on Regular Food in a Year per HH Member, by Gender of Head of Household

	Observations	Mean	Median
Female Heads of HH	340	205173.1	133874.2
Male Heads of HH	2927	134255.7	103658.7
Total	3267	141636.1	106000

Table 23. Total Expenditure in a Year per HH Member, by Gender of Head of Household

	Observations	Mean	Median
Female Heads of HH	340	1698878	1074698
Male Heads of HH	2927	1502399	1095375
Total	3267	1522846	1094235

Households with female heads report higher annual incomes per household member than those with heads of household that are men (Table 24). This is the case both for regular income and the

category of irregular household income. Households with female heads report an annual regular income per household member 158,685 MNT higher than that in the average male headed household. Irregular income is just over 50,000 MNT higher in households with female heads. Total average yearly income per household member is about 210,000 MNT higher in female headed households.

Table 24. Income per Household Members, by Gender of Head of Household

	Female Heads of HH		Male Heads of HH		Total	
	Mean	Median	Mean	Median	Mean	Median
Regular Income in a Year per HH member	577212	415933	418527	139200	435041	176500
Irregular Income in a Year per HH member	316772	110000	265813	90000	271116	91667
Total Income in a Year per HH member	893984	612000	684340	344667	706158	387143

There appear to be virtually no head of household gender differences in the number of land certificates owned by households. Table 25 breaks down land certificate ownership by gender. These figures suggest that households headed by men and women are roughly equal in their existing claims to the land, at least as measured by the existence and number of land certificates per household member.

Table 25. Number of Land Certificates Owned by HH, percent, by Gender of Head of Household

Number of Land Certificates Owned by HH	Female Heads of HH	Male Heads of HH
0	61.47	61.02
1	33.24	32.73
2	4.41	5.33
3	0.59	0.61
4	0.29	0.27
Total	340	2927

Gender differences in household expenditures and, to a lesser extent, income appear to be quite modest, as reported in the tables above. However, when it comes to access to credit, the differences between households with female versus male heads of household are more pronounced. Table 26, below, shows the percentage of households, by gender of head of household that obtained loans greater than 500,000 MNT in the past five years. Over 55% of male-headed households have received loans of this size compared to just fewer than 42% of households with female heads.

Table 26. Loans Greater than 500 000 MNT in the Last 5 Years, Percent, by Gender of Head of Household

	Female Heads of HH	Male Heads of HH
	41.76	55.54
Total	340	2917

Note: Figures include both outstanding loans and loans that have been paid in full.

When examining differences in terms of herd sizes between households with women as heads of household and those with men (Table 27), we note two things. First, the average heard size is considerably larger amongst households with men as heads. Female-headed households have, on average, 115 animals compared to 209 for male-headed households. In other words, herd sizes are almost twice as large, on average, in male-headed households. However, when we look at the average number of livestock per household member, the difference between male and female-headed households is much smaller; the former having 55 animals per household member and the latter 50. The explanation for this lies in the differences in household size reported by female and male-headed households; male-headed households tend to be larger.

Table 27. Livestock Numbers - Average Total Herd Size and Average per Household Member, by Gender of Head of Household

		Total Number	Average for each HH Member
Female Heads of HH	Observations	340	340
	Mean	114.7	49.9
	Median	47	18
Male Heads of HH	Observations	2927	2927
	Mean	208.7	54.5
	Median	116	28.3
Total	Observations	3274	3268
	Mean	198.5	54
	Median	106	27

The PURLS also includes questions about future investments. Here we find some differences between male and female-headed households but these differences are not particularly large nor are they systematic in any obvious way. Table 28 reports the percentage of households planning to invest in the next five years across a range of areas, should they have the resources.

Table 28. Future Investment, by Head of Household

Variable	Female Heads of HH	Male Heads of HH
Building a well	57	61
Building maintaining or shelter	66	63
Fencing pastureland area	47	49
Cultivating forage plant	38	45
Purchasing pure and crossbred cows	57	70
Purchasing Mongolian cows	12	15
Purchasing other	22	25
Other	8	10

Note: N=331

As is the case with land certificate ownership, we find no marked gender differences in terms of land disputes (Table 29). Both households with male and female heads of household report roughly the same number of disputes.

Table 29. Land Disputes, by Gender of Household

	Observations	Number of HH with Disputes	Average Number of HH with Disputes
Female Heads of HH	332	38	0.1144578
Male Heads of HH	2887	371	0.1285071
Total	3219	409	0.1270186

Table 30 shows the educational attainment of heads of households, broken down by gender. Educational levels are fairly equal between men and women with a few notable differences. Male heads of household are more likely to both have some secondary education and to have completed secondary education. Roughly 37% of male household heads have an incomplete secondary education, compared to 27% of women. When it comes to a completed secondary education 24% of males have achieved this level while a little under 19% of female heads of household have completed secondary education.

Table 30. Education of Head Household

	Female		Male	
Education Level	**Frequency**	**Percent**	**Frequency**	**Percent**
No education	23	6.76	106	3.63
Primary	96	28.24	455	15.57
Incomplete secondary	91	26.76	1,079	36.91
Complete secondary	64	18.82	712	24.36
Vocational	39	11.47	329	11.26
Incomplete tertiary	1	0.29	2	0.07
Complete tertiary	26	7.65	240	8.21
Total	340	100	2,923	100

The PURLS baseline data point to several important differences along gender lines. In the analysis of the follow up wave to be fielded in fall 2012 and winter 2013, we will be able speak to the question of whether these gender differences also play out in terms of project effects.

IX. Soum Governor Survey

The soum governor survey was developed to collect data on soum level dynamics that may not be fully captured by the household and herder group data collection instruments. The PURP is being implemented on a soum-by-soum basis and as such, the soum is the primary unit of selection for the project. Therefore, it is not unreasonable to expect that the project may affect outcomes at the soum level. For example, if a given soum provides exclusive leases to a large section of its rangeland, this could potentially have a negative effect on non-project herders in that soum who would no longer have a legal right to graze on the leased land and would thus potentially have access to a lower resource base. The effect on non-project herders could likewise be positive. For example, non-project herders might gain knowledge or skills that spillover from project related training, or resources that spillover from project related resources. Such positive and/or negative spillovers could affect patterns of agricultural development, land and resource related conflicts, as well migration patterns in the soum. Moreover, until the national rangeland law is passed, the legal underpinnings of the project currently depend entirely on the powers of the soum government. It is thus reasonable to expect that variation in soum level administrative capacity and governance style might lead to variation in the management, and consequently success, of the PURP in different soum contexts.

The complete survey is provided in Appendix E in Section XI. It includes basic information such as demography, migration, agricultural practices, land related conflicts, and soum government opinions of the PURP's strengths and weaknesses was therefore collected. In particular, it includes the following topics:

1. Demography, migration, and access to public resources/services
2. Livestock numbers, livestock related practices, and rangeland quality
3. Land disputes and conflict resolution
4. PURP land leases and their impacts
5. Other donor programs being implemented in the soum
6. Business activities being conducted in the soum

The questionnaire was administered to all soum governments participating in the PURP as well as adjacent soums that did not directly participate in the project. Though referred to as the "Soum Governor Survey", the questionnaire was in fact filled out by a number of different soum government representatives other than the soum governor. Enumerators interviewed whichever government representative was most knowledgeable on a given topic. Researchers were careful to record the name of all officials who provided information on the survey and note their position in the government or civil service. Table 31 provides a list of soums for which a representative completed the soum governor survey, both soums that contained households that participated in PURP and those that did not.

Table 31. List of Soums Participating in Soum Governor Survey

Project Soums	Non-project Soums
Altanbulag (Tuv aimag)	Altanbulag (Selenge aimag)
Argalant	Bayan-Agt
Arkhust	Bayanzurkh - 20 khoroo
Bagakhangai - 1 khoroo	Bayan-Unjuul
Baganuur - 1 khoroo	Bayantsagaan
Baganuur - 4 khoroo	Bulgan
Batsumber	Buren
Bayan	Gurvanbulag
Bayanchandmani	Dashinchilen
Bayandelger	Delgerkhaan
Bayangol	Javkhlant
Bayanjargalan	Jargalant (Tuv aimag)
Bayantsogt	Lun
Bayan-Undur	Mogod
Bornuur	Nalaikh - 3 khoroo
Bugat	Nalaikh - 5 khoroo
Buregkhangai	Undurshireet
Darkhan	Rashaant
Erdene	Saikhan (Bulgan aimag)
Jargalant (Orkhon aimag)	Sant
Jargalant (Selenge aimag)	Sumber
Khangal	Sukhbaatar
Khongor	Skhd - 21 khoroo
Khushaat	Tushig
Mandal	Teshig
Mungunmorit	Ugtaaliaiaa
Orkhon (Bulgan aimag)	Khan-Uul - 14 khoroo
Orkhon (Darkhan-Uul aimag)	Khishig-Undur
Orkhon (Selenge aimag)	Khutag-Undur
Orkhontuul	Khuder
Saikhan (Selenge aimag)	Tsagaannuur
Selenge	Tseel
Sergelen	Sharyngol
Shaamar	Erdenesant
Songinokhairkhan - 20 khoroo	
Yuruu	
Zuunburen	
Zuunmod	

Because the PURP was not randomly allocated at the soum level, the governor survey will not allow researchers to accurately estimate any causal impacts the project may have on soum level dynamics. The governor survey was developed simply as a complementary diagnostic tool that would allow the research team to explore and control for soum level characteristics that might be related to the project.

Table 32 provides basic descriptive statistics gathered from the soum governor survey and compares project soums to the non-project soums that were surveyed. Project and non-project soum governors differ systematically in their assessments of rangeland health in their soums. Governors in project soums have, on average, a more positive assessment of the state of desertification in their soum than do governors from non-project areas. While just over 30% of land in project soums is thought by governors to be affected by desertification, the proportion of the average non-project soum is over 38%. However, perceptions about recent trends in pastureland degradation do not appear to vary greatly between project and non-project soums. This was measured on a 5 point scale, with responses of "1" indicating no chance during the past 5 years and responses of "5" meaning the five year trend has been one of severe negative change.

A rather noteworthy difference between project and non-project soums is the number of land disputes occurring during the 12 months prior to the survey. Soum governments in project areas reported more than four times as many disputes (22.5) on average than did non-project soums (4.5). The number of lease usage certificates and land lease certificates is also much higher in project soums than in non-project soums, suggesting that there may be some sort of relationship between land conflict and land certificates, even if the nature of this relationship is not clear from these data. Project soums also appear to have more donor driven projects, more resident companies and enterprises, as well as more livestock related enterprises than non-project soums. Project soums appear to have more demands form a wider variety of parties placed on their land, which may explain the higher frequencies of conflicts.

Table 32. Results from Soum Governor Survey

	Project Soum Mean	Non-Project Soum Mean
Proportion of soum impacted by desertification	30.56	38.13
Pasture degradation trend past 5 years	3.90	4.10
Number of land disputes past 12 months	22.54	4.55
Number of land lease/usage certificates	471.46	350.39
Number of lease certificates	94.88	34.39
Number of donor/development programs	2.32	2.06
Number of enterprises	106.66	43.94
Livestock production/sale enterprises	8.10	4.03

X. Impact Evaluation Design

As described in the previous section, significant differences exist between households that were selected to participate in the project and those that were not. Under the original plan of randomly choosing project households from the set of applicants through a lottery, the random nature of the selection process would have ensured that among the applicants, those chosen to receive the project would have been similar, on average, to those that did not. Since the only difference between the two groups under the lottery design would have then been that one group received the project, then any difference between the two groups observed on future surveys could only have been the result of the project.

The differences observed between project recipients and the other groups in the baseline survey complicate the interpretation of any post-program differences between the project recipients and the other groups. The post-program differences might be the result of the project, but they also might be the result of the baseline differences observed in the groups of households. As described in the project design document for the project, the proposed solution is to utilize Propensity Score Matching (PSM) research design.[12] Such a design is not ideal, but in

[12] PSM is among the more well known of these matching techniques in the evaluation field. For discussions of matching, see, for example, Abadie, A. and Imbens, G. (2009). "Matching on the estimated propensity score," (Working paper); Diamond, A. and Sekhon, J. (2006). "Genetic matching for estimating causal effects: A general multivariate matching method for achieving balance in observational studies," (Working paper); Rosenbaum, Paul R.; Rubin, Donald B. (1983). "The central role of the propensity score in observational studies for causal effects." *Biometrika* 70: 41–55; Rubin, Donald. (2006). *Matched Sampling for Causal Effects.* Cambridge University Press;

consultation with MCC, it was decided that such a design was the best option given the implemented selection process. While the complete details of the proposed research design are described in a separate project design document, we can use the data from the PURLS to illustrate how the PSM will function and how it will create more comparable comparison groups for the households selected for the project.

A PSM design attempts to determine the causal effects of an intervention by simulating the logic underlying a randomized controlled trial. As described above, a randomized controlled trial creates two similar groups of households by randomly choosing which households will receive the project. The PSM strategy works in reverse. One starts with households already chosen for to receive the project and then identifies other households that are similar to those households to serve as a control group. By matching the selected households on characteristics observed in the data set, it is possible to create a comparison group for the project households that are similar along all of the dimensions observed in the survey. Those households the project and non-project groups that are good matches will be selected for the final "treatment" and "comparison" groups. Thus, households that appear, after the matching exercise, to be particularly poor matches, will be dropped.

The PSM methodology is designed to create two research groups that are similar along the variables used for the matching process, but the challenge is the characteristics which are not or which cannot be measured in the survey. The current evaluation methodology will match households that did not apply for the project to households that applied for and received the project. However, there was some reason that one group applied and the other did not, even among households with otherwise similar characteristics. The underlying cause could be quasi-random factors such as a random power outage that prevented some households from watching television at the time the project was advertised. However, the underlying cause could also be that some households exert significantly more effort in general to be informed than households that did not apply. Since that underlying desire for new information is difficult to measure, it cannot be used in the matching process. However, if Non-Applicant households remain less likely to seek out new information than Project households even after matching on observable characteristics, then Project households might be more productive over time than Non-Applicant households even without the project because they seek out other information about new herding management techniques and other business opportunities than Non-Applicant households. As a result, any observed differences in the follow-up surveys might be due to the project or they could be due to remaining unobserved differences.

PSM is conducted in two steps. First, we create a model that identifies the relative importance of individual characteristics in the matching process. With multiple characteristics defining

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Winship, Christopher and Stephen Morgan. (1999). "The estimation of causal effects from observational data." *Annual Review of Sociology* 25: 659–707.

households, choosing households that are similar on a single dimension can cause those households to be very different along other dimensions. For example, if we matched households on milk yields, the overall differences in the sample along another dimension such as livestock sales might increase. To resolve this, one first estimates a single value called the "propensity score" for each household which is based on a model that takes all of the observed characteristics and numerically relates them to the probability that a household has been selected for the project. This estimated equation creates a single value for each household that balances all of the underlying characteristics and that can be used to match Non-Applicant and Applicant households to the Project households.

Once the propensity score is estimated for all households, each of the Project households is then paired up with one or more comparison household with a similar propensity score. This then creates two groups of households – Project-beneficiary households and households that had similar propensity scores but were not selected for the project. Because the propensity score weights the importance of the different characteristics of the households, the result of the matching process is that, on average, the differences between the matched households and the Project households should be much smaller than the differences observed between the Project households and the Applicant and Non-Applicant households shown in the previous section.

In reality, the Applicant and Non-Applicant households are likely to offer different advantages as comparison groups. These are described in more detail in Table 21. For example, unlike Non-Applicant households, Applicant households were sufficiently informed that they applied for the project. However, the fact that the Applicant households were not selected for the project means that they differ from Project households along the characteristics that caused them to be rejected. We will explore these issues in much more detail in the final impact evaluation report.

For now, we use the data collected in the PURLS to demonstrate the effect of the PSM process. We estimated the propensity scores for the Project, Applicant, and Non-Applicant households, and then completed the matching process based on the resulting estimated scores. The details of this process, including the estimated functions and the propensity score distributions by group are presented in Appendix A.

The results of this process are presented in Table 33. Since the Applicant and Non-Applicant households have both been used as possible matches to the Project households, we have pooled the groups together for this exercise and refer to the combined group as non-project households. For a subset of variables, we present two rows of data. The first row is for the unmatched, original sample; this comparison is similar to those presented in Section 4 but with the Applicant and Non-Applicant households pooled together as non-project households. The second row then compares the samples that results from the matching process. The results demonstrate the effectiveness of the PSM technique. Consider, for example, the distance from the winter camp to town in the first row. Using the overall sample, the difference between project and non-project

households is a statistically significant 8.15 km. However, after the matching process, the difference between the matched sample is only 0.42km which is not statistically different at conventional levels. The other variables show similar reductions in differences, demonstrating that PSM matching will achieve the goals set out the project design report.

Table 33. Comparison Households for the PSM Exercise – Strengths and Weaknesses

Group	Description	Strength	Weakness
Applicant	All herders that applied for the project and were deemed ineligible at any stage.	These herders should be similar in at least some aspects such as the motivation to apply, general eligibility to apply, access to rangeland, etc.	Small sample size. These groups are known to be different in many key variables given that they dropped out of the selection process for various reasons. There may not be enough households in this group that are similar enough to the project beneficiaries to allow for propensity score matching to be viably utilized.
Non-Applicant	Neighboring herder household that live next to project beneficiaries.	These herders should be similar in at least some aspects as they are located on similar plots of land, reside in the same soum, are exposed to the same climactic conditions, etc.	There are reasons these herders didn't apply to the project. Most likely they don't meet the requirements of the project. If they did meet the requirements, they are likely very different in their future plans or their need for land security, and their relationship to the soum government.
	A random sample of herders in project soums that never applied for the project.	The same regional and soum level trends affect these herders. There is also a larger sample size available.	There are reasons these herders didn't apply to the project. Most likely they don't meet the requirements of the project. If they did meet the requirements, they are likely very different in their future plans or their need for land security, and their relationship to the soum government.

Table 34. Comparison of Households Before and After Matching

Variable	Sample	Mean		Difference
		Project	Non-Project	
Distance from winter camp to town (km)	Unmatched	71.6	63.45	8.15***
	Matched	72.92	72.5	0.42
Age of HH head	Unmatched	45.84	49.04	-3.19***
	Matched	46.19	46.42	-0.22
Herder HHs with husbandry training (%)	Unmatched	24.38	16.72	7.66***
	Matched	22.97	21.29	1.69
Distance migrated per year (km)	Unmatched	45.52	28.08	17.43***
	Matched	41.81	42.66	-0.85
Cost of migration (MNT)	Unmatched	80075	50007	30068***
	Matched	78064	76745	1319
HH possess winter land certificate (%)	Unmatched	63.38	43.47	19.91***
	Matched	67.23	65.24	1.99
HH possess spring land certificate (%)	Unmatched	23.75	11.46	12.28***
	Matched	23.43	20.83	2.6
HH who have performed vaccinations (%)	Unmatched	75.61	79.97	-4.36**
	Matched	78.56	78.87	-0.31
HH produces hay (%)	Unmatched	77.6	62.32	15.29***
	Matched	78.1	77.49	0.61
HH regular income past year (MNT)	Unmatched	1300000	1600000	-300000***
	Matched	1200000	1100000	100000
Total number of bulls	Unmatched	0.47	0.33	0.14***
	Matched	0.49	0.49	0
Total number of cows	Unmatched	7.21	5.92	1.27***
	Matched	7.4	7.54	-0.14
Total number of sheep 2009	Unmatched	161.42	114.55	46.87***
	Matched	160.45	170.87	-10.42
Total number of goats 2009	Unmatched	108.4	81.07	27.33***
	Matched	114.98	118.6	-3.62
HH yearly expenditure on food (MNT)	Unmatched	470000	530000	-60000***
	Matched	470000	460000	10000

*Note: *** significant at .1%; ** significant at 1%; * significant at 5%.*

XI. Next Steps for the Evaluation

Data collection for the evaluation of Phase I of the PURP will include a second survey of all respondents in this baseline survey. This longitudinal survey will be administered in the fall and winter of 2012. All households that participated in the original survey will be tracked and re-interviewed. These surveys will then form the basis for the evaluation.

