Pastures, Conservation and Climate Action, Mongolia

Annual report years 2 and 3 (01.04.2016-31.03.2017; 01.04.2017-31.03.2018)

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Summary

Project overview	
Reporting period	April 2016-March 2017 April 2017-March 2018
Geographical areas	3 herder community (*heseg*) areas at sites across Mongolia: i) Hongor Ovoo *heseg*, Ikh Tamir *soum* (district), Arkhangai *aimag* (region) (36,756ha) ii) Ikh Am *heseg*, Undurshireet *soum*, Tuv *aimag* (18, 241 ha) iii) Dulaan Kharkhain *heseg*, Bogd *soum*, Bayankhongor *aimag* (22,485ha)
Technical specifications in use	Technical Specification as set out in Part G of approved PDD (20/8/2015) and linked to Plan Vivo Climate Benefit Quantification Methodology 'Carbon sequestration through improved grassland and natural resources management in extensively managed grasslands' Version 1 (Annex 8, PDD)

Project indicators	Historical (Year 1 April 2015-March 2016)	Added/ Issued this period (April 2016-March 2018)	Total
No. smallholder households with PES agreements	0	0	0
No. community groups with PES agreements (where applicable)	3	0	3
Approximate number of households (or individuals) in these community groups	174	0	124*[1]
Area under management (ha) where PES agreements are in place	77482	0	77482
Total PES payments made to participants (USD)	0	$317.25 + $9209.77 = $9527.02	$9527.02
Total sum held in trust for future PES payments (USD)	0	$8912.40	$8912.40 [2]
Allocation to Plan Vivo buffer (tCO_2)	4,793	0	4,793
Maximum Saleable emissions reductions (tCO_2)	92,769	0	92,769
Saleable emissions reductions tCO2)	20,015	45,567	65,582
Unsold Stock at time of Submission (PVC)			15,965
Plan Vivo Certificates available for future issuance			**45,567**
Buffer credits available for future allocation			**7,161**
Plan Vivo Certificates (PVCs) issued to date			**20,015**
Plan Vivo Certificates requested for issuance in this period			**0**
Total PVCs issued (including this report)			**20,015**

Part A: Project updates

A1 Key events

1. This is 50HH fewer than in Year 1. This in part reflects a reclassification by official soum statistics of households without their own animals (e.g. dependent parents, grandparents etc.). These are no longer officially classified as herding households. In addition, 17 herding households from Hongor Ovoo and 7 from Ikh Am have moved to other areas.
2. By the time of publication (Feb 2019), these funds had also been disbursed on the basis of year 3 monitoring results.

Participating herder groups (heseg) showed their commitment to the project through continued implementation of planned activities across a range of pasture management, livelihood and conservation issues. They even expanded their activities beyond those planned in the PDD to include additional conservation and livelihood support activities, as specified in Sections A2 and E, below. Sales of certificates from the project in Year 3 (April 2017-March 2018; total sales summarised in preceding Project Indicators summary) were important milestones, with herders realising direct financial benefit from the activities they had been carrying out across project sites for the first time. Proceeds from certificate sales (less agreed management costs of 30%) were distributed equally across the participating project sites, to be allocated to activities as agreed by the herder groups (heseg) themselves.

These funds were primarily used by herder groups to support winter preparations e.g. through purchase of fodder, and were very well received as important contributions to this key activity.

The Ikh Am PUG herders receiving the project funding of 5,555,000 tugrug from Plan Vivo, February 2018.

A2 Successes and challenges

The main success has been in the continued functioning of the project and commitment of herders to it, given that this is the first of its kind in Mongolia, with its focus on rangeland carbon sequestration and a number of associated activities. The unfamiliar funding model, based on reward in exchange for delivery against mutually agreed targets, presented a further challenge, as did the fact that initial sales and thus payments to herder groups took some time to materialise. Nonetheless, participating heseg continued to undertake agreed activities and their commitment to the project constitutes a real success, as does the materialisation of certificate sales and recent flow of financial benefits to the herders. Highly variable climatic conditions in Years 2 and 3 had some effect on herders' compliance with agreed pasture management plans and stocking rates in some instances. For example in summer 2017 (Year 3) in participating sites many heseg members moved out of their typical pasture areas for part of the year due to drought. This had the effect of reducing stocking rates in the local areas, through livestock being relocated elsewhere. This may initially look problematic in terms of leakage. However, as highlighted in Section G6, p.57 of the original PDD, such movement outside of usual seasonal grazing areas in times of drought or dzud (natural disaster) has long been an established traditional practice in Mongolian pastoralism and is not, nor should it be, something that the PV project seeks to curtail. Where significant movement of incoming herders to project areas and/or off site migration of heseg members was known to be a