Following the PSM methodology described in Section IX, above, we will construct a matched sample of project and non-project households using the baseline PURLS. The matching will be used to inform sampling for the follow-up PURLS to be fielded in late fall 2012. Using the follow-up survey we will compare characteristics of the matched households. The analysis of project impacts in Phase I will focus mainly on changes in behavior such as herd management, rangeland use, and perceptions of land quality. We will also estimate project effects on changes in income. However, the absence of income effects at the end of the Phase I evaluation should not be taken as definitive evidence of the PURP not having been successful. It may simply be too early to detect these effects. Nevertheless, changes in behavior are an important part of this causal model and as such, the Phase I evaluation will still provide valuable information on the project and will also inform the evaluation of Phase II areas.

XII. Appendices

Appendix A. Propensity Score Matching Model

In Section IV, above, we describe some of the differences across the three types of households on a range of variables in the PURLS. As is evident, there exist important baseline differences between these groups. The observed differences make it difficult to evaluate the project by comparing the groups. For example, we may find that the PURP appears to be very successful but this conclusion would be wrong if in fact the large project effects are due simply to the comparison group being worse off to begin within. Or, we may find the opposite—that the PURP had little or no effect. But again, such a finding would be incorrect if, for example, the comparison group was much better off at baseline. In the first case, the PURP might in reality have had no effect and in the second, the PURP may have improved things considerably among project households, bringing them up to the level of the comparison group, thereby making the effect look small.

In order to create a comparison group more similar to the project group, we estimated a nearest neighbor matching model using the Stata program *psmatch2*.[13] We included a wide range of variables in order to capture as much unobserved bias in the samples as possible. The list of variables is presented in Table A1 below. In addition to the variables listed in Table A1, we also included a number of squared terms in order to better account for mean differences in covariates.

The first step in the PSM process is to estimate the propensity score for each unit—household in our case. The propensity score is simply the probability of a household being selected for project benefits (becoming a project household), conditional on the variables in the PSM model. The distribution of propensity scores is reported in Figure A1, below. Examining the density distribution is a useful method for assessing the degree of overlap—or "common support"—between the different groups. Here we can see that there are a small number of project households that fall outside the common support. That is, there are no reasonable matches among non-project households for these units. Overall, given the large sample size, we are satisfied that the data contain enough matches to build a comparison group.

[13] E. Leuven and B. Sianesi. (2003). "PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing". http://ideas.repec.org/c/boc/bocode/s432001.html. This version: 4.0.6 (May 17, 2012).

Figure A 1 Density Distribution of Propensity Scores

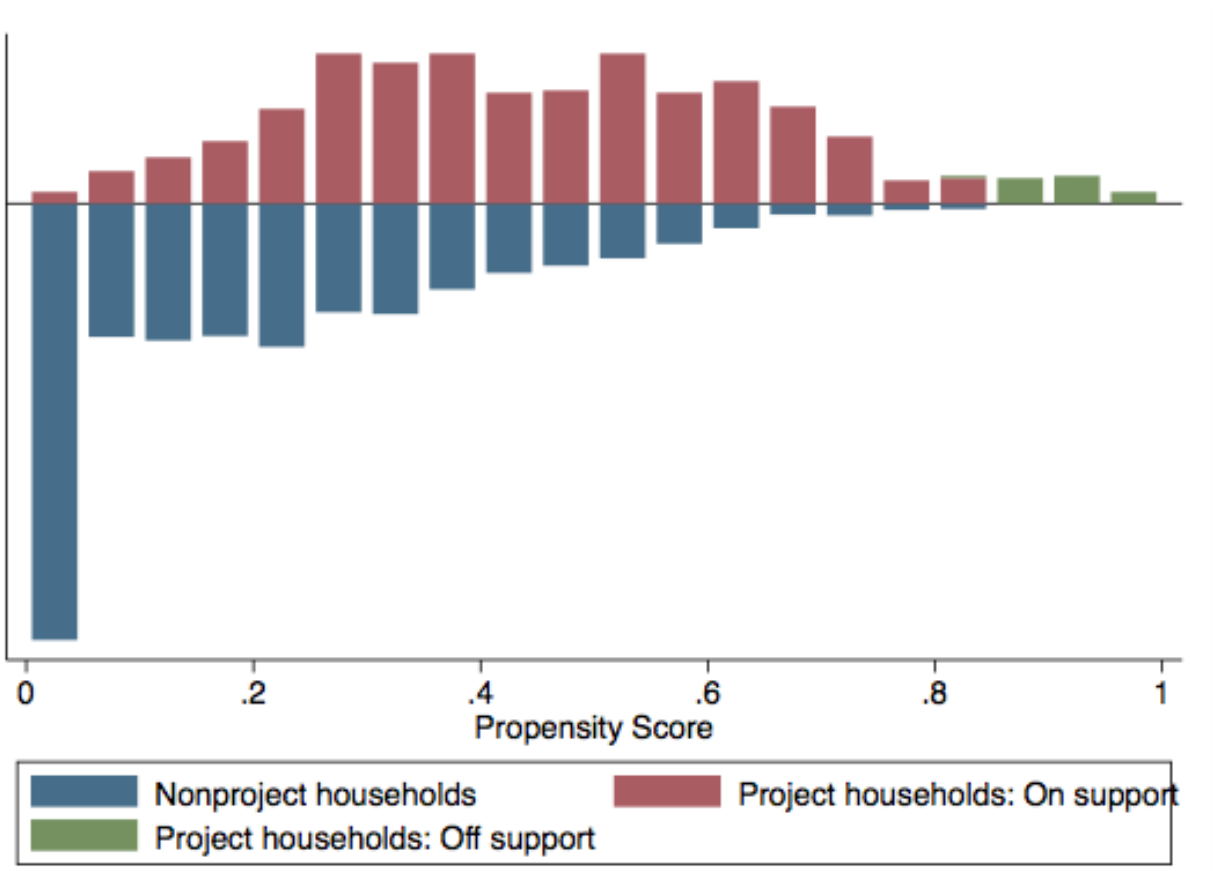


Table A1, below, lists the variables included in the PSM model and reports on t-tests comparing project and non-project means, both before and after matching. As is clear from the table, the matching has produced a comparison group much closer to the project group. Many of the differences between project and non-project households are large and statistically significant before matching. Matching reduces the size of these differences considerably and also renders them statistically insignificant in all cases. Table A1 also provides information on the amount of bias in the sample for each variable and percent reduction in bias achieved after matching.

Table A 1. Sample Balance Before and After Matching

Variable	Sample	Mean		Bias		Difference
		Treated	Control	%	% reduction	
Assessment of winter pastureland	Unmatched	3.01	2.64	42.1		0.38***
	Matched	2.98	2.96	2.4	94.3	0.02
Winter camp electricity access	Unmatched	0.17	0.36	-43.8		-0.19***
	Matched	0.13	0.11	4.2	90.3	0.02
Dist. winter camp to town (km)	Unmatched	71.6	63.45	16		8.15***
	Matched	72.92	72.5	0.8	94.8	0.42
Dist. winter camp to milk processing (km)	Unmatched	38.67	38.35	1		0.31
	Matched	40.27	41.81	-4.7	-388.9	-1.54
Winter camp access to mobile network	Unmatched	0.75	0.8	-11.9		-0.05**
	Matched	0.74	0.73	1.8	84.6	0.01
Age of head of household	Unmatched	45.84	49.04	-23.1		-3.19***
	Matched	46.19	46.42	-1.6	93.1	-0.22
% male heads of household	Unmatched	0.9	0.89	3.8		0.01
	Matched	0.92	0.92	-2.5	32.7	-0.01
Head of HH no education	Unmatched	0.03	0.04	-4.7		-0.01
	Matched	0.04	0.04	0	100	0
Head of HH primary education	Unmatched	0.17	0.17	-0.3		0
	Matched	0.17	0.17	-1.6	-401.7	-0.01
Head of HH incomplete sec. education	Unmatched	0.39	0.35	8.5		0.04*
	Matched	0.4	0.4	-1	88.8	0
Head of HH vocational training	Unmatched	0.11	0.11	-1.2		0
	Matched	0.11	0.09	3.9	-226.1	0.01
Head of HH completed tertiary education	Unmatched	0.07	0.09	-6.9		-0.02
	Matched	0.06	0.05	1.1	83.3	0
Household members over 18	Unmatched	2.76	2.85	-8.3		-0.10*
	Matched	2.82	2.86	-3.6	56.7	-0.04
Household members under 18	Unmatched	1.37	1.26	8.8		0.11*
	Matched	1.41	1.36	4.4	50.1	0.06
Household member husbandry training	Unmatched	0.24	0.17	19		0.08***
	Matched	0.23	0.21	4.2	78	0.02
Household member business training	Unmatched	0.16	0.11	14.7		0.05***

Variable	Sample	Mean		Bias		Difference
		Treated	Control	%	% reduction	
	Matched	0.15	0.12	9.8	33.2	0.03
Migration distance (km)	Unmatched	45.52	28.08	24.7		17.43***
	Matched	41.81	42.66	-1.2	95.2	-0.85
Migration cost (MNT)	Unmatched	80075	50007	32.1		30068***
	Matched	78064	76745	1.4	95.6	1319
Migration days	Unmatched	2.6	1.84	45.7		0.75***
	Matched	2.72	2.75	-1.8	96.1	-0.03
Land conflict	Unmatched	0.11	0.13	-5.6		-0.02
	Matched	0.12	0.14	-5.6	-1.1	-0.02
Number of conflicts	Unmatched	0.24	0.34	-9.4		-0.10*
	Matched	0.26	0.3	-4.3	54.9	-0.05
Participated in joint business activities	Unmatched	0.07	0.02	23.6		0.05***
	Matched	0.06	0.04	8.3	64.9	0.02
Participated in activities with other groups	Unmatched	0.09	0.13	-13.2		-0.04***
	Matched	0.1	0.1	0	100	0
Loans > 500K MNT	Unmatched	0.57	0.53	7.3		0.04
	Matched	0.6	0.58	4.6	36.6	0.02
Winter camp land certificate	Unmatched	0.63	0.43	40.7		0.20***
	Matched	0.67	0.65	4.1	90	0.02
Spring camp land certificate	Unmatched	0.24	0.11	32.7		0.12***
	Matched	0.23	0.21	6.9	78.8	0.03
Animals vaccinated	Unmatched	0.76	0.8	-10.5		-0.04**
	Matched	0.79	0.79	-0.7	93	0
Treatment for parasites	Unmatched	0.86	0.84	5		0.02
	Matched	0.87	0.87	-0.4	91.5	0
Veterinary contract	Unmatched	0.44	0.4	8.2		0.04
	Matched	0.44	0.46	-4.3	47.2	-0.02
Access to hay area	Unmatched	0.49	0.39	19.4		0.10***
	Matched	0.49	0.5	-1.5	92	-0.01
Hay production	Unmatched	0.78	0.62	33.8		0.15***
	Matched	0.78	0.77	1.4	96	0.01
Plans to invest in well	Unmatched	0.67	0.58	18.6		0.09***
	Matched	0.67	0.65	3.8	79.5	0.02

Variable	Sample	Mean		Bias		Difference
		Treated	Control	%	% reduction	
Plans to invest in animal shelter	Unmatched	0.68	0.61	16.1		0.08***
	Matched	0.68	0.65	4.5	72	0.02
Plans to invest in fence	Unmatched	0.55	0.46	18.7		0.09***
	Matched	0.55	0.53	5.2	72.1	0.03
Plans to invest in forage	Unmatched	0.5	0.42	16.8		0.08***
	Matched	0.5	0.47	5.9	65.2	0.03
Plans to invest pure & crossbred cows	Unmatched	0.76	0.66	21.6		0.10***
	Matched	0.77	0.75	4.4	79.6	0.02
Plans to invest in Mongolian cows	Unmatched	0.14	0.15	-4.5		-0.02
	Matched	0.14	0.15	-2.2	51.6	-0.01
Plans to invest in other livestock	Unmatched	0.21	0.26	-11.7		-0.05**
	Matched	0.22	0.23	-2.2	81.4	-0.01
Plans invest other investment	Unmatched	0.1	0.1	-0.4		0
	Matched	0.11	0.09	4.1	-1042.2	0.01
Total regular HH income (MNT)	Unmatched	1300000	1600000	-14		-300000***
	Matched	1200000	1100000	1.9	86.6	100000
Total irregular HH income (MNT)	Unmatched	1200000	960000	7.8		240000*
	Matched	920000	810000	3.3	58.3	110000
Regular income per HH capita (MNT)	Unmatched	370000	460000	-15.4		-90000***
	Matched	340000	320000	2.4	84.4	20000
Irregular income per HH capita (MNT)	Unmatched	320000	250000	7.9		70000*
	Matched	230000	210000	2.5	68.4	20000
Total number of bulls	Unmatched	0.47	0.33	22.6		0.14***
	Matched	0.49	0.49	0.5	97.8	0
Total number of cows	Unmatched	7.21	5.92	21.2		1.29***
	Matched	7.4	7.54	-2.3	89.3	-0.14
Horse deaths	Unmatched	2.07	1.71	4.6		0.36
	Matched	2.15	2.08	1	79.4	0.07
Cattle deaths	Unmatched	3.79	3.64	2.1		0.15
	Matched	4.33	4.29	0.5	77.3	0.03
Sheep deaths	Unmatched	24.49	22.78	2.7		1.71
	Matched	27.39	32.23	-7.5	-182.3	-4.84

Variable	Sample	Mean		Bias		Difference
		Treated	Control	%	% reduction	
Goat deaths	Unmatched	15.97	15.48	1.4		0.49
	Matched	18.83	20.1	-3.7	-156.8	-1.27
Horse total 2009	Unmatched	18.2	12.91	20.4		5.29***
	Matched	18.18	19	-3.1	84.6	-0.81
Cattle total 2009	Unmatched	23.99	19.82	20.4		4.17***
	Matched	25.12	26.03	-4.5	78.1	-0.91
Sheep total 2009	Unmatched	161.42	114.55	22.9		46.87***
	Matched	160.45	170.87	-5.1	77.7	-10.42
Goat total 2009	Unmatched	108.4	81.07	25.4		27.33***
	Matched	114.98	118.6	-3.4	86.8	-3.62
Current horses	Unmatched	17.16	11.72	22.2		5.44***
	Matched	17.18	18.02	-3.4	84.6	-0.84
Current cattle	Unmatched	24.13	18.66	26.5		5.47***
	Matched	24.81	25.54	-3.5	86.7	-0.73
Current sheep	Unmatched	136.97	91.65	25.4		45.32***
	Matched	136.67	141.81	-2.9	88.7	-5.14
Current goat	Unmatched	88.44	59.86	31.6		28.58***
	Matched	91.72	93.17	-1.6	94.9	-1.46
Hot ail at winter camp	Unmatched	1.7	1.65	4.4		0.05
	Matched	1.72	1.68	3.3	25.5	0.04
Coordination of winter pastureland	Unmatched	0.25	0.16	22.9		0.09***
	Matched	0.26	0.24	3.1	86.5	0.01
Assessment of quality of winter pasture	Unmatched	2.99	3.36	-42.1		-0.38***
	Matched	3.02	3.04	-2.4	94.3	-0.02
HH expenditure on food (MNT)	Unmatched	470000	530000	-16.1		-60000***
	Matched	470000	460000	1.9	88.1	10000
Food expenditure per HH capita (MNT)	Unmatched	130000	150000	-16.6		-20000***
	Matched	120000	120000	1.3	92	0
HH expenditure other regular goods (MNT)	Unmatched	3000000	2800000	5.7		200000
	Matched	3000000	2900000	3.8	33.4	100000
Exp. other reg. goods per HH capita (MNT)	Unmatched	780000	730000	6.2		50000

Variable	Sample	Mean		Bias		Difference
		Treated	Control	%	% reduction	
	Matched	770000	740000	3.5	43.6	30000
Irregular HH expenditure (MNT)	Unmatched	2500000	2100000	11.7		400000**
	Matched	2400000	2500000	-4.3	63.3	-100000
Irregular exp per HH capita (MNT)	Unmatched	760000	580000	9.9		180000**
	Matched	620000	680000	-3.5	64.1	-60000
Ger with hashaa, warm	Unmatched	0.86	0.77	25.6		0.10***
	Matched	0.89	0.89	-1.2	95.3	0
Apartment with hashaa, warm	Unmatched	0.04	0.03	6		0.01
	Matched	0.03	0.03	0	100	0
Number of appliances, 4 wall ger	Unmatched	0.43	0.41	4.6		0.03
	Matched	0.45	0.42	5	-9	0.03
Gas stove	Unmatched	0.21	0.17	9.1		0.04*
	Matched	0.21	0.19	3.8	58.8	0.02
Number of mobile phones	Unmatched	2	2.03	-2.4		-0.03
	Matched	2	1.95	4	-67.1	0.05
Number of passenger vehicles	Unmatched	0.23	0.22	2.8		0.01
	Matched	0.22	0.22	0	100	0
Ger with hashaa, cold	Unmatched	0.77	0.7	16.6		0.07***
	Matched	0.8	0.81	-0.7	95.8	0
Apartment, cold	Unmatched	0.06	0.04	8.8		0.02**
	Matched	0.04	0.04	2	77.1	0
Number of appliances, 5 wall ger	Unmatched	0.62	0.57	10.4		0.06**
	Matched	0.65	0.65	0.3	97.3	0
Wind power generator	Unmatched	0.06	0.05	2.2		0
	Matched	0.06	0.06	1.3	38.1	0
Radio	Unmatched	0.57	0.51	12.1		0.07**
	Matched	0.6	0.62	-2.8	76.7	-0.02
Number of transportation vehicles	Unmatched	0.35	0.3	11.5		0.06**
	Matched	0.34	0.35	-0.3	97.3	0
Summer house, warm	Unmatched	0.1	0.11	-4.5		-0.01
	Matched	0.11	0.1	2	56.1	0.01
Private luxury house, warm	Unmatched	0.01	0.01	-5.4		-0.01
	Matched	0.01	0	1.5	71.2	0

Variable	Sample	Mean		Bias		Difference
		Treated	Control	%	% reduction	
Number of appliances, 6 wall ger	Unmatched	0.24	0.17	15.6		0.06***
	Matched	0.23	0.26	-5.9	62.2	-0.02
Solar panel power generator	Unmatched	0.82	0.63	32.2		0.20***
	Matched	0.88	0.9	-3.5	89.1	-0.02
Computer	Unmatched	0.15	0.14	1.3		0
	Matched	0.12	0.12	0.8	38.4	0
Transport vehicles, >7 seats	Unmatched	0.03	0.02	4.3		0.01
	Matched	0.03	0.02	1.9	56.6	0
Summer house, cold	Unmatched	0	0.01	-2.7		0
	Matched	0.01	0	6.4	-138.1	0
Private luxury house, cold	Unmatched	0.01	0.01	-0.4		0
	Matched	0.01	0.01	0	100	0
Refrigerator/freezer	Unmatched	0.46	0.66	-24.9		-0.20***
	Matched	0.42	0.38	4.9	80.1	0.04
Small size power generator	Unmatched	0.2	0.15	10.5		0.04**
	Matched	0.17	0.18	-2.2	78.8	-0.01
Other appliance	Unmatched	0.13	0.16	-6.7		-0.03
	Matched	0.12	0.13	-1.2	81.8	-0.01
Number of tractors	Unmatched	0.19	0.14	12		0.05**
	Matched	0.19	0.17	3.6	70.3	0.02
Winter house, warm	Unmatched	0.11	0.21	-27.8		-0.10***
	Matched	0.1	0.09	2.5	90.9	0.01
Other housing type, warm	Unmatched	0	0	-0.6		0
	Matched	0	0	0	100	0
Washing machine	Unmatched	0.29	0.35	-13.9		-0.07***
	Matched	0.25	0.22	4.7	65.8	0.02
Antenna dish	Unmatched	0.58	0.47	21.8		0.11***
	Matched	0.6	0.6	-0.9	95.9	0
Bicycle	Unmatched	0.15	0.2	-11		-0.05**
	Matched	0.17	0.17	-0.3	97	0
Carriage drawn by animal	Unmatched	0.36	0.32	8.2		0.05*
	Matched	0.4	0.41	-2.4	70.3	-0.01

Variable	Sample	Mean		Bias		Difference
		Treated	Control	%	% reduction	
Winter house, cold	Unmatched	0.24	0.32	-18.2		-0.08***
	Matched	0.23	0.23	0.7	96.2	0
Other housing type, cold	Unmatched	0	0	2.1		0
	Matched	0	0	3.7	-70.2	0
Electric stove	Unmatched	0.24	0.28	-8.4		-0.04*
	Matched	0.21	0.2	3.6	57.6	0.02
Television	Unmatched	1.01	1	2.1		0.01
	Matched	1	0.98	3.5	-67.1	0.02
Motorcycle	Unmatched	0.4	0.29	21.2		0.11***
	Matched	0.44	0.42	3	85.8	0.02

Note: *** significant at .1%; ** significant at 1%; * significant at 5%. The standardized percent bias is the percent difference of the sample means in the treated and non-treated (pre-matched or matched) sub-samples as a percentage of the square root of the average of the sample variances in the treated and non-treated groups (see Rosenbaum and Rubin, 1985). We also report the percent reduction in this bias after matching.

Table A1, above, reports on t-tests that were done on the variables entered into the PSM model. Another way to assess matching is to look at the amount of bias across the range of variables considered in the estimated PSM model. Table A2, summarizes the distribution of bias in the two samples—before and after matching. Before matching, the average standardized bias across the variables is 12.8%. After matching is applied, this is reduced to 2.7%.[14]

[14] The standardized percent bias is the percent difference of the sample means in the treated and non-treated (pre-matched or matched) sub-samples as a percentage of the square root of the average of the sample variances in the treated and non-treated groups (see Rosenbaum and Rubin, 1985).

Table A 2. Summary of the Distribution of Bias

Before Matching	Percentiles	Smallest		
1%	0.4	0.3		
5%	1.1	0.4		
10%	2.1	0.4	Obs	140.0
25%	4.7	0.6	Sum of Wgt.	140.0
50%	10.3		Mean	12.8
		Largest	Std. Dev.	10.4
75%	18.6	42.1		
90%	26.0	42.1	Variance	107.3
95%	33.2	43.8	Skewness	1.2
99%	43.8	45.7	Kurtosis	4.0

After matching	Percentiles	Smallest		
1%	0.0	0.0		
5%	0.1	0.0		
10%	0.4	0.0	Obs	140.0
25%	1.2	0.0	Sum of Wgt.	140.0
50%	2.4		Mean	2.7
		Largest	Std. Dev.	1.9
75%	3.8	7.2		
90%	5.1	7.5	Variance	3.7
95%	6.2	8.3	Skewness	0.8
99%	8.3	9.8	Kurtosis	3.7

A likelihood ratio test of the joint insignificance of the variables before and after matching also illustrates the improvement in balance between project and non-project households after matching. Table A3 summarizes these tests.

Table A 3. Covariate Bias Before and After Matching

Sample	Pseudo R2	LR chi2	p>chi2	Mean Bias	Median Bias
Unmatched	0.183	526.25	0	12.8	10.3
Matched	0.022	40.37	1	2.7	2.4

Appendix B. Selection Criteria for Candidates

Selection of Short-List Candidates for Semi-Intensive Herding			
	Criteria	Proof	Score
A	Minimum criteria		
1	3-6 herder households together will form a herder group/farm	application chart	√
2	Herder household members must be registered in the specified region, or used pastures for more than 180 days in the specified region	ID/Letter from Bagh Governor	√
3	Must have consensually agreed to balance number of livestock with pastureland carrying capacity (contract condition)		√
4	No household shall own more than 1000 sheep units		√
5	Members of the herder group must be Mongolian citizens	proved by ID	√
6	Each household must derive a minimum of 60% of its income from herding	application chart	√
7	Herder group must provide a guarantee for the health of their livestock	medical certificate	√
B	**Criteria for scoring**		
I	**Socio-economic criteria (maximum possible points: 65)**		
1	**Good and exemplary history and ability of cooperation (maximum possible points: 17)**		
1	Collaborative supply of livestock products (milk, meat, hides, cashmere, etc.) to the market	application chart	Regularly (3 times per year) = 5 pts; Frequently (2 times per year) = 3 pts
1	Majority of household members collaboratively utilize the same pasture	application chart	Throughout the year = 6 pts; For 9 months a year = 4 pts; For 6 months a year = 2 pts
1	Herder group has had a leader for a minimum of 1 year	application chart	2 pts
1	The leader of the herder group has been living on pastureland site of group	application chart	2 pts
2	At least two-thirds of the households in the herder group have been the same for last 3 years	application chart	2 pts
2	**Sustainable livestock management capability (maximum possible points: 25)**		
2	Amount of herder income that originates from animal husbandry	application-income chart	More than 80% = 8 pts;60%-80% = 5 pts; Less than 60% = 0 pts
2	Majority of households in a group have more than 3 years of experience managing livestock operations of dairy cows, multi-purpose (dairy/meat) cattle or meat livestock of high yields	application chart	3 or more years' experience = 6 pts;1-3 years' experience = 4 pts
2	All households in a group have experience in meat or milk livestock herding/handling	application chart	3 or more years' experience = 11 pts;1-3 years' experience = 7 pts
3	**Number of low-income or female-headed households (maximum possible points: 15)**		

3	Percentage of herder households in a group who are low-income or female-headed	Low income will be defined by livelihood standard in each soum and checked against the application income chart	More than 50% of hhlds = 15 pts;30-50% of hhlds = 12 points; At least 1 hhld = 8 pts
4	**Registration (maximum possible points: 8)**		
4	Percentage of adult members of the group registered as residents of the specified region	application chart	All adults are registered residents = 8 pts; More than 70% of adults are registered = 5 pts
I	**Current farming situation (maximum possible points: 35)**		
5	**Livestock genetic quality (maximum possible points: 12)**		
5	Number of herder households who own genetically improved livestock (meat or dairy)	application chart	4 or more = 8 pts;2-3 = 6 pts;1 = 4 pts
5	Average annual milk yield of pure and cross breed dairy cows of herder group	application chart	1000 or more liters = 4 pts;700 or more liters = 3 pts
6	**Experience of milk and meat supply to the nearby market (maximum possible points: 8)**		
6	Household experience of milk supply to nearby markets during the winter and spring for last 3 years	application chart	Every household has experience for last 3 years = 4 pts; More than 50% have experience for last 3 years = 2 pts; More than 30% have experience for last 3 years = 1 pt
6	Household experience of meat supply to nearby markets during the whole year for last 3 years	application chart	Every household has experience for last 3 years = 4 pts; More than 50% have experience for last 3 years = 2 pts; More than 30% have experience for last 3 years = 1 pt
7	**Fodder preparation (maximum possible points: 6)**		
7	Majority of households have been able to feed livestock (dairy, multi-purpose and meat animals) for last three years with concentrate feed, silage and stored hay/forage.	application chart	1 or more months = 6 pts;10 or more days = 2 pts;3 or more days = 1 pt
8	Herder group has at least one shelter for livestock	application chart	4 pts
9	Herder group owns hay making and fodder preparation machinery or equipment	application chart	3 pts
10	Herder group owns a milk processing equipment	application chart	2 pts

Appendix C. Household Questionnaire

1. IDENTIFIERS

	ENUMERATOR				
1.1.	**Enumerator name**				
1.2.	**Date of interview (to be filled after the interview being completed)**		**Month**		**Day**
1.3.	**Enumerator signature**				
	TEAM LEADER				
1.4.	**Team Leader name**				
1.5.	**Date of Team Leader's verification and confirmation**		**Month**		**Day**
1.6.	**Team Leader's signature**				
	SURVEY SUPERVISOR/ CODER				
1.7.	**Survey Supervisor name**				
1.8.	**Survey Supervisor's verification and confirmation**		**Month**		**Day**
1.9.	**Number of photos received by Survey Supervisor**				
1.10.	**Survey Supervisor signature**				
	DATA ENTRY OPERATOR # 1				
1.11.	**1st Data Entry Operator name**				
1.12.	**1st Data Entry date**		**Month**		**Day**
1.13.	**1st Data Entry Operator signature**				
	DATA ENTRY OPERATOR # 2				
1.14.	**2nd Data Entry Operator name**				
1.15.	**2nd Data Entry date**		**Month**		**Day**
1.16.	**2nd Data Entry Operator signature**				
	DATABASE SUPERVISOR				
1.17.	**Database Supervisor name**				
1.18.	**Database Supervisor's verification and confirmation date**		**Month**		**Day**
1.19.	**Database Supervisor signature**				

Implementer: **MEC LLC, MCDS LLC**
Unit 511, Chingis Avenue 21
14240 Ulaanbaatar
Tel: 11-319672

2. QUALITY CONTROL SHEET

SURVEY RECORDS	
	VISITS

2.1.	**1st VISIT**					**Sup**
2.	**Date**		**Month**		**Day**	
2.	**OUTCOME**	Responses options	**Response**	**Code**		
		Interview completed	1			
		Interview in-complete	2		***To agree to continue interview***	
		Refused to participate in survey	9 9		***To clarify causes of the refusal***	
	2nd VISIT					**Sup**
2.	**Date**		**Month**		**Day**	
2.	**OUTCOME**	Responses options	**Response**	**Code**		
		Interview completed	1			
		Interview in-complete	2		***To agree to continue interview***	
		Refused to participate in survey	99		***To clarify causes of the refusal***	
	3rd VISIT					**Sup**
2.	**Date**		**Month**		**Day**	
2.	**OUTCOME**	Responses options	**Response**	**Code**		
		Interview completed	1			
		Interview in-complete	2		***To agree to continue interview***	
		Refused to participate in survey	99		***To clarify causes of the refusal***	

CLARIFICATION

Please clarify why the interview was refused on the 1st visit
Please clarify why the interview was refused on the 2nd visit
Please clarify why the questionnaire was refused on the 3rd visit
Please clarify why the questionnaire is incomplete after the 3rd visit

2.4.	**Total number of questions the respondent refused to answer**	
2.4.1.	Refused Question number	
2.4.2.	Refused Question number	
2.4.3.	Refused Question number	
2.4.4.	Refused Question number	
2.4.5.	Refused Question number	

TO BE COMPLETED AFTER TEAM LEADER VALIDATION

2.5.	**Total number of refused questions being validated**			
2.6.	**Total number of questions with missing, incorrect values**			
2.6.1.	Of which:	**Total number of questions re-filled, corrected, resolved**		
2.6.2.		**Total number of questions not re-filled, resolved**		

TO BE COMPLETED AFTER SURVEY SUPERVISOR VALIDATION

2.7.	**Total number of refused questions being validated**			
2.8.	**Total number of questions with missing, incorrect values**			
2.8.1.	Of which:	**Total number of questions re-filled, corrected, resolved**		
2.8.2.		**Total number of questions not re-filled, resolved**		

TO BE COMPLETED AFTER DATABASE SUPERVISOR VALIDATION

2.9.	**Total number of refused questions being validated**			
2.10.	**Total number of questions with missing, incorrect values**			
2.10.1.	Of which:	**Total number of questions re-filled, corrected, resolved**		
2.10.2.		**Total number of questions not re-filled, resolved**		

SPECIAL NOTE # 1

Note taken by (name)	
Note	

INTRODUCTION

[Enum: Read carefully] *Hello. My name is… I am here to conduct an interview as a part of the* ***"Peri-Urban Rangeland Project"*** *being implemented at the Ministry of Agriculture and Light Industry and financed by the Millennium Challenge Account-Mongolia (MCA-M). The consulting companies MEC and MCDS are administering the survey required for the project evaluation. The two companies are not related to the MCA-M Project Implementation Unit. Our interview will take approximately an hour. During this time, I will be discussing the project with you and asking questions relating to rangeland, livestock, you livelihood, household and household members. I would like to write down/make a record of your answers if you would allow it. The information you provide will only be used for the sole purpose of the project and kept confidential. The information will not be used for tax or any other purposes. Although you will not be directly benefitted by participating in the interview, we will collect valuable information to improve project activities as an outcome of your interview. We will highly appreciate your participation. If you agree to be interviewed, let's start the questionnaire*

☐ **Check the box if verbal consent was given by the respondent**

3. BASIC INFORMATION

	CHECK/QUESTIONS														Code	Sup
3.1.	**Date, time of interview**			**Month**			**ay**			**Hour**			**in**			
3.2.	**Aimag**															

3.3.	**Soum**	
3.4.	**Bag**	
3.5.	**Name of area**	
3.6.	**Herder group name**	
3.7.	**Herder group ID**	
3.8.	**Household head name**	
3.9.	**Respondent Tel No**	
3.10.	**Household Register No**	
3.11.	**GPS coordinates (North)**	**N**
3.12.	**GPS coordinates (East)**	**E**

		Response options	**Response**	**Code**	**Sup**
3.13.	**Household status**	Household of herder group leader	1		
		Herders group member's household	2		
		Non-project household *(within 2 km distance of a project land plot)*	3		
		Non-project household *(outside 2km distance of a project land plot)*	4		
		Don't know	88		
		Refused	99		

#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
3.14.	**Is your household a member of any herder group formed outside of the MCA-M "Peri-Urban Rangeland Project?"**			8	9	9	
#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
3.15.	**Was your household officially registered in this soum a year ago?**			8	9	9	
#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
3.16.	**Was your household officially registered in this soum 5 years ago?**			8	9	9	
#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
3.17.	**Did your household apply for MCA-M's "Peri-Urban Rangeland Project?"**			8	99		

SPECIAL NOTE # 2

Note taken by (name)	

4. HOUSEHOLD BACKGROUND INFORMATION

Before starting the interview, allow me to explain who will be included in your household members. Household is one or a group of people who have one income and a common expenditure for basic consumer goods, such as food. Household members include children who are currently studying somewhere else, as well as others who are working elsewhere.

QUESTIONS														Number			up
4.1.	**How many people currently belong to your household?** *(ATTENTION: Use the instruction manual when asking about household and household member information.)*																
4.1.1.	**Of which:**	How many members of your household are over the age of 18?															
4.1.2.		How many members of your household are under the age of 18?															
4.2.	**What is the sex of the household head?**													**Response**		**Code**	**Sup**
	Response options	Male												1			
		Female												2			
		Refused												99			
4.3.	**In what type of housing does your household live?**		**Warm season**					**Cold season**									**Sup**
			Yes	**No**	**DNK**	**Refused**	**Code**	**Yes**	**No**	**DNK**	**Refused**	**Code**					
4.3.1.	**Housing type**	Ger with hashaa			88	99				88	99						
4.3.2.		Summer house			88	99				88	99						
4.3.3.		Winter house			88	99				88	99						
4.3.4.		Apartment			88	99				88	99						
4.3.5.		Private luxury house			88	99				88	99						
4.3.6.		Other			88	99				88	99						
4.4.	**Does your household own the following properties?** ***(if nothing note as "0")***													**Number**			**Sup**
4.4.1.	**Housing type**	Land under housing *(number of certificates)*															
4.4.2.		Summer house															
4.4.3.		Winter house															
4.4.4.		Apartment															
4.4.5.		Private luxury house															
4.4.6.		Other															
4.5.	**Does your household own a ger and/or the following home appliances?**													**Number**			**Sup**
4.5.1.	**Household appliances**	Ger with 4 walls															

4.5.2.		Ger with 5 walls				
4.5.3.		Ger with 6 or more walls				
4.5.4.		Refrigerator, freezer				
4.5.5.		Washing machine				
4.5.6.		Electrical stove				
4.5.7.		Gas stove *(portable)*				
4.5.8.		Wind power generator				
4.5.9.		Solar panel *(power generator)*				
4.5.10.		Small size generator *(power generator)*				
4.5.11.		Dish antenna set				
4.5.12.		TV set				
4.5.13.		Cell phone				
4.5.14.		Radio				
4.5.15.		Computer				
4.5.16.		Other				
4.6.	**Does your household have any of the following transportation vehicles?**		**Number**			**Sup**
4.6.1.	**Transportation Vehicles**	Bicycle				
4.6.2.		Motorcycle				
4.6.3.		Passenger car				
4.6.4.		Truck *(with all type back load)*				
4.6.5.		Car with 8 or more seats *("Furgon", minibus, bus)*				
4.6.6.		Tractor				
4.6.7.		Carriage *(drawn by draught animal)*				
4.6.8.		Other				

INSERT CLARIFICATION FOR QUESTION 4.3, 4.4, 4.5, 4.6

Other 4.3.6																		
Other 4.4.6																		
Other 4.5.16																		
Other 4.6.8																		

5. HOUSEHOLD EXPENDITURES

5.1.	Did your household buy any of the following?		Units for last 30 days	Unit price for last 30 days	Units for Last 12 months	up
5.1.1.	Regular food expenditures from vendors/markets	Meat (kg)				
5.1.2.		Milk (liter)				
5.1.3.		Flour (kg)				
5.1.4.		Rice (kg)				
5.1.5.		Sugar (kg)				
5.1.6.		Potato (kg)				