common phenomenon in particular seasonal pastures e.g. summer pastures for Ikh Am, these were excluded from carbon modelling calculations from the outset, as part of our conservative approach. Elsewhere, as for Hongor Ovoo heseg, any readjustment to PV payments (e.g. to reflect participants' use of pastures elsewhere and to compensate 'hosts') was indicated as one possible mechanism should host areas feel this was indicated. No such requests or indications have been received to date. Conversely, in Year 2, favourable climatic conditions and low market prices for livestock products together mediated against reductions in livestock numbers, with some increases noted at all sites. Overall, the impact of changes in mobility and stocking rates over the Year 2 and 3 period and across the 3 participating sites in relation to carbon sequestration calculations is detailed in Section C, below. Extensive biodiversity monitoring proved a challenge at some sites, as specified in Sections B and E, below, where slow initial certificate sales imposed financial constraints on what was possible. Nonetheless, participating heseg at all sites were active and successful in taking on new roles in governance and decision-making for conservation, as well as in conducting targeted monitoring of key sites and species.

A3 Project developments

As stated in our Year 1 Annual Report, the project validator did not submit any formal CARs. However, he did make the following observations in the Validation Report, which we took as points for action:

1. '*Herder groups require additional training required on several topics according to the specifics of the herder groups. For example, technical training on planting tree among the herder group that represent desert steppe environments'*. This observation was made in reference to requirements for permanence (Item 2.4, Validation Report). In response MSRM have planned and instituted training on tree seedling production and planting before the main planting season in 2016, for the relevant *heseg*. Further training was also provided to other *heseg* and in mapping and recording techniques for herder group leaders, to enable them to better train and support their own members. In addition, throughout Years 2 and 3, MSRM conducted multiple trainings on pasture degradation and ways to reduce this, on rotational pasture use and on carbon sequestration.

2. '*MSRM need to provide continued training and ensure that herder and local officials are gaining knowledge from land management techniques'*. This observation was made in reference to requirements for monitoring (Item 2.7, Validation Report). In response, MSRM instituted further training in land management techniques for *heseg* members in summer 2016, and in 2017, as outlined above. In addition, training was also conducted with local officials, concerning collaboration with herders, making agreements with them and supporting herders' cooperation and collective action.

Table 2: Progress against corrective actions

Document	Corrective action	Activity against this
Validation Report	Section 2.4: Permanence Observation by Validator: additional training required	MSRM provided further ongoing training in specific activities with herder groups in Summer 2016

	according to the specific planned actions of the herder groups (e.g. tree planting)	(May- September) and in 2017 (Years 2 and 3).
Validation Report	Section 2.7: Monitoring Observation by Validator: MSRM need to provide continued training and ensure that herders and local officials are gaining knowledge from land management techniques.	MSRM provided further ongoing training with herder groups in Summer 2016 (May- September) and in 2017. Local officials were also invited to specific training events, and training materials and project outputs shared with all parties.

A4 Future Developments

We are not planning any further expansion of activities in this initial commitment period (2015-2019) at this stage. In our view it is important to test the approach in the existing sites first for the initial four year commitment period before extending this to other sites, in spite of expressions of interest from a number of potential investors in other sites. As we move towards the end of the four year project period, we are working with our existing PCCA herder groups to determine whether and in what form they wish to continue the project across the existing areas. All 3 groups have recently stated clearly that they do wish to continue to a second commitment period. However, details have yet to be discussed and agreed. These discussions are now being undertaken between MSRM and participating heseg and will continue over the next few months, with a view to finalising plans for future commitments before the end of 2018.

We have also remained in contact with herders of Dert *heseg*, Ulziit *soum*, in the Gobi region. These were one of four original herder groups who wanted to develop activities under the PV standard, the other three being listed above. Dert progressed part way through this process, but adverse weather conditions and the absence of many herders on long distance migration during key planning periods precluded their full engagement with the PV process during the initial project set up. They have not progressed their Plan Vivo in the interim, but will be engaged in conversations about possible inclusion in a Phase 2 commitment period.