5.2.	Did your household buy any of the following, groceries, goods or services?	Last 30 days total MNT	Last 12 months total MNT	up
5.2.1.	Sweets, fruits			
5.2.2.	Vegetables			
5.2.3.	Vodka, wine *(Excluding consumption during Tsagaan sar, wedding and naadam)*			
5.2.4.	Cost for water consumption *(household and livestock consumption)*			
5.2.5.	Other food products *(tea, salt, oil etc)*			
5.2.6.	Cigarettes			
5.2.7.	Textiles (all types)			
5.2.8.	Shoes and clothing			
5.2.9.	School supplies			
5.2.10.	Other domestic goods *(cosmetics, subscription of newspaper and journal, toiletry items etc.)*			
5.2.11.	Public transport			
5.2.12.	Total fuel expenditures *(for domestic uses and transportation)*			
5.2.13.	Communication including mobile phones			
5.2.14.	Electricity *(for household and livestock consumption)*			
5.2.15.	Wood and Coal *(includes heating purpose)*			
5.2.16.	Medicine and medical treatment			
5.2.17.	Loan payment *(includes payment of the principal and interest)*			
5.2.18.	Renting of immovable properties *(except livestock infrastructure renting such as renting of animal shelter)*			
5.2.19.	Other expenditures			

INSERT CLARIFICATION FOR QUESTION 5.2

Other 5.2.19																		

HOUSEHOLD EXPENDITURES (CONTINUE)

#	EXPENDITURE		Last 12 months total price (MNT)	Sup
5.3.	**IRREGULAR EXPENDITURES IN THE LAST 12 MONTHS** ***(including new purchases and maintenance costs)***			
5.3.1.	**Immovable assets** (new purchases and maintenance costs**)**	Land		
5.3.2.		Summer housing		
5.3.3.		Winter housing		
5.3.4.		Apartment		
5.3.5.		Private luxury house		
5.3.6.	**Ger and home appliances** (new purchases and maintenance costs**)**	Mongolian ger		
5.3.7.		Refrigerator, freezer		
5.3.8.		Washing machine		
5.3.9.		Electrical stove		
5.3.10.		Wind power generator		
5.3.11.		Solar panel		
5.3.12.		Small size generator *(gasoline power generator)*		
5.3.13.		Dish antenna set		
5.3.14.		TV set		
5.3.15.		Cell phone		
5.3.16.		Radio		
5.3.17.		Computer (includes desktop and/or notebook)		
5.3.18.	**Transportation vehicles** (new purchases and maintenance costs)	Bicycle		
5.3.19.		Motorbike		
5.3.20.		Passenger car		
5.3.21.		Truck (with all type back load)		
5.3.22.		Car with 8 or more seats *("Furgon", minibus, bus)*		
5.3.23.		Tractor		
5.3.24.		Carriage *(drawn by draught animal)*		
5.3.25.	**Other**	Schooling fees		
5.3.26.		Lunar New Year celebration costs		
5.3.27.		Other celebration (such as weddings) related costs		
5.3.28.		Other expenses		

INSERT CLARIFICATION FOR QUESTION 5.3

Other 5.3.28	

HOUSEHOLD INCOME

5.4.	Sources of income	MNT (last calendar month)		MNT (last 12 months)	Sup

5.4.1.	**Regular income**	Monthly wage, salary or similar income																		
5.4.2.		Monthly pension benefits *(pension for the elderly)*																		
5.4.3.		Monthly welfare support *(unemployment, child support, disability., etc.)*																		
5.4.4.	**Irregular income**	Non regular wages																		
5.4.5.		Profit from private business activities (excluding agriculture)																		
5.4.6.		Income from monthly rent *(Ask if the respondent answered Yes to any of 4.4 question)*																		
5.4.7.		Money transfer from others *(including transfers from household and non-household members)*																		
5.4.8.		Interest from savings accounts																		
5.4.9.		Human Development Fund *(70 000 ,10 000 MNT)*																		
5.4.10.		Other income																		

INSERT CLARIFICATION FOR QUESTION # 6.1 HERE

Other 6.1.10																			

6. HOUSEHOLD LOANS AND RECEIVABLES

	QUESTION	Yes	No	DNK	Refused	Code	Sup
6.1.	**Has your household obtained any loans greater than 500 000 MNT in the last 5 years? *(includes both outstanding loans and loans that have been paid in full)***			8	99		
		"2, 88, 99" >Q8.1					

QUESTION		Number	Total MNT	Sup
6.2.	**If so, please specify the number and the amount in MNT?**			

6.3.	**Loans *(start with the most recent loan)***	**Principle amount (MNT)**	**Sources of loan (Refer to table 1 below for code)**	**Status of payment (Refer to table 2 below for code)**	**Sup**
6.3.1.	**1st loan**				
6.3.2.	**2nd loan**				
6.3.3.	**3th loan**				
6.3.4.	**4th loan**				
6.3.5.	**5th loan**				
6.3.6.	**6th loan**				
6.3.7.	**7th loan**				
6.3.8.	**8th loan**				
6.3.9.	**9th loan**				
6.3.10.	**10th loan**				

Table 1 **Table 2**

	Sources of loan	Code
	Bank	**1**

	Non-Bank Financial Institutions	**2**
	SCCs	**3**
	Pawn shop	**4**
	Company	**5**
	Donor Organization	**6**
	Individual	**7**
	Do not know	**88**
	Refused	**99**

	Status of payment	**Code**
	Paid off	**1**
	Outstanding	**2**
	In Default	**3**
	Do not know	**88**
	Refused	**99**

SUPPORTAND ASSISTANCE RECEIVED FROM OTHERS

6.4.	**Has your household received support and assistance from anyone in the last 12 months?** *(please check the appropriate boxes if the household has received any of the assistance)*		**es**	**o**		**Government**	**Donor Organization**	**Family member**	**Not a family member**	**Other**	**Don't know**	**Code**	**Sup**
6.4.1.	**Type of support and assistance**	Cash			**If "yes"**								
6.4.2.		In-kind livestock											
6.4.3.		In-kind livestock hay/forage											
6.4.4.		In-kind consumption goods including food											
6.4.5.		Education /training (free of charge)											

INSERT CLARIFICATION FOR SECTION # 8 HERE

Other 8																		

7. MIGRATION AND CAMP SPECIFIC INFRASTRUCTURE AND PASTURELAND

	QUESTION					**Number**		**Sup**
7.1.	**How many times has your household moved in the last 12 month?** *(excludes moving for the purposes of changing the ger base)*							
7.2.	**Please clarify in which camps you reside camps for each of the 4 seasons?**					**Please ask the camp specific questions if appropriate boxes are ticked.**		
	Season	**Winter**	**Spring**	**Summer**	**Autumn**			
7.2.1.	Winter Camp							
7.2.2.	Spring Camp							
7.2.3.	Summer Camp							

7.2.4.	Autumn Camp								
7.3.	**Did your household obtain a land certificate to possess winter and spring camps?**			**Yes**	**No**	**DNK**	**efused**	**Code**	**Sup**
7.3.1.	Type	Separate Winter camp land				88	99		
7.3.2.		Separate Spring camp land				88	99		

	Question	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.4.	**Has your household participated in joint business activities with other households during last 12 months**			88	99		
		If "2", "88", "99" > Q9.6.1					
7.5.	**What are the activities your household has been involved jointly with other herders for last 12 months if did have?**						**Sup**

MIGRATION AND CAMP SPECIFIC INFRASTRUCTURE & PASTURELAND (CONTINUED) SEPARATE WINTER CAMP

7.6.	**How far is your household's 2009/2010 winter camp located from the following points?**		**Km**	**Sup**
7.6.1.	Distance	From nearest big town *(UB or Darkhan or Erdenet)*		
7.6.2.		From points of milk, milk products cooling, processing, receiving		
7.6.3.		From water sources		
7.6.4.		From forest		

#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.7.	**Is your winter camp connected to a central electricity grid?**			88	99		

#	**QUESTION**	**Yes**	**No**	**NK**	**Refused**	**Code**	**Sup**
7.8.	**Does your household have mobile network service in your winter camp?**			88	99		

7.9.	**What are the primary water sources used for both domestic and livestock purposes in your winter camp? *(primary means as source where household intentionally obtains water)***		**Yes**	**No**	**Km**	**Code**	**Sup**
7.9.1.	**Water sources**	Deep well *(electric)*					
7.9.2.		Hand well*(manual)*					
7.9.3.		Water distribution unit					
7.9.4.		Open sources as river, spring etc.					

7.9.5.		Snow, ice								
7.9.6.		Other								
7.10.	**If your household obtains water from wells, who owns the wells used?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**	
7.10.1.	**Well ownership**	Own			88	99				
7.10.2.		Own group			88	99				
7.10.3.		Other individual			88	99				
7.10.4.		Other group			88	99				
7.10.5.		Organization			88	99				
7.10.6.		Government			88	99				
7.10.7.		Other *(clarify)*			88	99				
7.11.	**Which of the following types of animal shelter does your household have in your winter camp?**		**Yes**	**No**	**Number in sheep unit**		**Code**		**Sup**	
7.11.1.	**Shelter**	Open front shelter		2						
7.11.2.		Four walls and roof shelter	1	2						
7.11.3.		Three-sided open front shelter made of stone	1	2						
7.11.4.		Indoor shelter	1	2						
7.11.5.		Other	1	2						
7.11.6.		Don't know	88							
7.11.7.		Refused	99							

	QUESTION					**Number**	**If "1">Q9.14**		**Sup**
7.12.	**How many households belong to your hot ail at your winter camp ?** *(if no other households belong to your hot ail, please mark 1)*								
7.13.	**Please clarify the arrangements for herding collaboration in your hot ail**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
7.13.1.	**Choice**	Each household herds livestock in separate herds			88	99			
7.13.2.		Each household's livestock is herded in separate herds, but by herders appointed by the hot ail			88	99			
7.13.3.		All hot ail livestock are herded together in one herd by herders appointed by the hot ail			88	99			
7.13.4.		Other			88	99			
7.14.	**Do you coordinate winter pastureland sharing with saahalt ail and other herders outside your hot ail?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**

					88	99				
			If "2", "88", "99">Q9.16							
7.15.	**If yes, how do you coordinate?**		**Yes**	**No**	**DNK**	**Refused**	**Code**			**Sup**
7.15.1.	**Can be multiple choice**	Coordination is done through soum, bagh governors' offices			88	99				
7.15.2.		Coordination is done through informal arrangements with other herders			88	99				
7.15.3.		Other			88	99				

INSERT CLARIFICATION FOR QUESTION 9.9, 9.10, 9.11, 9.13, 9.15 HERE

Other 9.9.5																		
Other 9.10.7																		
Other 9.11.5																		
Other 9.13.4																		
Other 9.15.3																		

MIGRATION AND CAMP SPECIFIC INFRASTRUCTURE & PASTURELAND (SEPARATE WINTER CAMP CONTINUED)

7.16.	**How you would assess the pastureland quality/ grazing capacity of your winter camp?**					**Response**	**Code**		**Sup**
	Choice	Very good				1			
		Good				2	**If "1","2","88","99" >Q9.18**		
		Moderate (*That is, the land is supporting the maximum number of animals, and the animals on the land are able to obtain sufficient nutrition from grazing. The land cannot support the additional livestock*)				3			
		Low				4			
		Very low				5			
		Don't know				8 8			
		Refused				9			
7.17.	**If quality was moderate, low or very low what were the main causes?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
7.17.1.	**Causes**	Increase in livestock number in the soum			88	99			
7.17.2.		Increase of migrants to the soum			88	99			
7.17.3.		Weather change			88	99			
7.17.4.		Mining exploration			88	99			
7.17.5.		Crop farming development			88	99			
7.17.6.		Arvicolinae (rodent infestation)			88	99			

7.17.7.		Other			88	99		

	QUESTION	Km	Sup
7.18.	**What is the distance between the previous camp to your 2009/2010 winter camp? (km)**		

	QUESTION	MNT	Sup
7.19.	**What is the cost of moving from the previous camp to your 2009/2010 winter camp?**		

	QUESTION	Day	Sup
7.20.	What was the duration of the move in days ? *(This will include the time spent for moving as well as the time spent for preparation.)*		

INSERT CLARIFICATION FOR QUESTION 9.17 HERE

Other 9.17.7																		

MIGRATION AND CAMP SPECIFIC INFRASTRUCTURE & PASTURELAND (CONTINUED) SEPARATE SPRING CAMP

			Km		Sup
7.21.	**How far is your household's 2010 spring camp located from the following points?**				
7.21.1.	Distance	From nearest big town *(UB or Darkhan or Erdenet))*			
7.21.2.		From points of milk, milk products cooling, processing, receiving			
7.21.3.		From water sources			
7.21.4.		From forest			

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
7.22.	**Is your spring camp connected to a central electricity grid?**			88	99		
#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.23.	**Does your household have mobile network service in your spring camp?**			88	99		

					Km		Code	Sup
7.24.	**What are the primary water sources used for both domestic and livestock purposes in your spring camp? *(primary means as source where household intentionally obtains water)***		**Yes**	**No**				
7.24.1.	**Water sources**	Deep well *(electric)*						
7.24.2.		Hand well *(manual)*						
7.24.3.		Water distribution unit						
7.24.4.		Open sources as river, spring etc						
7.24.5.		Snow, ice						
7.24.6.		Other						

7.25.	**If your household obtained water from wells, who owns the wells used?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.25.1.	**Well ownership**	Own			88	99		
7.25.2.		Own group			88	99		
7.25.3.		Other individual			88	99		
7.25.4.		Other group			88	99		
7.25.5.		Organization			88	99		
7.25.6.		Government			88	99		
7.25.7.		Other			88	99		
7.26.	**Which of the following types of animal shelter does your household have in your spring camp?**		**Yes**	**No**	**Number in sheep unit**		**Code**	**Sup**
7.26.1.	**Shelter**	Open front shelter						
7.26.2.		Four walls and roof shelter						
7.26.3.		Three-sided open front shelter made of stone						
7.26.4.		Indoor shelter						
7.26.5.		Other	1					
7.26.6.		Don't know	88					
7.26.7.		Refused	99					

#	QUESTION	Number	If "1">Q9.29	Sup

7.27.	**How many households belong to your hot ail at your spring camp ?** *(if no other households belong to your hot ail, please mark 1)*							
7.28.	**Please clarify the arrangements for herding collaboration in the hot ail ?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.28.1.	**Choice**	Each household herds livestock in separate herds			88	99		
7.28.2.		Each household's livestock is herded in separate herds, but by herders appointed by the hot ail			88	99		
7.28.3.		All hot ail livestock are herded together in one herd by herders appointed by the hot ail			88	99		
7.28.4.		Other			88	99		
7.29.	**Do you coordinate spring pastureland sharing with saahalt ail and other herders outside your hot ail?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
					88	99		
			If "2", "88", "99">Q9.31					
7.30.	**If yes, how do you coordinate?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.30.1.	**Can be multiple choice**	Coordination is done through soum, bagh governors' offices			88	99		
7.30.2.		Coordination is done through informal arrangements with other herders			88	99		
7.30.3.		Other			88	99		

INSERT CLARIFICATION FOR QUESTION 9.24, 9.25, 9.26, 9.28, 9.30 HERE

Other 9.24.5																		
Other 9.25.7																		
Other 9.26.5																		
Other 9.28.4																		
Other 9.30.3																		

MIGRATION AND CAMP SPECIFIC INFRASTRUCTURE & PASTURELAND (SEPARATE SPRING CAMP CONTINUED)

7.31.	**How you would assess the pastureland quality/ grazing capacity of your spring camp?**		**Response**	**Code**	**Sup**
	Choice	Very good	1		
		Good	2	**If "1","2","88","99" >Q9.33**	
		Moderate (*That is, the land is supporting the maximum number of animals, and the animals on the land are able to obtain sufficient nutrition from grazing. The land can not support the additional livestock*)	3		
		Low	4		
		Very low	5		
		Don't know	88		

		Refused				99		
7.32.	**If quality was moderate, low or very low what are the main causes?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.32.1.	**Causes**	Increase in livestock number in the soum			88	99		
7.32.2.		Increase of immigrants to the soum			88	99		
7.32.3.		Weather change			88	99		
7.32.4.		Mining exploration			88	99		
7.32.5.		Crop farming development			88	99		
7.32.6.		Arvicoline (rodent infestation)			88	99		
7.32.7.		Other			88	99		

	QUESTION	**Km**	**Sup**
7.33.	**What is the distance between the previous camp to your 2010 spring camp? (km)**		

	QUESTION	**MNT**	**Sup**
7.34.	**What is the cost of moving from the previous camp to your 2010 spring camp?**		

	QUESTION	**Day**	**Sup**
7.35.	**What is the duration of the move in days ?** *(This will include the time spent for moving as well as the time spent for preparation.)*		

INSERT CLARIFICATION FOR QUESTION 9.32 HERE

Other 9.32.7	

MIGRATION AND CAMP SPECIFIC INFRASTRUCTURE & PASTURELAND (CONTINUED) SUMMER CAMP

7.36.	**How far is your household's 2010 summer camp located from the following points?**		**Km**	**Sup**
7.36.1.	Distance	From nearest big town *(UB or Darkhan or Erdenet)*		
7.36.2.		From points of milk, milk products cooling, processing, receiving		
7.36.3.		From water sources		
7.36.4.		From forest		

#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.37.	**Is your summer camp connected to a central electricity grid?**			8	9		

#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**

7.38.	**Does your household have mobile network service in your summer camp?**						88	99						
7.39.	**What are the primary water sources used for both domestic and livestock purposes in your summer camp? *(primary means as source where households intentionally get water)***		**Yes**	**No**	**Km**						**Code**		**Sup**	
7.39.1.	**Water sources**	Deep well *(electric)*												
7.39.2.		Hand well (manual)												
7.39.3.		Water distribution unit												
7.39.4.		Open sources as river, spring etc.												
7.39.5.		Other												
7.40.	**If your household obtains water from wells, who owns the wells used?**		**Yes**	**No**	**DNK**		**Refused**				**Code**		**Sup**	
7.40.1.	**Well ownership**	Own			8		9							
7.40.2.		Own group			8		9							
7.40.3.		Other individual			88		99							
7.40.4.		Other group			88		99							
7.40.5.		Organization			88		99							
7.40.6.		Government			88		99							
7.40.7.		Other												
7.41.	**Which of the following types of animal shelter does your household have in your summer camp?**		**Yes**	**No**	**Number in sheep unit**						**Code**		**Sup**	
7.41.1.	**Shelter**	Open front shelter	1	2										
7.41.2.		Four walls and roof shelter	1	2										
7.41.3.		Three-sided open front shelter made of stone	1	2										
7.41.4.		Indoor shelter	1	2										
7.41.5.		Other	1	2										
7.41.6.		Don't know	88											
7.41.7.		Refused	99											

#	QUESTION	Number	If "1"=>Q9.44	Sup

7.42.	**How many households belong to your hot ail at your summer camp?** *(if no other households belong to your hot ail, please mark 1)*								
7.43.	**Please clarify the arrangements for herding collaboration in the hot ail?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
7.43.1.	**Choice**	Each household herds livestock in separate herds			88	99			
7.43.2.		Each household's livestock is herded in separate herds, but by herders appointed by the hot ail			88	99			
7.43.3.		All hot ail livestock are herded together in one herd by herders appointed by the hot ail			88	99			
7.43.4.		Other			88	99			
7.44.	**Do you coordinate summer pastureland sharing with saahalt ail and other herders outside your hot ail?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
					88	99			
			If "2", "88", "99">Q9.46						
7.45.	**If yes, how do you coordinate?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
7.45.1.	**Can be multiple choice**	Coordination is done through soum, bagh governors' offices			88	99			
7.45.2.		Coordination is done through informal arrangements with other herders			88	99			
7.45.3.		Other			88	99			

INSERT CLARIFICATION FOR QUESTION 9.39, 9.40, 9.41, 9.43, 9.45 HERE

Other 9.39.4																		
Other 9.40.7																		
Other 9.41.5																		
Other 9.43.4																		
Other 9.45.3																		

MIGRATION AND CAMP SPECIFIC INFRASTRUCTURE & PASTURELAND (SUMMER CAMP CONTINUED)

7.46.	**How you would assess the pastureland quality/grazing capacity of your summer camp?**				**Response**	**Code**		**Sup**
	Choice	Very good			1			
		Good			2	**If "1","2","88","99" >Q9.48**		
		Moderate (*the land is supporting the maximum number of animals, and the animals on the land are able to obtain sufficient nutrition from grazing. The land cannot support the additional livestock*)			3			
		Low			4			
		Very low			5			
		Don't know			88			
		Refused			99			
7.47.	**If quality was moderate, low or very low what are the main**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**

	causes?							
7.47.1.	**Causes**	Increase in livestock number in the soum			88	99		
7.47.2.		Increase of immigrants to the soum			88	99		
7.47.3.		Weather change			88	99		
7.47.4.		Mining exploration			88	99		
7.47.5.		Crop farming development			88	99		
7.47.6.		Arvicoline (rodent infestation)			88	99		
7.47.7.		Other			88	99		

	QUESTION	**Km**	**Sup**
7.48.	**What is the distance between the previous camp to your 2010 summer camp ? (km)**		

	QUESTION	**MNT**	**Sup**
7.49.	**What is the cost of moving from the previous camp to your 2010 summer camp?**		

	QUESTION	**Day**	**Sup**
7.50.	**What is the duration of the move in days ?** *(This will include the time spent for moving as well as the time spent for preparation.)*		

INSERT CLARIFICATION FOR QUESTION 9.47 HERE

Other 9.47.7	

MIGRATION AND CAMP SPECIFIC INFRASTRUCTURE & PASTURELAND (CONTINUED) SEPARATE AUTUMN CAMP

7.51.	**How far is your household's 2010 autumn camp located from the following points?**				**Km**			**Sup**
7.51.1.	Distance	From nearest big town *(UB or Darkhan or Erdenet)*						
7.51.2.		From points of milk, milk products cooling, processing, receiving						
7.51.3.		From water sources						
7.51.4.		From forest						
#	**QUESTION**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.52.	**Is your autumn camp connected to a central electricity grid?**				88	99		
#	**QUESTION**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.53.	**Does your household have mobile network service in your autumn camp?**				88	99		
7.54.	**What are the primary water sources used for both domestic and livestock purposes in your autumn camp? *(primary means as source where households intentionally get water)***		**Yes**	**No**	**Km**		**Code**	**Sup**

7.54.1.	**Water sources**	Deep well *(electric)*									
7.54.2.		Hand well *(manual)*									
7.54.3.		Water distribution unit									
7.54.4.		Open sources as river, spring etc.									
7.54.5.		Snow, ice									
7.54.6.		Other									
7.55.	**If your household obtains water from wells, who owns the wells used?**		**Yes**	**No**	**DNK**	**Refused**			**Code**		**Sup**
7.55.1.	**Well ownership**	Own			88	99					
7.55.2.		Own group			88	99					
7.55.3.		Other individual			88	99					
7.55.4.		Other group			88	99					
7.55.5.		Organization			88	99					
7.55.6.		Government			88	99					
7.55.7.		Other			88	99					
7.56.	**Which of the following types of animal shelter does your household have in your autumn camp?**		**Yes**	**No**	**Number in sheep unit**				**Code**		**Sup**
7.56.1.	**Shelter**	Open front shelter									
7.56.2.		Four walls and roof shelter	1	2							
7.56.3.		Three-sided open front shelter made of stone	1	2							
7.56.4.		Indoor shelter	1	2							
7.56.5.		Other	1	2							
7.56.6.		Don’t know	88								
7.56.7.		Refused	99								
#	**QUESTION**				**Number**				**If “1”>Q9.59**		**Sup**

7.57.	**How many households belong to your hot ail at your autumn camp ?** *(if no other households belong to your hot ail, please mark 1)*							
7.58.	**Please clarify the arrangements for herding collaboration in the hot ail ?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.58.1.	**Choice**	Each household herds livestock in separate herds			88	99		
7.58.2.		Each household's livestock is herded in separate herds, but by herders appointed by the hot ail			88	99		
7.58.3.		All hot ail livestock are herded together in one herd by herders appointed by the hot ail			88	99		
7.58.4.		Other			88	99		
7.59.	**Do you coordinate autumn pastureland sharing with saahalt ail and other herders outside your hot ail?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
					88	99		
			If "2", "88", "99">Q9.61					
7.60.	**If yes, how do you coordinate?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
7.60.1.	**Can be multiple choice**	Coordination is done through soum, bagh governors' offices			88	99		
7.60.2.		Coordination is done through informal arrangements with other herders			88	99		
7.60.3.		Other			88	99		

INSERT CLARIFICATION FOR QUESTION , 9.54, 9.55, 9.56, 9.58, 9.60 HERE

Other 9.54.5																		
Other 9.55.7																		
Other 9.56.5																		
Other 9.58.4																		
Other 9.60.3																		

MIGRATION AND CAMP SPECIFIC INFRASTRUCTURE & PASTURELAND (SEPARATE AUTUMN CAMP CONTINUED)

7.61.	**How you would assess the pastureland quality/ grazing capacity of your autumn camp?**		**Response**	**Code**	**Sup**
	Choice	Very good	1		
		Good	2	**If "1","2","88","99" >Q9.63**	
		Moderate (*the land is supporting the maximum number of animals, and the animals on the land are able to obtain sufficient nutrition from grazing. The land cannot support the additional livestock*)	3		
		Low	4		
		Very low	5		
		Don't know	88		
		Refused	99		

7.62.	If quality was moderate, low or very low what are the main causes?		Yes	No	DNK	Refused	Code	Sup
7.62.1.	Causes	Increase in livestock number in the soum			88	99		
7.62.2.		Increase of immigrants to the soum			88	99		
7.62.3.		Weather change			88	99		
7.62.4.		Mining exploration			88	99		
7.62.5.		Crop farming development			88	99		
7.62.6.		Arvicoline (rodent infestation)			88	99		
7.62.7.		Other			88	99		

	QUESTION	Km	Sup
7.63.	**What is the distance between the previous camp to your autumn camp? (km)**		

	QUESTION	MNT	Sup
7.64.	**What is the cost of moving from the previous camp to your autumn camp?**		

	QUESTION	Day	Sup
7.65.	**What is the duration of the move in days?** *(This will include the time spent for moving as well as the time spent for preparation.)*		

INSERT CLARIFICATION FOR QUESTION 9.62 HERE

Other 9.62.7																		

8. 10. HOUSEHOLD LIVESTOCK NUMBER, REVENUE AND EXPENDITURE, VETERINARIAN SERVICES

8.1.	Type	The number as of 31 Dec 2009	Increases			Decreases						As of now
			Born Raised	Purchased	Received as a gift	Sold	Stolen or Lost	Consumed as food	Natural disaster	Illness	Given as a gift	
8.1.	Camel											
8.1.	Horse											
8.1.	Cattle											
8.1.	Sheep											
8.1.	Goat											

8.2.	How many livestock your household has sold and how much money has been earned since 31 Dec 2009 *(Crosscheck with table 10.1 above)*		Number copy from above)	MNT	Sup
8.2.1.	Type	Camel			
8.2.2.		Horse			
8.2.3.		Cattle			
8.2.4.		Sheep			
8.2.5.		Goat			

8.3.	Type	Death due to livestock diseases (Cross check with illness above)					
		Anthrax	Rabies	Aphthae	Other	**Don't know** *(Fill out using the number of livestock lost to unknown illness or cause)*	Sup
8.3.1.	Camel						

8.3.2.	Horse												
8.3.3.	Cattle												
8.3.4.	Sheep												
8.3.5.	Goat												

INSERT CLARIFICATION FOR QUESTION 10.3 HERE

Other 10.3.1.																		
Other 10.3.2.																		
Other 10.3.3.																		
Other 10.3.4.																		
Other 10.3.5.																		

HOUSEHOLD LIVESTOCK NUMBER, REVENUE AND EXPENDITURES, VETERINARY SERVICES (CONTINUED)

8.4.	**Home grown agriculture products (consumed and sold) in the last 12 months** *(if household did not produce, note as "0")*		**Domestic household consumption (units)**	**Sold (units)**	**Total amount earned in last 12 months (MNT)**	**Sup**
8.4.1.	**Products**	Camel – Numbers sold for meat				
8.4.2.		Horse – Numbers sold for meat				
8.4.3.		Cattle – Numbers sold for meat				
8.4.4.		Sheep – Numbers sold for meat				
8.4.5.		Goat – Numbers sold for meat				
8.4.6.		Cashmere (kg)				
8.4.7.		Wool (kg)				
8.4.8.		Fur (pieces)				
8.4.9.		Skin (pieces)				
8.4.10.		Cow milk (liters)				
8.4.11.		Sheep/goat milk (liters)				
8.4.12.		Fermented Mare milk (liters)				
8.4.13.		Pork (kg)				
8.4.14.		Poultry (kg)				
8.4.15.		Egg (pieces)				
8.4.16.		Honey (kg)				
8.4.17.		Potato (кg)				
8.4.18.		Vegetables (кg)				
8.4.19.		Other				

8.5.	**How much your household has spent for your livestock in the last 12 months?** *(if nothing note as "0")*		**MNT**	**Sup**
8.5.1.	**Choice**	Buying livestock		
8.5.2.		Livestock insemination cost		
8.5.3.		Veterinary treatment service cost		
8.5.4.		Vaccination cost		
8.5.5.		Livestock insurance		
8.5.6.		Livestock tax		
8.5.7.		Paid worker fee		
8.5.8.		Existing fence, shelter repair		
8.5.9.		Building of new fence and shelter		

8.5.10.		Well use fee																				
8.5.11.		Rent *(pastureland, winter, spring camp, etc)*																				
8.5.12.		Other																				

INSERT CLARIFICATION FOR QUESTION 10.4, 10.5 HERE

Other 10.4.19																			
Other 10.5.12																			

HOUSEHOLD LIVESTOCK NUMBER, REVENUE AND EXPENDITURES, VETERINARY SERVICES (CONTINUED)

8.6.	What influences how you decide which animal to sell? (please rank the most important as 1 and least important as 6		**Rank 1-6**				**Code**	**Sup**
8.6.1.	**Choice**	Age of the animal						
8.6.2.		Sex of the animal						
8.6.3.		Physical condition / health of the animal						
8.6.4.		The amount that can be earned for each animal						
8.6.5.		Cost to maintain animal						
8.6.6.		Other						

#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
8.7.	**Do you possess a contract (written and/or verbal) with a veterinarian?**			8	9		
#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
8.8.	**Did you have any of your livestock vaccinated during last 12 months to prevent from livestock infectious diseases?**			8	9		
		If "2", "88","99" >Q10.10					

8.9.	**If so, what type of vaccinations?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
8.9.1.	**Highly infections**	**Anthrax**			88	99		
8.9.2.		Rabies			88	99		
8.9.3.		Aphthae			88	99		
8.9.4.		Other			88	99		
8.9.5.	**Infections**	Pasteurella multocida infection			88	99		
8.9.6.		Clostridium perftingens infection			88	99		
8.9.7.		Brucellosis			88	99		
8.9.8.		Tubumercul			88	99		
8.9.9.		Diphtheria			88	99		
8.9.10.		Gripp equorum			88	99		
8.9.11. Д		Clostridium			88	99		
8.9.12.		Mycoplasma			88	99		
8.9.13.		Other			88	99		

#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
8.10.	**Did you treat any of your livestock for parasites in the last 12 months?**			88	99		
		If "2", "88","99" >Q11.1					

8.11.	**If so, what of treatment?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
8.11.1.	**Parasites**	Scabies, Acari			88	99		
8.11.2.		Parasittic worms/helminthes			88	99		
8.11.3.		Ivomec			88	99		
8.11.4.		Other			88	99		

INSERT CLARIFICATION FOR QUESTION 10.6, 10.9, 10.11 HERE

Other 10.6.6																			
Other 10.9.4																			
Other 10.9.13																			
Other 10.11.4																			

9. HOUSEHOLD CATTLE

9.1.	**How many bulls does your household have ?**		**Number**		**Sup**
9.1.1.	**Choice**	Mongolian			
9.1.2.		Alatau			
9.1.3.		Simental (Shar tarlan)			
9.1.4.		Khar tarlan			
9.1.5.		Talyn ulaan			
9.1.6.		Selenge			
9.1.7.		Other			
9.2.	**How many male calves were born last year? If ”0”> A11.5**				
9.3.	**How many byaruu (two year old male cattle) did you castrate last year? If ”0” > A11.5**				

9.4.	**What are the main reasons for castration?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
9.4.1.	**Choice**	To control the number and quality of bulls			8	9 9		
9.4.2.		To prepare male cattle for meat production			8	9 9		
9.4.3.		Other			8	9 9		

9.5.	**How many cows does your household have?**		**Number**		**Sup**
9.5.1.	**Choice**	Mongolian			
9.5.2.		Alatau			
9.5.3.		Simental (Shar tarlan)			
9.5.4.		Khar tarlan			
9.5.5.		Talyn ulaan			
9.5.6.		Selenge			
9.5.7.		Other			
9.6.	**How many days in a year you milk the cows?**		**Days**		**Sup**

INSERT CLARIFICATION FOR QUESTION 11.1, 11.4, 11.5 HERE

Question 11.1.8	
Question 11.4.3	
Question 11.5.8	

10. HOUSEHOLD MILKING COWS

10.1.	Cow name/ID		1st highest producing cow		2nd highest producing cow		3rd highest producing cow		1st lowest producing cow		2nd lowest producing least		Sup
			Response	Code	Response	Code	Response	Code	Response	Code	Response	Code	Sup
10.1.1.	Breeding	Mongolian	1		1		1		1		1		
10.1.2.		Alatau	2		2		2		2		2		
10.1.3.		Simental (Shar tarlan)	3		3		3		3		3		
10.1.4.		Khar tarlan	4		4		4		4		4		
10.1.5.		Talyn ulaan	5		5		5		5		5		
10.1.6.		Selenge	6		6		6		6		6		
10.1.7.		Other	7		7		7		7		7		
10.1.8.		Don't know	88		88		88		88		88		
10.1.9.		Refused	99		99		99		99		99		

#	QUESTION	Number	Number	Number	Number	Number	Sup
10.2.	Age						
10.3.	Liters of milk in last week?						
10.4.	The highest liters of milk per day during non-milking? (liters, Oct-Apr)						
10.5.	The lowest liters of milk per day during non-milking? (liters, Oct-Apr)						
10.6.	How many days is cow milked in non-milking season ? (Oct-Apr)						
10.7.	The highest liters of milk per day during milking? (liter, May-Sep)						
10.8.	The lowest liters of milk per day during milking? (liters, May-Sep)						

10.9.	How many days is cow milked in milking season? (May-Sep)																			
10.10.	**What method of breeding was used?**	**Response**	**Code**	**Response**	**Code**	**Response**	**Code**	**Response**	**Code**	**Response**	**Code**	**Response**	**Code**	**Response**	**Code**	**Response**	**Code**	**Response**	**Code**	**Sup**
10.10.1.	Pure bull (pure and cross)	1		1		1		1		1		1		1		1		1		
	Mongolian bull	2		2		2		2		2		2		2		2		2		
	Artificial insemination	3		3		3		3		3		3		3		3		3		
	Don't know	88		88		88		88		88		88		88		88		88		
	Refused	99		99		99		99		99		99		99		99		99		
#	**QUESTION**	**Number**		**Number**		**Number**		**Number**		**Number**		**Number**		**Number**		**Number**		**Number**		**Sup**
10.11.	Number of offspring ever (calves)?																			
#	**QUESTION**	**Month**		**Month**		**Month**		**Month**		**Month**		**Month**		**Month**		**Month**		**Month**		**Sup**
10.12.	In which month did the cow last give birth?																			
10.13.	Is the cow pregnant now?	**Choice**	**Code**	**Choice**	**Code**	**Choice**	**Code**	**Choice**	**Code**	**Choice**	**Code**	**Choice**	**Code**	**Choice**	**Code**	**Choice**	**Code**	**Choice**	**Code**	**Sup**
10.13.1.	Yes	1		1		1		1		1		1		1		1		1		
	No	2		2		2		2		2		2		2		2		2		
	Don't know	88		88		88		88		88		88		88		88		88		
	Refused	99		99		99		99		99		99		99		99		99		
	QUESTION	**Number**		**Number**		**Number**		**Number**		**Number**		**Number**		**Number**		**Number**		**Number**		**Sup**
10.14.	If yes, in what month was the cow inseminated?																			
10.15.	How many liters of milk does the cow produce when you decide to stop milking in non-milking season?																			