Part B: Project activities

B1 Project activities generating Plan Vivo Certificates

The Technical specification is as set out in Part G of the approved PDD (20/8/2015) and linked to Plan Vivo Climate Benefit Quantification Methodology 'Carbon sequestration through improved grassland and natural resources management in extensively managed grasslands' Version 1 (Annex 8, PDD), hereafter referred to as TS1. This is linked to the development and implementation of new schedules for annual pasture use by the *heseg*, designed to reduce grazing pressure and enhance carbon sequestration through enhanced seasonal mobility, and in some cases through reductions in stocking rates. This is as specified for each *heseg* in the PDD Annex 5 Management Plans. Modelled carbon reductions in Years 2 and 3 for each site are as specified in Section C, Table 5 below. A further indicator here, as set out in the Annex 5 Management Plans, was the percentage of herders who complied with the agreed schedule, with at least 80% required to do so for all sites in Year 2 and 90% for Year 3. In addition, as part of the project design, herder groups (*heseg*) each identified a range of other activities, not specifically related to carbon sequestration, against which progress was to be evaluated (see B2 below)

Table 3: Project activity summary

Name of technical	Area (Ha)	No herding	No

specification		households	Community Groups
TS1	77,482 ha (total pasture areas for all three sites – see Project Indicators, above)	124	3

The number of participating households has decreased by comparison with Year 1. This partly reflects movement of 17 households from Hongor Ovoo and 7 from Ikh Am to other areas. It also reflects new census-based calculation methods, which only identify families with their own livestock herds as 'herding households', thus excluding dependent and co-resident families without animals, even where these remain effectively part of the heseg.

There have been no new technical specifications submitted to the PV Foundation for approval, nor are there any in development. The project has not expanded to new communities or geographical areas in this reporting period.

B2 Project activities in addition to those generating Plan Vivo Certificates

The activities reported are those set out in the final PDD. These involve not only carbon sequestration through improved grazing management practices, but also specific activities linked to biodiversity conservation and livelihoods/ wellbeing. These are all specified in the site specific management plans in Annex 5 of the PDD and summarised below. Heseg performance against agreed indicators and in relation to these activities is analysed in Section E.

For Hongor Ovoo heseg: In Years 2 and 3 of the project these entailed:

- Completion of activities for herder group partnerships for environmental protection, as set up in Year 1, with activities as agreed with local administration for Years 2 and 3;
- Cooperation in groups for forest cleaning and protection, with further 2ha cleaned by end 2016 and another 2ha by end 2017, in addition to the initial 2ha cleaned in Year 1. Repeat vegetation and bird surveys following ZSL methodology were also planned for Years 2 and 3;
- Herders' increased participation in decision-making on environmental issues (e.g. licences for wood cutting), with herders' committee established and recognised by local administration in Year 1 and indicators in subsequent years as set by that committee
- The planting of some 200 saplings in soum forest areas by the end of Year 3, following establishment of a tree nursery by December of Year 2 (April 2016-end March 2017)
- Repair of fences and winter shelters, with 5 fences/ shelters repaired in Year 2, and a further 5 in Year 3, in addition to those repaired in Year 1
- Collaborative production and marketing of local brand milk products, with evidence of collaboration on processing and marketing of products in Year 2 and the establishment of a cooperative in Year 3
- Enhanced household income from gathering and sale of wild fruit and nuts, by end 2016 (Year 2) and in subsequent years
- Combing of yak wool and delivery to markets, with enhanced household income from this source by end 2016 (Year 2) and subsequent years. Monitoring results against these activities and associated indicators are summarised in Part E, Table 8.

For Ikh Am heseg: In Years 2 and 3 of the project these additional activities entailed:

- Digging hand wells, with one well to have been completed by the end of 2016, (Year 2) in addition to that completed in Year 1 (no target for Year 3);
- Protection of red deer, argali, marmot and Mongolian gazelle, with repeated manned

surveys of target species by herders in Years 2 and 3[3]

- Protection of bushes at Ovootiin and cleaning area of rubbish on 3 occasions per year in Years 2 and 3, plus planting of additional 0.5ha in each of Years 2 and Year 3
- Repair of fences/ winter or spring shelters, with 10 fences/ shelters per annum;
- Collaborative production and marketing of milk and curd in season, with enhanced household income from this source by end 2016 and in subsequent years;
- Production of felt and delivery to markets, with 150m felt produced and marketed in Year 2 and 200m in Year 3, linked to enhanced household income;
- Hay preparation, with hayfield established by end 2015 and increased % of households with adequate hay provision in Years 2 and 3 and in accordance with targets set in Year 1. Monitoring results against these activities and associated indicators are summarised in Part E, Table 8.