INSERT CLARIFICATION FOR QUESTION 12 HERE

Other 12.1																				

11. MILK STORAGE, TRANSPORTATION AND SALES PROCESS (LAST 12 MONTHS)

#	QUESTION	Yes	No	DNK	Refused	Code	up
11.1.	Did your household deliver milk to individuals in last 12 months?			88	99		
		If "2", "88", "99" >Q13.5					

#	Question	Non milking season (Oct-April)	Milking season (May-Sep)	Sup
11.2.	What was the sale price per liter when selling to individuals? (MNT)			
11.3.	How many liters of milk did your household deliver per day to the individual? (Average liters)			
11.4.	How many days in total did your household deliver milk to the individual? (Days)			

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
11.5.	Does your household sell milk directly to the market in last 12 months?			88	99		
		If "2", "88", "99" >Q13.9					

#	QUESTION	Non milking season (Oct-April)	Milking season (May-Sep)	Sup
11.6.	What was the sale price per liter when selling to the market? (MNT)			
11.7.	How many liters of milk did your household deliver per day to the market? (Average liters)			
11.8.	How many days in total did your household deliver milk to the market? (Days)			

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
11.9.	Does your household deliver to a centralized cooling facility in last 12 months?			88	99		
		If "2", "88", "99" >Q13.13					

#	Question	Non milking season (Oct-April)	Milking season (May-Sep)	Sup
11.10.	What was the sale price per liter when selling to the centralized cooling facility? (MNT)			
11.11.	How many liters of milk did your household deliver per day to the centralized cooling facility? (Average liters)			
11.12.	How many days in total did your household deliver milk to the centralized cooling facility? (Days)			

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
11.13.	Does your household deliver milk to a mobile collecting vehicle every day in last 12 months?			88	99		
		If "2", "88", "99" >Q13.17					

#	Question	Non milking season (Oct-April)	Milking season (May-Sep)	Sup
11.14.	What was the sale price when selling to the collecting vehicle facility? (MNT)			
11.15.	How many liters of milk did your household deliver per day to the collecting vehicle facility? (Average liters)			
11.16.	How many days in total did your household deliver milk to the collecting vehicle facility? (Days)			

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
11.17.	Does your household have milk cooling, storing purpose facilities?			88	99		
		If "2", "88", "99">Q13.19					

#	Question	Liter	Sup
11.18.	If so, what is the capacity (in liters) of your household milk cooling, storing capacity?		

#	QUESTION	es	o	NK	efused	ode	up
11.19.	Does your household have a creamer / butter making machine?			8	9		

12. LIVESTOCK FORAGE

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
12.1.	**Does your household have access to a hay making area?**			88	99		
		If "2", "88", "99" >Q14.3					

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
12.2.	**If yes, has your household obtained a land certificate to possess hay making area?**			88	99		

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
12.3.	**Did your household produce hay yourself in 2009?**			88	99		
		If "2", "88", "99" >Q14.9					

#	Question	Hectare	Sup
12.4.	**From how many hectares did your household produce hay in 2009?**		
12.5.	**If yes, how many tons of hay did your household produce in 2009?**		

		MNT	Sup
12.6.	**How much did your household spend on hay production in 2009?**		

		Yes	No	NK	Refused	Code	Sup
12.7.	**Did you have excess hay beyond your own livestock consumption needs?** *(in 2009)*			88	99		
		If "2", "88", "99">Q14.9					

		Yes	No	Number	Code	Sup
12.8.	**If yes, what did you do with excess hay?**					
12.8.1.	Sold excess hay *(MNT)*					
12.8.2.	Gave to others *(tons*)					
12.8.3.	Stored it *(tons)*					
12.8.4.	Other					

		Yes	No	DNK	Refused	Code	Sup
12.9.	**Did your household purchase hay in last 12 months?**			8	9		
		If "2", "88", "99">Q14.11					

		Kg	MNT	Sup
12.10.	**If yes, specify volume (kg) and total amount spent in MNT ?**			

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
12.11.	**Does your household have access to an area for growing forage plants?**			8	9		

#	QUESTION	Yes	No	DNK	Refused	Code	Sup
		If "2", "88", "99">Q14.13					
12.12.	If yes, has your household obtained a land usage certificate to possess the area where forage plants are grown?			8	9		

#	Which of the following forage crops does your household grow? How much forage does your household make in a year? (*In 2009*)		Yes	No	Size of area (ha)	Unit (tons)	Code	Sup
12.13.								
12.13.1.	Type of forage plants	Alfalfa						
12.13.2.		Corn						
12.13.3.		Green forage						
12.13.4.		Sunflower						
12.13.5.		Oat						
12.13.6.		Rye						
12.13.7.		Wheat						
12.13.8.		Barley						
12.13.9.		Other						

#	Question	(MNT)	Sup
12.14.	How much did your household spend on forage production in 2009?		

#	How many kg of the following forage did you purchase? What was the total amount spent in MNT?		Yes	No	Unit (kg)	Total Amount Spent (MNT)	Code	Sup
12.15.								
12.15.1.	Forage type	Fiber						
12.15.2.		Rye						
12.15.3.		Wheat						
12.15.4.		Combi-forage						
12.15.5.		Khorgoljin						
12.15.6.		Oat						
12.15.7.		Other						

INSERT CLARIFICATION FOR QUESTION 14.8, 14.13, 14.15 HERE

Other 14.8.4	
Other 14.13.9	
Other 14.15.7	

LIVESTOCK FORAGE (CONTINUE)

12.16. #	In what months did your household give hay and/or fodder to your livestock? *(Please insert "√" in the appropriate field.)*	Yes	No	Month													
				1	2	3	4	5	6	7	8	9	10	11	12	Code	Sup
12.16.1.	Camel																
12.16.2.	Horse																
12.16.3.	Cattle																
12.16.4.	Sheep																
12.16.5.	Goat																

13. LIVESTOCK INVESTMENT

13.1.	If you have adequate resources to do so, what will you invest in during the next 5 years?		Yes	No	Total investment (MNT)	Code	Sup
13.1.1.	Investment area	Building a well					
13.1.2.		Building maintaining or shelter					
13.1.3.		Fencing pastureland area					
13.1.4.		Cultivating forage plant					
13.1.5.		Purchasing pure and crossbred cows					
13.1.6.		Purchasing Mongolian cows					
13.1.7.		Purchasing other livestock					
13.1.8.		Other					

INSERT CLARIFICATION FOR QUESTION 15.1 HERE

Other 15.1.8																		

14. LAND DISPUTES

	Question	es	o	Number		Code	Sup
14.1.	Has your household been involved in any pastureland related disputes for last 5 years?*b1*						
		If "2" > Q17.1					

14.2.	Disputes (*Start with most recent)*	Causes *(please use codes from the table 3)*		Participants *(please use codes from the table 4)*		Status of resolution *(please use codes from the table 5)*		(If resolved, how did you resolve? *(please use codes from the table 6)*		Sup
14.2.1.	1st Dispute									

14.2.2.	**2nd Dispute**													
14.2.3.	**3th Disputeы**													
14.2.4.	**4th Dispute**													
14.2.5.	**5th Dispute**													
14.2.6.	**6th Dispute**													
14.2.7.	**7th Dispute**													
14.2.8.	**8th Dispute**													
14.2.9.	**9th Dispute**													
14.2.10.	**10th Dispute**													

Table-3 **Table-4** **Table-5** **Table-6**

Causes	**Code**	**Participants**	**Code**	**Status of resolution**	**Code**	**If resolved, how did you resolve**	**Code**
Fencing	**1**	Herder inside soum	**1**	**Resolved**	**1**	Settled through informal arrangements	**1**
Water usage	**2**	Herder from neighboring soum	**2**	**Not resolved**	**2**	Settled through an official arbitrator	**2**
Sharing pastureland	**3**	Migrant herder passing through	**3**	**Do not know**	**88**	Settled in court	**3**
Other	**4**	Organization or Company	**4**	**Refused**	**99**	**Do not know**	**88**
						Refused	**99**

INSERT CLARIFICATION FOR TABLE 3 HERE

Table 3- Other																		

OPINIONS ON PERI-URBAN RANGELAND PROJECT

#	**Question**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
14.3.	**Have you received information on MCA-M project activities including the leasing of pastureland?**				88	99			
			If "2", "88", "99"then > Q17.3						
14.4.	**If yes, what are the information sources?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
14.4.1.	**Sources**	PIU			88	99			
14.4.2.		Soum government administration			88	99			
14.4.3.		Group Leader			88	99			
14.4.4.		Group other members			88	99			

14.4.5.		Newspaper, publications			88	99		
14.4.6.		TV, radio			88	99		
14.4.7.		Other			88	99		

#	Question	Yes	No	DNK	Refused	Code	Sup
14.5.	Does your household think that leasing area under the Peri-urban rangeland lease project is good idea?			88	99		
14.6.	If you were part of the MCA-M project, what benefits would you expect to experience as a result of the project?	**Yes**	**No**	**DNK**		**Code**	**Sup**
14.6.1.	**Activities** Better collaboration with other households belonging to the herder group			88			
14.6.2.	Improved intensive and semi-intensive livestock practices			88			
14.6.3.	Acquisition of rangeland lease			88			
14.6.4.	Access to wells			88			
14.6.5.	Assistance with build/repair animal shelter			88			
14.6.6.	Other			88			

INSERT CLARIFICATION FOR QUESTION 17.2, 17.4 HERE

Other 17.2.7																			
Other 17.4.6																			

15. HOUSEHOLD ADULT MEMBERS

	Household members	Name	Number
15.1.	**Household head name (don't ask)**		**1**
15.2.	**Household adult member # 2**		**2**
15.3.	**Household adult member # 3**		**3**
15.4.	**Household adult member # 4**		**4**
15.5.	**Household adult member # 5**		**5**
15.6.	**Household adult member # 6**		**6**
15.7.	**Household adult member # 7**		**7**

If the household adult members are more than 7 please use a new questionnaire format.

	Question	Response	Household member ID 1 Code	2 Code	3 Code	4 Code	5 Code	6 Code	7 Code	Sup
15.8.	**Sex**	Male								
		Female								
15.9.	**Age (full years)**									

	Question	Response	1	2	3	4	5	6	7	Sup
15.10.	**What is the relationship to the head of the household?**	Wife/husband								
		Mother/father								
		Child								
		Siblings								

		Relatives								
		Non-relatives								
		Refused	9	9	9	9	9	9		

	Question	Response	1	2	3	4	5	6	7	Sup
15.11.	**What is the highest education level?**	No education								
		Primary								
		Incomplete secondary								
		Complete secondary								
		Vocational								
		Incomplete tertiary								
		Complete tertiary								
		Refused	9	9	9	9	9	9	9	

	Question	**Response**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Sup**
15.12.	Have you ever had any training in livestock husbandry?	Yes								
		No								
		Refused	99	99	99	99	99	99	99	

	Question	**Response**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Sup**
15.13.	Have you ever had any business operation training of any type?	Yes								
		No								
		Refused	99	99	99	99	99	99	99	

	Question	**Response**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Sup**
	The main respondent									
	Participated in the interview									
	Present during the interview									
	Not present during the interview									

16. HOUSEHOLD CHILDREN (0-17)

	Household children	Name	Number
16.1.	Household children # 1		1
16.2.	Household children # 2		2
16.3.	Household children # 3		3
16.4.	Household children # 4		4
16.5.	Household children # 5		5
16.6.	Household children # 6		6
16.7.	Household children # 7		7

(IF THE HOUSEHOLD ADULT MEMBERS ARE MORE THAN 7 PLEASE USE A NEW QUESTIONNAIRE FORM)

	Question	Response	Household member ID 1	2	3	4	5	6	7	Sup
			Code	Code	Code	Code	Code	Code	Code	
16.8.	Sex	Male								
		Female								
16.9.	Head of the household or not	Yes								
		No								
16.10.	What is your relationship to the head?	Son/ Daughter								
		Grandson/ Granddaughter								
		Sibling								
		Other Relative								
		Other/Non relative								
		Refused	99	99	99	99	99	99	99	
16.11.	Age (full years)									

	Question	Response	1	2	3	4	5	6	7	Sup
16.12.	Does child attend school?	Home								
		Kindergarten								
		Primary school (1-4 Year)								
		Lower Secondary school (5th-8th Grade)								
		Upper Secondary (9^{th}-11^{th}								

		Grade)															
		Vocational training, college															
		Tertiary educational institution															
		School dropped/never gone to school															

17. PROJEC BENEFICIARY HOUSEHOLDS *(If household is project household, ask session 20, if household is neighbor, skip 20 and ask 21)*

17.1.	What is your relationship with other members of your Herder Group?		Yes	No	DNK	Refused	Code		Sup
17.1.1.	Relationship	Friends			88	99			
17.1.2.		Relatives			88	99			
17.1.3.		Supporting herder			88	99			
17.1.4.		Neighbor			88	99			
17.1.5.		Other			88	99			
17.2.	**What motivated you to join the group?** *(Don't read options)*		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
17.2.1.	Motivations	Desire to raise livestock jointly in herder group			88	99			
17.2.2.		To improve pastureland quality			88	99			
17.2.3.		To protect the environment			88	99			
17.2.4.		For support to build fencing			88	99			
17.2.5.		For support to build well			88	99			
17.2.6.		To learn/from and share with others			88	99			
17.2.7.		To better develop semi-intensive or intensive farming practices			88	99			
17.2.8.		Other			88	99			
17.3.	**What areas do you expect to be improved because you joined the herder group? (***Don't read options)*		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
17.3.1.	Issues	Joint sales, processing, and production of livestock products			88	99			
17.3.2.		Building and repairing of fences and shelters			88	99			
17.3.3.		Livestock productivity and quality			88	99			
17.3.4.		Prevention of livestock loss due to natural disaster, illness, and/or other causes			88	99			
17.3.5.		Decreased degradation of pastureland			88	99			
17.3.6.		Collaboration of fodder and hay production			88	99			
17.3.7.		Prevention of theft of livestock			88	99			

17.3.8.		Increases access to water sources			88	99			
17.3.9.		Other			88	99			

INSERT CLARIFICATION FOR QUESTION 20.1, 20.2, 20.3 HERE

Other 20.1.5																		
Other 20.2.8																		
Other 20.3.9																		

18. QUESTIONS FOR NEIGHBORING HOUSEHOLDS *(HOUSEHOLDS IDENTIFIED AS "NEIGHBORS" BY MCA-M)*

18.1.	**Does your household have the following on the lease area of the herder group?**		**Yes**	**No**	**DNK**	**Refusal**	**Code**	**Sup**
18.1.1.	**Choices**	Pastureland			8	9 9		
18.1.2.		Well/other water points			8	9 9		
18.1.3.		Hay making area			8	9 9		
18.1.4.		Cropping area			8	9 9		
18.1.5.		Other			8	9 9		

#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
18.2.	**Is your household's winter/spring camp located in the same area as an MCA-M project lease area?**			8	9 9		
		If "2", "88", "99" > Q21.8					
#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
18.3.	**If yes, has your household been introduced to the "No objection" statement?**			88	99		
		If "2", "88", "99">Q21.5					
#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
18.4.	**If so, did you get a proper understanding of the "No objection" statement?**			88	99		
#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
18.5.	**Did your household sign the "No objection" statement?**			88	99		
		If "2", "88", "99">Q21.7					
#	**QUESTION**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
18.6.	**Have you received one copy of the "No Objection" statement signed by you?**			88	99		
18.7.	**If you did not sign the "no objection, " please clarify the reasons for objecting?**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
18.7.1.	**Reasons** Rangeland lease			88	99		
18.7.2.	Rangeland fencing			88	99		
18.7.3.	Well use			88	99		
18.7.4.	Other			88	99		
18.8.	**If in the future you encounter issues related to loss of access to pastureland and water sources where will you express your complaint?**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
18.8.1.	**Choices** Herder group			88	99		
18.8.2.	Bagh Governor			88	99		
18.8.3.	Soum Governor			88	99		
18.8.4.	PIU			88	99		

18.8.5.		Court			88	99			
18.8.6.		Other			88	99			

INSERT CLARIFICATION FOR QUESTION 21.1, 21.7, 21.8 HERE

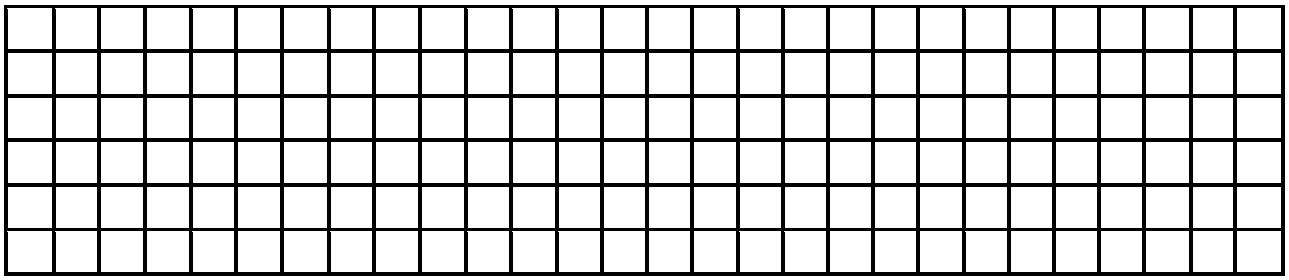
Other 21.1.5	
Other 21.7.4	
Other 21.8.6	

19. SURVEY INTERVIEW VALIDATION

#	Question			Supervisor
19.1.	**Interview start date, time**	**month** **day** **hour** **min**		
19.2.	**Interview completed date, time**	**month** **day** **hour** **min**		
19.3.	**Interview continuation period**	**min**		
19.4.	**Level of respondents cooperation**	Low Moderate High	**Code**	
19.5.	**Enumerator name**			
19.6.	**Number of photos taken**			
19.6.1.	1st photo ID			
19.6.2.	2nd photo ID			
19.6.3.	3rd photo ID			
19.6.4.	4th photo ID			
19.7.	**Enumerator signature**			
19.8.	**Team Leader name**			
19.9.	**Number of photo validated by Team Leader (Team Leader checks and validates every single photo taken)**			
19.10.	**Questionnaire page numbers validated by team Leader (out of a total of 30 pages)**			
19.11.	**Team Leader signature**			

SPECIAL NOTE # 3

Note taken by (name)	



Appendix D. Herder Group Leader Questionnaire

..... AIMAG

..... SOUM

..... GROUP

INTRODUCTION

20. IDENTIFIERS

	INTERVIEWER	
20.1.	**Name of Interviewer**	
20.2.	**Interview date (to be filled after completing the interview)**	**onth** / **day**
20.3.	**Signature of Interviewer**	
	FIELD TEAM LEADER	
20.4.	**Name of Team Leader**	
20.5.	**Date of check**	**month** / **day**
20.6.	**Signature of Team Leader**	
	SUPERVISOR	
20.7.	**Name of Supervisor**	
20.8.	**Supervisor check date**	**month** / **day**
20.9.	**Number of photos received by Supervisor**	
20.10.	**Signature of Supervisor**	
	DATA ENTRY OPERATOR # 1	
20.11.	**Name of Data Entry Operator #1**	
20.12.	**Date of 1st data entry**	**month** / **day**
20.13.	**Signature of Data Entry Operator #1**	
	DATA ENTRY OPERATOR # 2	
20.14.	**Name of Data Entry Operator #2**	
20.15.	**Date of 2nd data entry**	**month** / **day**
20.16.	**Signature of Data Entry Operator #2**	
	DATABASE MANAGER	
20.17.	**Name of Database Manager**	
20.18.	**Data validation check date**	**onth** / **day**
20.19.	**Signature of Database Manager**	

Executed by: MEC LLC, MCDS LLC
511, Chinggis Avenue 21
14240 Ulaanbaatar
Tel: 11-319672

21. QUALITY CONTROL SHEET

SURVEY RECORDS						
	VISITS					
21.1.	**1st VISIT**					**Sup**
21.1.1	**Date**		**Month**		**Day**	
21.1.2	**OUTCOME**	Responses options	**Response**	**ode**		
		Interview completed	1			
		Interview in-complete	2		***To agree to continue interview***	
		Interview refused	99		***To clarify causes of the refusal***	
21.2	**2nd VISIT**					**Sup**
21.2.1	**Date**		**Month**		**Day**	
21.2.2	**OUTCOME**	Responses options	**Response**	**Code**		
		Interview completed	1			
		Interview in-complete	2		***To agree to continue interview***	
		Interview refused	99		***To clarify causes of the refusal***	
21.3	**3rd VISIT**					**Sup**
21.3.1	**Date**		**Month**		**Day**	
21.3.2	**OUTCOME**	Responses options	**Response**	**Code**		
		Interview completed	1			
		Interview in-complete	2		***To agree to continue interview***	
		Interview refused	99		***To clarify causes of the refusal***	

CLARIFICATION

Please clarify why the interview was refused on the 1st visit
Please clarify why the interview was refused on the 2nd visit
Please clarify why the questionnaire was refused on the 3rd visit
Please clarify why the questionnaire is incomplete after the 3rd visit

21.4.	**Total number of questions the respondent refused to answer**	
21.4.1.	Refused Question number	
21.4.2.	Refused Question number	
21.4.3.	Refused Question number	

21.4.4.	Refused Question number						
21.4.5.	Refused Question number						

TO BE COMPLETED AFTER TEAM LEADER VALIDATION

21.5.	**Total number of refused questions being validated**			
21.6.	**Total number of questions with missing, incorrect values**			
21.6.1.	**Of which:**	**Total number of questions re-filled, corrected, resolved**		
21.6.2.		**Total number of questions not re-filled, resolved**		

TO BE COMPLETED AFTER SURVEY SUPERVISOR VALIDATION

21.7.	**Total number of refused questions being validated**			
21.8.	**Total number of questions with missing, incorrect values**			
21.8.1.	**Of which:**	**Total number of questions re-filled, corrected, resolved**		
21.8.2.		**Total number of questions not re-filled, resolved**		

TO BE COMPLETED AFTER DATABASE SUPERVISOR VALIDATION

21.9.	**Total number of refused questions being validated**			
21.10.	**Total number of questions with missing, incorrect values**			
21.10.1.	**Of which:**	**Total number of questions re-filled, corrected, resolved**		
21.10.2.		**Total number of questions not re-filled, resolved**		

SPECIAL NOTE # 1

Note taken by (name)	
Note	

INTRODUCTION

[Enum: Read carefully] *Hello. My name is X from MEC. I have come to see you to discuss a project that is being implemented by the Ministry of Agriculture with support from a donor called the Millennium Challenge Account or MCA. MEC has been contracted to conduct a survey as part of efforts to evaluate the MCA project and is independent from project implementers. Our interview will take about half an hour. During this time, we'll talk about issues relating to the project, rangeland, land, water usage, livestock, and questions regarding your herder group, it's organization and operations. With your permission, I would like to make a written record of your answers. Your answers will only be used for project purposes and kept highly confidential. The information will not be used for tax purposes. Although you will not be directly benefitted by participating in the interview, we will collect valuable information to improve project activities as an outcome of your interview. We will highly appreciate your participation. If you agree to be interviewed, let's start the questionnaire.*

☐ **Check the box if verbal consent was given by the respondent.**

22. BASIC INFORMATION

			Code	Sup
22.1.	**Start of the interview**	month day hour min		
22.2.	**Aimag**			
22.3.	**Soum**			
22.4.	**Bagh**			
22.5.	**Name of the herder group**			
22.6.	**Place of the interview**			
22.7.	Family name of the head			
22.8.	Surname name of the head			
22.9.	Phone # 1 of the respondent			
22.10.	Phone # 2 of the respondent			
	Name and phone		**Number**	**Sup**
22.11.	**How many herder households are in the group? Give the name of the head of member households below.**			

	Give the name and phone number of the head of herder group member households below.		Code		SUP
22.12.	Name of the 2nd member household head				
22.13.	Phone # of the 2nd member household head				
22.14.	Name of the 3rd member household head				
22.15.	Phone # of the 3rd member household head				
22.16.	Name of the 4th member household head				
22.17.	Phone # of the 4th member household head				
22.18.	Name of the 5th member household head				
22.19.	Phone # of the 5th member household head				
22.20.	Name of the 6th member household head				
22.21.	Phone # of the 6th member household head				

22.22.	Name of the 7th member household head			
22.23.	Phone # of the 7th member household head			
22.24.	Name of the 8th member household head			
22.25.	Phone # of the 8th member household head			
22.26.	Name of the 9th member household head			
22.27.	Phone # of the 9th member household head			
22.28.	Name of the 10th member household head			
22.29.	Phone # of the 10th member household head			

Codes to use for clarifications for questions 3.12-3.29

Household status	Code
Female headed household	1
Have a small number of livestock *(less than 100 sheep units)*	2
Other	3

23. HERDER GROUP BACKGROUND INFORMATION

#	QUESTION				Sup
23.1.	**When was the herder group first formed?**	Year	Month		
#	QUESTION		Number		Sup
23.2.	**The number of member households in your herder group** *(cross check with 3.11)*				
23.3.	**How many of your herder group member households are relatives?**				
23.4.	**How many female household heads are there in your herder group?** *(Note in 3.12-3.19 which households have a female household head.)*				
23.5.	**How many of the households in the herder group have a small number of livestock?** *(a "small number" means 100 or less livestock in sheep units, Note in 3.12-3.29 which households have a small number of livestock)*				
23.6.	**Did any of the herder group members participate in the business plan development training provided by the Peri-Urban Rangeland Project?**	**Choices**	**Response**	**Code**	**Sup**
		None	1		
		One member	2		
		Two or more members	3		
		Refused	99		

23.7.	**Did your herder group submit a business plan for the "Peri-Urban Rangeland" Project?**	**Choices**	**Response**	**Code**	**Sup**
		Yes	1		
		No	2	**If "2", "88","99"> Q4.10**	
		Don't know	88		
		Refused	99		

23.8.	**If so, which type of farming did you propose to develop/practice in the business plan**	**Response options**	**Response**	**Code**	**Sup**
		Intensive	1		
		Four season Semi-intensive	2		
		Two-Season Semi-intensive *(Cold season)*	3		
		Two season Semi-intensive *(Warm season)*	4		
		Did not submit a business plan	5		
		Don't know	88		
		Refused	99		

23.9.	**Did your herder group keep a copy of your business plan?**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
		1	2	88	99		
23.10.	**Has your herder group been chosen to be a beneficiary of the PURP?**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
		1	2	88	99		

#	**QUESTION**	**Number of animals (sheep unit)**		**Sup**
23.11.	**How big is the capacity of your herder group lease area in sheep unit?** *(Use table-1)*			

23.12.	**QUESTION**	**Type**	**Number**	**Sup**	
23.12.1.	**How many livestock does your herder group plan to graze in the lease area?**	Camel			
23.12.2.		Horse			
23.12.3.		Cattle			
23.12.4.		Sheep			
23.12.5.		Goat			

Table 1

#	**Animals**	**Coefficient**
1.	Camel	5 Sheep
2.	Horse	7 Sheep
3.	Cattle	6 Sheep
4.	Sheep	1
5.	Goat	0,9 Sheep

24. HERDER GROUP INFORMATION

#	АСУУЛТ		Yes	No	DNK	Refused	Code		Sup
24.1.	**Does your herder group livestock number exceed the grazing capacity specified by MCA-M project guidelines?**				88	99			
			If "2", "88","99" >Q5.3						
24.2.	**If so, what will your herder group do with the excess livestock?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
24.2.1.	**Choice**	Will graze livestock in the rangeland lease area			88	99			
24.2.2.		Will graze animal at pastureland of a neighbor, who is also a part of the PURP Project			88	99			
24.2.3.		Will graze animal at pastureland of neighbor, who is not a part of the PURP Project			88	99			
24.2.4.		Will graze livestock at a pastureland outside the lease area that belongs to the herder group			88	99			
24.2.5.		Will sell livestock			88	99			
24.2.6.		Other			88	99			
24.3.	**Does the herder group lease area have the following?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
24.3.1.	**Choices**	Traditional well			88	99			
24.3.2.		Well with hand pump			88	99			
24.3.3.		Well with electric pump			88	99			
24.3.4.		River, stream			88	99			
24.3.5.		Winter camp of a non-member household			88	99			
24.3.6.		Spring camp of a non-member household			88	99			

24.3.7.		Hay making area used by a non-member of the herder group			88	99			
24.3.8.		Crop area of non-member herder			88	99			
24.3.9.		Grazing area used by non-members of the herder group			88	99			
24.3.10.		Passage area used by non-members of the herder group			88	99			

#	QUESTION	Number		Sup
24.4.	**How many winter camps are located within 2km of the lease land plot?**			
24.5.	**How many spring camps are located within 2km of the lease land plot?**			
24.6.	**From how many neighbor households has your herder group obtained a signature for the "No objection "statement?**			

24.7.	**Have the herder group members received any training since its establishment?** ***(tick all applicable)***		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
24.7.1.	**Clarification**	Pastureland management			88	99			
24.7.2.		Intensive, semi-intensive livestock farming			88	99			
24.7.3.		Fodder production			88	99			
24.7.4.		Feed storage			88	99			
24.7.5.		Business and marketing			88	99			
24.7.6.		Well maintenance			88	99			
24.7.7.		Business plan development			88	99			
24.7.8.		Other			88	99			

INSERT CLARIFICATION FOR QUESTION 5.2, 5.7 HERE

Other 5.2.6																		
Other 5.7.8																		

HERDER GROUP INFORMATION (CONTINUED)

24.8.	**Do herder group members execute any of the following activities together?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
24.8.1.	**Choices**	Herding			88	99			
24.8.2.		Veterinary services			88	99			

24.8.3.		Hay making			88	99			
24.8.4.		Planting fodder			88	99			
24.8.5.		Building/repairing shelter			88	99			
24.8.6.		Build, repair well			88	99			
24.8.7.		Shear wool, cashmere			88	99			
24.8.8.		Product processing			88	99			
24.8.9.		Selling agricultural products			88	99			
24.8.10		Organization/planning			88	99			
24.8.11		Growing vegetables			88	99			
24.8.12		Other			88	99			
24.9.	**Which of the following equipment do group members share?** *(tick all applicable)*		**Yes**	**No**	**DNK**	**Refused**	**Code**		**Sup**
24.9.1.		Trucks			88	99			
24.9.2.		Cars			88	99			
24.9.3.		Tractor			88	99			
24.9.4.		Mower *(scrub cut,* Hay making equipment)			88	99			
24.9.5.		Plow			88	99			
24.9.6.		Motorbikes			88	99			
24.9.7.	**Clarification**	Cattle for transport			88	99			
24.9.8.		Fencing			88	99			
24.9.9.		Well			88	99			
24.9.10		Milking equipment			88	99			
24.9.11		Dairy processing equipment			88	99			
24.9.12		Fridges/coolers			88	99			
24.9.13		Other			88	99			
#	**QUESTION**					**Number**			**Sup**
24.10.	**How many of the herder group households live within the lease area?**								
24.11.	**Is your herder group planning to fence any of the lease area?**		**Yes**	**No**	**Hectare**		**Code**		**Sup**
24.11.1.	**Fenced area**	Fodder field area							

24.11.2.		Immediate area around shelter																
24.11.3.		Area around well																
24.11.4.		Reserved pastures																
24.11.5.		Hay making area																
24.11.6.		Crop area																
24.11.7.		Potato and vegetable growing area																
24.11.8.		Other																

24.12.	**What will your herder group use to fence the lease area?**		**Yes**	**No**	**DNK**	**Refused**	**Code**		
24.12.1	**Response choices**	Wooden stakes			88	99			
24.12.2		Concrete posts and iron mesh			88	99			
24.12.3		Wooden posts and iron mesh			88	99			
24.12.4		Other			88	99			

24.13.	**If you are going to have wooden fence, where will you will get the wood?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
24.13.1	**Location**	From forest			88	99		
24.13.2		From aimag/soum center			88	99		
24.13.3		From UB			88	99		
24.13.4		Other			88	99		

#	**QUESTION**	**m^3**	**Sup**
24.14.	**How much wood will your herder group need to build/repair fencing?**		

24.15.	**Does your herder group have a forest area near your lease area?**	**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
				88	99		

#	**QUESTION**	**MNT**	**up**
24.16.	**How much will do you think it will cost for your herder group to fence your lease area?**		

INSERT CLARIFICATION FOR QUESTION 5.8, 5.9, 5.11, 5.12, 5.13 HERE

Other 5.8.12																		
Other 5.9.13																		
Other 5.11.8																		

Other 5.12.4																		
Other 5.13.4																		

HERDER GROUP'S LIVESTOCK INFORMATION (CONTINUED)

#	QUESTION		Yes	No	DNK	Refused	Code		Sup
24.17.	Is your herder group planning to sell milk jointly as a group?				88	99			
			If "2", "88", "99" > Q5.19						
24.18.	If so, how will your herder group sell the milk?		Yes	No	DNK	Refused	Code		Sup
24.18.1.	Clarification	Sell to cooling unit			88	99			
24.18.2.		Sell to cooling transport unit			88	99			
24.18.3.		Sell to individuals			88	99			
24.18.4.		Sell to market themselves			88	99			
24.18.5.		Other			88	99			
#	QUESTION		Yes	No	DNK	Refused	Code		Sup
24.19.	Is your herder group planning to sell livestock / meat jointly as a group?				88	99			
			If "2", "88", "99">Q5.21						
24.20.	If so, how does your herder group plan to sell the livestock and meat?		Yes	No	DNK	Refused	Code		Sup
24.20.1.	Clarification	Sell to individuals			88	99			
24.20.2.		Sell to market themselves			88	99			
24.20.3.		Other			88	99			
#	QUESTION		Yes	No	DNK	Refused	Code		Sup
24.21.	Does your herder group have a pastureland management plan?				88	99			
			If "2", "88", "99"> Q5.25						
24.22.	If so, what is the term of your herder group pastureland management plan?					Response	Code		Sup
	Response choices	1 year				1			
		2-5 year				2			
		6 year and over				3			

		Don't know				88		
		Refused				99		
24.23.	**If so, is it currently being implemented?**					**Response**	**Code**	**Sup**
	Response choices	Yes				1		
		No				2	**If "1", "88", "99">Q5.25**	
		Don't know				88		
		Refused				99		
24.24.	**If it is not being implemented, could you clarify the reasons?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
24.24.1.	**Clarification**	Waiting for project commencement			88	99		
24.24.2.		Lack of financial resources			88	99		
24.24.3.		Other			88	99		

INSERT CLARIFICATION FOR QUESTION 5.18, 5.20, 5.24 HERE

Other 5.18.5																		
Other 5.20.3																		
Other 5.24.3																		

HERDER GROUP'S LIVESTOCK INFORMATION (CONTINUED)

24.25.	**Is there a forest within your herder group lease area?**		**Response**	**Code**	**Sup**
	Response choices	Yes	1		
		No	2	**If "2", ,"88", "99" >Q5.29**	
		Don't know	88		
		Refused	99		
24.26.	**If so, does your herder group have a forest management plan?**		**Response**	**Code**	**Sup**
	Response choices	Yes	1		
		No	2	**If "2", "88", "99">Q5.29**	
		Don't know	88		
		Refused	99		

24.27.	**If yes, are you implementing the forest management plan?**					**Response**	**Code**	**Sup**
	Response choices	Yes				1		
		No				2	**If "1", ,"88", "99" >Q5.29**	
		Don't know				88		
		Refused				99		
24.28.	**If you are not currently implementing the forest management plan, what are the reasons?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
24.28.1	**Clarification**	Waiting for project commencement			88	99		
24.28.2		Lack of financial resources			88	99		
24.28.3		Other			88	99		
24.29.	**For what will you use the herder group project funds?**		**Yes**	**No**	**Percent**		**Code**	**Sup**
24.29.1	**Clarification**	Building a well						
24.29.2		Building /maintaining winter camp shelter						
24.29.3		Fencing lease area						
24.29.4		Other						
24.30.	**What areas of training are needed for your herder group?**		**Yes**	**No**	**DNK**	**Refused**	**Code**	**Sup**
24.30.1	**Clarification**	Lease area management			88	99		
24.30.2		Intensive and semi-intensive livestock farming practices			88	99		
24.30.3		Fodder production			88	99		
24.30.4		Fodder storage			88	99		
24.30.5		Market and marketing			88	99		
24.30.6		Well use, maintenance and service			88	99		
24.30.7		Developing business plan			88	99		
24.30.8		Other			88	99		

INSERT CLARIFICATION FOR QUESTION 5.28, 5.29, 5.30 HERE

Other 5.28.3																		
Other 5.29.4																		

Other 5.30.8	

THANK YOU FOR YOUR PARTICIPATION!

25. SURVEY INTERVIEW VALIDATION

#	Question					Supervisor
25.1.	Interview start date, time	month	day	hour	min	
25.2.	Interview completed date, time	month	day	hour	min	
25.3.	Interview continuation period				min	
25.4.	Level of respondent's effort	Low / Moderate / High			Code	
25.5.	Enumerator name					
25.6.	Number of photos taken					
25.6.1.	1st photo ID					
25.6.2.	2nd photo ID					
25.6.3.	3rd photo ID					
25.6.4.	4th photo ID					
25.7.	Enumerator signature					
25.8.	Team Leader name					
25.9.	Number of photos validated by Team Leader (Team Leader checks and validates every single photo taken)					
25.10.	Questionnaire page numbers validated by team Leader (to be in total HH pages)					
25.11.	Team Leader signature					

SPECIAL NOTE # 2

Note taken by (name)	

Appendix E. Soum Governor Questionnaire

.....................................AIMAG

.....................................SOUM

MECPURLS0101

26. IDENTIFIERS

	INTERVIEWER		
26.1.	**Name of Interviewer**		
26.2.	**Interview date (to be filled after completing the interview)**	**day**	**month**
26.3.	**Signature of Interviewer**		
	FIELD TEAM LEADER		
26.4.	**Name of Team Leader**		
26.5.	**Date of check**	**day**	**month**
26.6.	**Signature of Team Leader**		
	SUPERVISOR		
26.7.	**Name of Supervisor**		
26.8.	**Supervisor check date**	**day**	**month**
26.9.	**Number of photos received by Supervisor**		
26.10.	**Signature of Supervisor**		
DATA ENTRY OPERATOR # 1			
26.11.	**Name of Data Entry Operator #1**		
26.12.	**Date of 1st data entry**	**day**	**month**
26.13.	**Signature of Data Entry Operator #1**		
DATA ENTRY OPERATOR # 2			
26.14.	**Name of Data Entry Operator #2**		
26.15.	**Date of 2nd data entry**	**day**	**month**
26.16.	**Signature of Data Entry Operator #2**		
	DATABASE MANAGER		
26.17.	**Name of Database Manager**		
26.18.	**Data validation check date**	**day**	**month**
26.19.	**Signature of Database Manager**		

Executed by: MEC LLC, MCDS LLC
511, Chinggis Avenue 21
14240 Ulaanbaatar
Tel: 11-319672

QUALITY CONTROL SHEET

MECPURLS0102

	SURVEY RECORDS				
	ATTEMPTS				
26.20.	**1ST ATTEMPT**				**Sup**
26.20.1.	**Date**		**month**	**day**	
26.20.2.	**Meeting results**	Response options	**Response**	**Code**	
		Complete responses	1		
		Incomplete responses	2	**To agree to continue response**	
		Refused to respond	3	**To clarify reasons of refusal**	
26.21.	**2nd ATTEMPT**				**Sup**
26.21.1.	**Date**		**month**	**Day**	
26.21.2.	**Meeting results**	Response options	**Responses**	**Code**	
		Complete responses	1		
		Incomplete responses	2	**To agree to continue response**	
		Refused to respond	3	**To clarify reasons of refusal**	
26.22.	**3rd ATTEMPT**				**Sup**
26.22.1.	**Date**		**month**	**Day**	
26.22.2.	**Meeting results**	Response options	**Responses**	**Code**	
		Complete responses	1		
		Incomplete responses	2	**To agree to continue response**	
		Refused to respond	3	**To clarify reasons of refusal**	

CLARIFICATION

Please clarify the reasons of refusal to respond at 1st attempt
Please clarify the reasons of refusal to respond at 2st attempt
Please clarify the reasons of refusal to respond at 3st attempt
Please clarify the reasons of incomplete responses at 3rd attempt

	TO BE FILLED AFTER INTERVIEW IS COMPLETED BY INTERVIEWER							
26.23.	**The total number of unexpected missing/incorrect values**							
26.23.1.	The question # with unexpected missing/incorrect values							
26.23.2.	The question # with unexpected missing/incorrect values							
26.23.3.	The question # with unexpected missing/incorrect values							
26.23.4.	The question # with unexpected missing/incorrect values							
26.23.5.	The question # with unexpected missing/incorrect values							
26.23.6.	The question # with unexpected missing/incorrect values							
26.23.7.	The question # with unexpected missing/incorrect values							
26.23.8.	The question # with unexpected missing/incorrect values							
26.23.9.	The question # with unexpected missing/incorrect values							
26.23.10.	The question # with unexpected missing/incorrect values							

TO BE FILLED AFTER FIELD TEAM LEADER CHECK

26.24.	**Interviewer review of unexpected missing/incorrect values**			
26.25.	**The total number of missing/incorrect values**			
26.26.	Out of which:	Number of unexpected missing/incorrect values resolved		
26.27.		Number of unexpected missing/incorrect values unresolved		

TO BE FILLED AFTER SUPERVISOR CHECK

26.28.	**Review of unexpected missing/incorrect values**			
26.29.	**The total number of unexpected missing/incorrect values**			
26.30.	Out of which:	Number of unexpected missing/incorrect values resolved		
26.31.		Number of unexpected missing/incorrect values unresolved		

TO BE FILLED AFTER DATABASE MANAGER CHECK

26.32.	**Review of unexpected missing/incorrect values**			
26.33.	**The total number of unexpected missing/incorrect values**			
26.34.	Out of which:	Number of unexpected missing/incorrect values resolved		
26.35.		Number of unexpected missing/incorrect values unresolved		

SPECIAL NOTE # 1

	Note taken by (name)																													
	Note																													

INTRODUCTION

Hello, My name is …… from …… I have to come to see you to discuss a project that is being implemented by the Ministry of Food and Agriculture with support from a donor called the Millennium Challenge Account or MCA. Discussion will take about one hour. During this time, I would like to ask you questions about issues related to the project and to the governance of land, livestock, water, and natural resources. With your permission, I would like to record your responses in this questionnaire. The information you provide will only be used for project planning purposes and will be kept confidential and analyzed only by the MCA analysis unit. The information will not be given to the government except by grouping people together or making information carefully anonymous and not traceable to you. I cannot guarantee that you will receive direct or immediate benefits from participating in the survey, although I believe your participation will improve the work being carried out by the project and will be highly appreciated.