For Dulaan Kharkhain herder group: In Years 2 and 3 of the project these additional activities entailed:

- Protection of argali, ibex and goitered gazelle, with manned surveys in each year;
- Protection of saxaul forest, with numbers of cut stumps decreased by 25% in Year 2 by comparison with Year 1 and 50% by comparison with Year 1 by the end of Year 3;
- Planting of sea buckthorn, with permission from local administration and planting of initial 1ha area by end Year 2, extending to 1.5ha by end Year 3;
- Repair of fences/winter or spring shelters, with 5 fences/ shelters in Year 2, in addition to those repaired in Year 1, and a further 5 in Year 3;
- Enhanced income through vegetable production in Years 2 and 3, following establishment of a greenhouse in Year 1;
- Hay preparation, with increased percentage of herders with adequate hay provision in Years 2 and 3, and according to targets developed in Year 1. Monitoring results against these activities and associated indicators are summarised in Part E, Table 8.

Part C: Plan Vivo Certificate issuance submission

C1 Contractual statement

The project continues to be based on signed PES agreements with participants complying with all the minimum requirements stated in these agreements.

C2 Issuance request

No further issuance of credits is requested at this stage, while there are still a number of unsold credits from the initial issuance. The purpose of this Annual report is simply to detail the progress made against the management schedule, and to demonstrate that the project is on track to deliver the estimated emissions reductions. It should be noted that the calculations now include those generated at Dulaan Kharkhain in Year 1 which were not previously available/issued (see Table 5 and accompanying narrative below). These are based on modelled C sequestration in Years 2 and 3. For Year 2, and as discussed in Section E below, despite some increases in livestock numbers at all sites, these were partially offset by higher pasture yields and greater mobility of herders. This resulted in some carbon sequestration being achieved, albeit below the maximum volumes initially modelled in the PDD (see Annex 2 tables, this report). Significant reductions in livestock numbers were recorded at all sites in Year 3 by comparison with Year 2 levels, and in most cases compared to baselines (see Section

[3] The initial plan was for these to be supported by camera trap surveys by ZSL. However, as noted in the ZSL report, Annex 5 of Year 1 Annual Report, camera trapping proved to be less effective than transect surveys, and was thus omitted following Year 1

E), resulted in further sequestration akin to modelled volumes.

In order to ensure the results are calculated very conservatively, the project will only issue credits in accordance with recorded grazing pressures, as can be seen below:

Table 5: Statement of tCO_2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period 04/16 – 03/18

Area ID	Total Area (ha)	Maximum Total ER's (Yrs 1-4) acc. to CENTURY model	Maximum Saleable ER's (Yr 1-4)	Estimated % achieved (Yr 1-3)	Total ER's achieved (Yr 1-3) acc. to monitoring results.	Saleable Ers available for issuance (Yr 1-3)	ER's available for buffer contribution (Yr 1-3)	ER's Issued as PVCs (Yr 1)	Allocated to Buffer account (Yr 1)	Saleable ER's available for future issuances	ER's available for future buffer allocation
		a	b	c=a*70%	d	e=d* 80 or 90%	f=d* 10 or 20%	g	h	i=e-g	j=f-h
Hongor Ovoo	36756	51139	46025	35797 (70%)	35533	31980	3553	11011	1688	20969	1865
Ikh Am	18241	20055	16044	14039 (70%)	10428	8342	2086	2327	802	6015	1284
Dert (N/A for this commitment period)		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dulaan Khairkhan	22485	38375	30700	26863 (70%)	31575	25260	6315	6677	2303	18583	4012
Totals	**77482**	**109569**	**92769**	**76698**	**77536**	**65582**	**11954**	**20015**	**4793**	**45567**	**7161**

NB: Risk buffer allocations are different across the three sites (H.O. 10%, L.A. 20%, D.K. 20%)

C3 Allocation of issuance request

n/a – no issuance request in this period.

C4 Data to support issuance request

While there is no issuance request in this period, under the Management Plans in the PDD, evidence for carbon sequestration is through grazing pressure, movement patterns and stocking rates for each site and its different pasture types. Tables B and C for each site are found in Annex 5 of the PDD. The site specific Management Plans also show detailed plans for grazing pressure at each site year in year and how these are translated into carbon sequestration (based on Century modelling, as explained in the TS). Actual rates for Years 2 and 3 are summarised in C2, Table 5 above, with underpinning spreadsheets, based on PDD Annex 5, as set in Annex 2 tables, this report.