27. BASIC INFORMATION

			Code	Sup
27.1.	**Start of the interview**	**month** **day** **hour** **minute**		
27.2.	**Aimag**			
27.3.	**Soum**			
27.4.	**Telephone # of Soum governor office**			
27.5.	**Number of respondents in the survey**			
27.5.1.	**1st respondent**		**Code**	**Sup**
27.5.1.1.	Attempt number	**Please clarify from Questions # 2.1-2.3**		
27.5.1.2.	Name			
27.5.1.3.	Official position			
27.5.1.4.	Telephone number			
27.5.2.	**Other presented at meeting**		**Code**	**Sup**
27.5.2.1.	Attempt number	**Please clarify from Questions # 2.1-2.3**		
27.5.2.2.	Name			
27.5.2.3.	Official position			
27.5.2.4.	Telephone number			
27.5.3.	**Other presented at meeting**		**Code**	**Sup**
27.5.3.1.	Attempt number	**Please clarify from Questions # 2.1-2.3**		
27.5.3.2.	Name			

27.5.3.3.	Official position			
27.5.3.4.	Telephone number			
27.5.4.	**Other presented at meeting**		**Code**	**Sup**
27.5.4.1.	Attempt number	**Please clarify from Questions # 2.1-2.3**		
27.5.4.2.	Name			
27.5.4.3.	Official position			
27.5.4.4.	Telephone number			
27.5.5.	**Other presented at meeting**		**Code**	**Sup**
27.5.5.1.	Attempt number	**Please clarify from Questions # 2.1-2.3**		
27.5.5.2.	Name			
27.5.5.3.	Official position			
27.5.5.4.	Telephone number			

M E C P U R L S 0 1 0 5

28. DEMOGRAPHY AND MIGRATION

	NUMBER OF RESIDENTS	**Number**	**Sup**
28.1.	How many registered permanent residents resided in your soum as of 31 Dec 2005?		
28.2.	How many unregistered temporary residents resided in your soum as of 31 Dec 2005?		
28.3.	How many registered permanent residents resided in your soum as of 31 Dec 2009?		
28.4.	How many unregistered temporary residents resided in your soum as of 31 Dec 2009?		
	NUMBER OF HOUSEHOLDS	**Number**	**Sup**
28.5.	How many registered permanent households resided in your soum as of 31 Dec 2005?		
28.6.	How many unregistered temporary households resided in your soum as of 31 Dec 2005?		
28.7.	How many registered permanent households resided in your soum as of 31 Dec 2009?		
28.8.	How many unregistered temporary households resided in your soum as of 31 Dec 2009?		
	NUMBER OF HERDER HOUSEHOLDS		
28.9.	How many registered permanent herder households resided in your soum as of 31 Dec 2005?		
28.10.	How many registered permanent herder households resided in your soum as of 31 Dec 2009?		
	NUMBER OF HOUSEHOLDS WINTERING OVER	**Number**	**Sup**
28.11.	How many households of your soum wintered over in another soum during 2005/2006 winter ?		
28.12.	How many households of your soum wintered over in another soum during 2009/2010 winter ?		
28.13.	How many migrant households wintered over in your soum during 2005/2006 winter?		
28.14.	How many migrant households wintered over in your soum during 2009/2010 winter?		
	NUMBER OF HOUSEHOLDS MIGRATING FOR SUMMER CAMPING	**Number**	**Sup**
28.15.	How many households of your soum moved for summer camping in another soum in 2005?		
28.16.	How many households of your soum moved for summer camping in another soum in 2010?		

28.17.	How many households migrated over to your soum for summer camping in 2005?					
28.18.	How many households migrated to your soum for summer camping in 2010?					

MIGRATION, PUBLIC SERVICE ACCESS

		Aimags	**Code**	**Sup**
28.19.	**What aimags do migrants tend to come from?**	.		
		.		
		.		
		.		
		.		

		Types of services	**Yes**	**No**	**Code**	**Sup**
28.20.	**What are the basic Soum services used by migrants (select as many as they want)**	Usage of the winter and/or spring camps				
		Pastures				
		Well, water				
		Health services				
		Kids education services				
		Administrative services				
		Others (clarify)				
		Others (clarify)				
		Others (clarify)				

NUMBER OF PROJECT HOUSEHOLDS AND NEIGHBORS		**Number**	**Sup**
28.21.	How many households are project beneficiary households?		
28.22.	How many households are neighbors?		

PLEASE WRITE CLARIFICATION FOR QUESTION # 4.20 HERE

Clarification # 1	
Clarification # 2	
Clarification # 3	

INFORMATION ON LIVESTOCK

	Number of livestock	31.12.2009	30.06.2010	Sup
28.23.	Camels			
28.24.	Horses			
28.25.	Cattle			
28.26.	Sheep			
28.27.	Goats			
28.28.	Pigs			
28.29.	Poultry			

29. LAND, PASTURE

#	Question			Hectare	Sup
29.1.	**Total land area**				
29.1.1.	Out of which:	Forest			
29.1.2.		Pasture			
29.1.3.		Out of which:	Poor quality/degraded		
29.1.4.		Hay land			
29.1.5.		State reserved parks			
29.1.6.		Locally protected area			
29.1.7.		Mines (geological and mining operation)			
29.1.8.		Out of which:	With mining license "A"		
29.1.9.			With geological license "B"		
29.1.10.		Crop area			
29.1.11.		Other			
29.1.12.	**Total (check against 6.1)**				

#	Question		Instruction	Sup
29.2.	**What proportion of total soum land is thought to have been impacted by desertification?**		**if "0" go to Q # 7** **if "99" go to Q # 7** **if "88" go to Q # 7**	

		Options	Answer	Code	Sup
29.3.	**What is the desertification trend during last five years?(select one)**	None	1		
		Slight	2		
		Moderate	3		
		Severe	4		
		Very severe	5		
		Don't know	88		
		Refused to respond	99		

	Question	Options	Answer	Code	Sup
29.4.	**What is the deforestation trend during last five years? (select one)**	Have no forest	1		
		None	2		
		Slight	3		
		Moderate	4		
		Severe	5		
		Very severe	6		
		Don't know	88		
		Refused to respond	99		
	Question	**Options**	**Answer**	**Code**	**Sup**
29.5.	**What is the pasture degradation trend during last five years? (select one)**	No change	1		
		Slight	2		
		Moderate	3		
		Severe	4		
		Very severe	5		
		Don't know	88		
		Refused to respond	99		
	Question	**Options**	**Answer**	**Code**	**Sup**
29.6.	**What is the hay making trend during last five years? (select one)**	Do not make hay	1		
		Significant decrease	2		
		Slight decrease	3		
		No change	4		
		Slight increase	5		
		Significant increase	6		
		Don't know	88		
		Refused to respond	99		

30. LAND DISPUTES AND CONFLICT RESOLUTION

	Question		Number		Instruction	Sup
30.1.	**How many land disputes have been recorded in the soum in the last 12 months?**				**"0" > Q # 8** **"99" > Q # 8** **"88" > Q # 8**	
30.2.	**What are the main causes of the disputes?**					
30.2.1.	Out of which :	Pasture related				
30.2.2.		Wells				
30.2.3.		Hay making areas				
30.2.4.		Mines				
30.2.5.		Other land usage license				
30.2.6.		Other (clarify)				
30.2.7.		Don't know causes				
30.2.8.	Total (check against 7.1)					
30.3.	**Resolution of the land disputes**		**Number**			**Sup**
30.3.1.	Out of which:	Number of resolution of pasture related disputes				
30.3.2.		Wells				
30.3.3.		Hay making areas				
30.3.4.		Mines				
30.3.5.		Other land usage license				
30.3.6.		Being resolved under other dispute resolutions				
30.3.7.		Don't know causes				

PLEASE PROVIDE CLARIFICATION OF QUESTION # 7.2.6 HERE

MECPURLS0110

	PLEASE SPECIFY THE FIVE MOST SIGNIFICAT LAND DISPUTES	
30.4.	**1ST DISPUTE**	**Sup**

30.4.1.	**Parties involved in land disputes**	.	
		.	
		.	
		.	
		.	

30.4.2.	**Elaborate the nature of the dispute**	**Code**	**Sup**

#	**Question**		**Answer**	**Code**	**Sup**
30.4.3.	**Status of resolution**	Resolved	1		
		Not resolved	2		
		Don't know	88		
		Refused to respond	99		

30.4.4.	**What factors made effective dispute resolution possible, if not what were the causes?**	**Code**	**Sup**

M E C P U R L S 0 1 1 1

30.5.	**2nd DISPUTE**		**Sup**
30.5.1.	**Parties involved in land disputes**	.	
		.	
		.	
		.	

		.			
30.5.2.	**Elaborate the nature of the dispute**			**Code**	**Sup**
#	**Question**		**Answer**	**Code**	**Sup**
30.5.3.	**Status of resolution**	Resolved	1		
		Not resolved	2		
		Don't know	88		
		Refused to respond	99		
30.5.4.	**What factors made effective dispute resolution possible, if not what were the causes?**			**Code**	**Sup**
30.5.5.					

30.6.	**3rd DISPUTE**				**Sup**
30.6.1.	**Parties involved in land disputes**	.			
		.			
		.			
		.			
		.			
30.6.2.	**Elaborate the nature of the dispute**			**Code**	**Sup**

#	Question		Answer	Code	Sup
30.6.3.	**Status of resolution**	Resolved	1		
		Not resolved	2		
		Don't know	88		
		Refused to respond	99		
30.6.4.	**What factors made effective dispute resolution possible, if not what were the causes?**			**Code**	**Sup**

MECPURLS0113

30.7.	**4th DISPUTE**				**Sup**
30.7.1.	**Parties involved in land disputes**	.			
		.			
		.			
		.			
		.			
30.7.2.	**Elaborate the nature of the dispute**			**Code**	**Sup**
#	**Question**		**Answer**	**Code**	**Sup**
30.7.3.	**Status of resolution**	Resolved	1		
		Not resolved	2		

		Don't know	88	
		Refused to respond	99	
30.7.4.	**What factors made effective dispute resolution possible, if not what were the causes?**			**Code** **Sup**

30.8.	**5th DISPUTE**			**Sup**
30.8.1.	**Parties involved in land disputes**	. . . . .		
30.8.2.	**Elaborate the nature of the dispute**			**Code** **Sup**
#	**Question**		**Answer**	**Code** **Sup**
30.8.3.	**Status of resolution**	Resolved	1	
		Not resolved	2	
		Don't know	88	
		Refused to respond	99	
30.8.4.	**What factors made effective dispute resolution possible, if not what was the causes?**			**Code** **Sup**

31. LAND LEASE/USAGE

	Question	Number	Instruction	Sup
31.1.	How many land lease/usage certificates have been issued by soum as of 31 June 2010?		if "0" go to Q #9	
31.2.	Out of which how many are land lease certificates?		If "0" go to Q #9	

	Question	Clarification	Code	Sup
31.3.	What are the procedures used to introduce lease/usage certificates?			

		Options	es	o	ode	up
31.4.	To what extend do you think the lease/usage certificates have helped investments? (multiple answers allowed)	Construction of wells				
		Construction of winter/summer camps				
		Hay making				
		Fodder preparation				
		Other (clarify)				
		Other (clarify)				
		Other (clarify)				
		No investment at all				
		Don't know				
		Refused to respond				

		Options	Answers	Code	Sup
31.5.	To what extend do you think the				

	lease/usage certificates have reduced conflicts?	Made worse	1	
		No change	2	
		Helped to reduce	3	
		Don't know	88	
		Refused to respond	99	

MECPURLS0116

		Options	**Answers**	**Code**	**Sup**
31.6.	**To what extend do you think the leases and usage certificate have helped mitigate land degradation and lead to more effective utilization of land?**	Made worse	1		
		No change	2		
		Made improvements	3		
		Don't know	88		
		Refused to respond	99		

PLEASE PROVIDE CLARIFICATION OF QUESTION # 8.4. HERE

Clarification # 1	
Clarification # 2	
Clarification # 3	

MECPURLS0117

32. DONOR PROGRAMS AND DEVELOPMENT PROJECTS

32.1.	**How many donor programs and development projects are currently being implemented in your soum?**	**Number**	**Sup**
32.2.	**1st PROJECT**		
32.2.1.	**Name of donor**	**Code**	**Sup**
32.2.2.	**Name of project**	**Code**	**Sup**
32.2.3.	**Purpose of project**	**Code**	**Sup**

32.2.4.	**Please clarify activities**	**Code**	**Sup**
32.2.5.	**Resources provided (MNT)**		**Sup**
	MNT		
	# **Question**	**Number**	
32.2.6.	**Number of target beneficiaries**		
32.2.7.	**Out of which, number of project and neighboring household members**		

MECPURLS0118

32.3.	**2nd PROJECT**		
32.3.1.	**Name of donor**	**Code**	**Sup**
32.3.2.	**Name of project**	**Code**	**Sup**
32.3.3.	**Purpose of project**	**Code**	**Sup**
32.3.4.	**Please clarify activities**	**Code**	**Sup**

32.3.5.	**Resources provided (MNT)**	**Sup**
	MNT	
#	**Question**	**Number**
32.3.6.	**Number of target beneficiaries**	
32.3.7.	**Out of which, number of project and neighboring household members**	

32.4.	**3rd PROJECT**		
32.4.1.	**Name of donor**	**Code**	**Sup**
32.4.2.	**Name of project**	**Code**	**Sup**
32.4.3.	**Purpose of project**	**Code**	**Sup**
32.4.4.	**Please clarify activities**	**Code**	**Sup**
32.4.5.	**Resources provided (MNT)**		**Sup**
	MNT		
#	**Question**	**Number**	
32.4.6.	**Number of target beneficiaries**		

32.4.7.	**Out of which, number of project and neighboring household members**					

32.5.	**4th PROJECT**		
32.5.1.	**Name of donor**	**Code**	**Sup**
32.5.2.	**Name of project**	**Code**	**Sup**
32.5.3.	**Purpose of project**	**Code**	**Sup**
32.5.4.	**Please clarify activities**	**Code**	**Sup**
32.5.5.	**Resources provided (MNT)**		**Sup**
	MNT		

#	Question	Number
32.5.6.	**Number of target beneficiaries**	
32.5.7.	**Out of which, number of project and neighboring household members**	

32.6.	**5th PROJECT**		
32.6.1.	**Name of donor**	**Code**	**Sup**
32.6.2.	**Name of project**	**Code**	**Sup**

32.6.3.	**Purpose of project**	**Code**	**Sup**
32.6.4.	**Please clarify activities**	**Code**	**Sup**
32.6.5.	**Resources provided (MNT)**		**Sup**
	MNT		

#	Question	Number	
32.6.6.	**Number of target beneficiaries**		
32.6.7.	**Out of which, number of project and neighboring household members**		

MECPURLS0122

33. BUSINESS ACTIVITIES

	Question	Number	Instruction	Sup
33.1.	**How many enterprises (shareholding companies, LLC, cooperatives) actively operating in your soum?**		**If "0" go to Q10.3**	
33.2.	**Out of which, how many are involved in livestock production and sale?**		**If "0" go to Q10.3**	

		Main operation	Number	Sup
33.2.1.	Out of which, please specify the main operation?	Processing meat products		
33.2.2.		Intestines processing		
33.2.3.		Dairy products processing		
33.2.4.		Felt, felt products processing		
33.2.5.		Wool, cashmere processing		
33.2.6.		Dairy farm		
33.2.7.		Pig farm		

33.2.8.		Poultry farm						
33.2.9.		Others (clarify)						
33.2.10.		Others (clarify)						
	Question		**Number**				**Instruction**	**up**
33.3.	**How many individuals are operating business activities in your soum?**						**If "0" complete the question**	
33.4.	**Out of which, how many are operating business activities in livestock production and sale?**						**If "0" complete the question**	
		Main operation	**Number**				**Sup**	
33.4.1.	Out of which, please specify the main operation?	Processing meat products						
33.4.2.		Intestines processing						
33.4.3.		Dairy products processing						
33.4.4.		Felt, felt products processing						
33.4.5.		Wool, cashmere processing						
33.4.6.		Dairy farm						
33.4.7.		Pig farm						
33.4.8.		Poultry farm						
33.4.9.		Others (clarify)						
33.4.10.		Others (clarify)						

PLEASE PROVIDE CLARIFICATION HERE

Q 10.2.9	**Clarification # 1**																				
Q 10.2.10	**Clarification # 2**																				
Q 10.4.9	**Clarification # 1**																				
Q 10.4.10	**Clarification # 2**																				

THANK YOU!

MECPURLS0123

34. VALIDATION

	Question															**Sup**
34.1.	**Start of the interview**			**month**			**Day**			**hour**			**minute**			
34.2.	**End of the interview**			**month**			**Day**			**hour**			**minute**			
34.3.	**Duration of the interview**												**minute**			
34.4.	**Evaluation of the respondents**							Bad						**Code**		

		Average Good	
34.5.	**Name of the interviewers**		
34.6.	**Number of photos taken**		
34.6.1.	**Photo # 1**		
34.6.2.	**Photo # 2**		
34.6.3.	**Photo # 3**		
34.6.4.	**Photo # 4**		
34.7.	**Signature of interviewer**		
34.8.	**Name of Field team leader**		
34.9.	**Review of photos taken**		
34.10.	**Review of questionnaire page numbers (total of 23 pages)**		
34.11.	**Signature of Field team leader**		

SPECIAL NOTE # 2

Note taken by (name)																											

XIII. Bibliography

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