At all sites, compliance with agreed grazing management practices and protocols was to be assessed on the basis of biannual self-reporting by the herder groups, subject to confirmation by MSRM. For Years 2 and 3 of the project, MSRM checked reported actions in August/ September, then again at the end of the year (e.g. by end of March).

Detailed tables of activities for each site, showing progress against agreed activities and indicators for Years 2 and 3, are included in Part E, Monitoring Results. MSRM Annual Reports for Years 2 and 3 are included in Annex 1.

As highlighted in Table 8b in Section E, as well as the accompanying narrative, performance indicators relate not just to stocking rates and mobility and hence to carbon sequestration, but to a range of biodiversity conservation and livelihood support activities. The majority of these met or even exceeded targets and the carbon sequestration calculations have been updated accordingly. Where targets were not fully met, mitigating activities have been agreed as detailed below.

Part D: Sales of Plan Vivo Certificates

D1: Sales of Plan Vivo Certificates

Table 7: Sales of Plan Vivo Certificates

Vintage	Buyer	No of PVCs	Price per PVC ($)*	Total sale amount ($)*	Price to participants per PVC ($)*	% Total Sale price received by participants
2015-2016	CLevel	50				70%
2015-2016	ZeroMission	2500				70%
2015-2016.	ZeroMission	500				70%
2015-2016	ZeroMission	1000				70%

*Pricing reported for internal monitoring purposes only and is removed from the final published document. The 'price to participants' takes into account the 30% allocated to MSRM for management, monitoring and reporting.

Part E: Monitoring results

E1: Ecosystem services monitoring

Monitoring results for all sites and against the full range of indicators (ecosystem services, socioeconomic and environmental/ biodiversity) and in relation to red, orange and green 'traffic light' indicators (Section K of PDD) are set out in Tables 8a & 8b, below.

Table 8a: Summary of Carbon Sequestration (Years 1-3 inclusive)

(For futher details, see: Annex 2d, 2e, 2f of 2016-2018 AR)			C Seq. (tCO_2e) at different grazing pressures				C Seq. (tCO2e) based on recorded grazing pressure at each site			
Site	Pasture type	Season	30%	40%	50%	> 50%	Yr1	Yr2	Yr3	Total Yrs 1-3
i) Hongor Ovoo	Riparian Meadow	Spring/summer/fall	1723	812	23	0	1723	1723	1723	
	Riparian Meadow	Summer	2725	1764	981	0	2725	2725	2725	
	Mountain Meadow	Winter	990	466	304	0	304	466	990	
	Mountain Meadow	Summer/fall	1198	560	-52	0	-52	560	1198	
	Mountain Meadow	Winter/spring	2175	2130	2060	0	2060	2175	2175	
	Mountain Steppe	Fall	1241	682	199	0	199	1241	1241	
	Mountain Steppe	Winter/spring	1153	418	-84	0	-84	1153	1153	
	Mountain Steppe	Summer/fall	2470	2029	1271	0	2470	2470	2470	
			13675	**8861**	**4702**	**0**	**9345**	**12513**	**13675**	**35533**
ii) Ikh Am	Riparian Meadow	Spring	988	466	13	0	0	13	466	
	Mountain Steppe	Spring	628	277	46	0	0	46	277	
	Mountain Steppe	Winter	4302	3534	2213	0	0	2213	2213	
	Steppe	Spring	1354	490	100	0	0	490	490	
	Steppe	Winter	4102	3369	2110	0	0	2110	2110	
			11374	**8136**	**4482**	**0**	**0**	**4872**	**5556**	**10428**
iv) Dulaan Khairkhan	Mtn Desert Steppe	Winter/spring	4973	4086	2559	0	4973	4973	4973	
	Mtn Desert Steppe	Fall	3021	1660	485	0	3021	3021	3021	
	Desert Steppe	Winter/spring	986	357	72	0	986	986	986	
	Desert Steppe	Fall	1545	849	248	0	1545	1545	1545	
			10525	**6952**	**3364**	**0**	**10525**	**10525**	**10525**	**31575**
									Total (Yrs 1-3)	**77536**

Table 8b: Summary of Overall Monitoring Results (Years 2 and 3)

Site and 'Traffic light'[1] indicator status	Activities & Indicators (*Years* 2 and 3)	Expected result	Results Achieved
Hongor Ovoo heseg			
1.Pasture management (carbon sequestration) 	*Years 2 & 3*: Annual pasture use schedule developed and implemented, with grazing pressure equivalent to modelled carbon sequestration rates for different pasture types.	*Year 2:* At least 80% of households comply with schedule in summer/winter 2016. 1% reduction in livestock (sheep units) against baseline by end March 2017. *Year 3*: At least 90% of households comply with schedule in summer/winter 2017. 3% reduction in livestock (sheep units) against baseline by end March 2018.	*Year 2: Heseg* leader reported full (100%) compliance with pasture use schedule re timing and periods of use of different seasonal pastures in heseg area, confirmed by MSRM through interviews. However, 1% reduction in livestock numbers not achieved in Year 2 by comparison with baseline. Reasons and implications are examined further below. *Year 3: Heseg* leader reported full (100%) compliance with pasture use schedule, where herding HH remained within local pasture areas, confirmed by MSRM through interviews. Increased annual mobility and numbers of seasonal camps also reported. Target reductions in livestock numbers of 3% against the baseline were not realised however, with a small increase of 0.2% against 2014 levels, but a reduction of 17% compared to Year 2. Implications are examined further below.
2.BiodiversityConservation  	*Years 2 & 3:* i) Herder group partnerships established through the project in Year 1 now undertaking activities to protect local environments. ii) Cooperation in groups for forest cleaning & protection.	*Years 2 & 3:* As per agreements/ MOU in place between herder groups & local administration: Cleaning of additional 2ha forest area by end of Year 2. Cleaning of additional 2ha forest area by	*Years 2 & 3:* Partnerships registered as cooperatives. Agreed activities for Years 2 and 3: to conduct forest clean up (specific targets and compliance highlighted below); protection from illegal cutting & collection and sale of wood waste. Successfully established a wood market to sell the collected waste wood in Year 3. Ikh Ulunt and Shiree Bulan cooperatives conducted forest cleanup of total 6 hectares in 2016 (Year 2) and 4 hectares in 2017 (Year 3), exceeding targets for Years 2 and 3.

		end of Year 3. Bird and vegetation surveys repeated on established forest patrol routes in summers of Year 2 and Year 3 (bird surveys ZSL, vegetation herder groups)	Training completed in Year 1. Unable to repeat formal surveys as planned due to funding constraints, but regular monitoring patrols instituted (see below).
	iii) Increased herders' participation in decision-making on environmental issues.	As per targets set by herder representative committee at the end of Year 1: these required herders to conduct forest patrols to monitor and protect the forest from illegal cutting trees in summer and fall and to establish their cooperatives.	Completed as planned.
	iv) Nurseries and planting for enhanced provision of forest habitat for native species	*Year 2:* Establishment of tree nursery to provide seedlings. *Year 3*: 200 saplings replanted in soum forest area.  *Tree Nursery, Hongor Ovoo (1)*	Completed as planned: Nursery established. Khaluun Us and Shiree Bulan cooperatives prepared 500 seedlings by end Year 2 and did forest restoration on a further 3-4ha, exceeding targets for Years 2 & 3.  *Tree Nursery, Hongor Ovoo (2)*
3. Socioeconomic activities	*Years 2 & 3* i) Repair of fences & winter/spring shelters	*Year 2*: 5 fences/ shelters repaired by end March 2017. *Year 3*: Further 5 fences/ shelters	*Year 2*: In 2016, this group built two winter shelters and two spring shelters and fixed 14 fences, exceeding targets. *Year 3*: Two herders built new winter

	 *Example newly built spring shelter, HO heseg, 2017* ii) Collaborative production & marketing of local brand milk products  *HO heseg dairy products on sale, 2017* iii) Gathering and sale of wild fruits and nuts	repaired by end March 2018. *Year* 2: Collaboration on processing and marketing established. Linked to enhanced HH income. *Year* 3: Cooperative established. Linked to enhanced HH income. *Year 2:* Enhanced HH income against baseline. *Year 3*: Enhanced HH income against baseline.	shelters. A further 10 families collaborated to fix their winter and spring shelters *Year 2*: HO herders prepared and sold dairy products collaboratively, e.g. 2 member families participated in aimag's dairy products trade fair representing the group. 20 families participated in "Lunar New Year - 2017" trade fair, January, 2017 and sold their dairy products. Revenue of 500,000-5 million tg per HH for dairy sales. *Year 3:* Again, herders prepared and sold dairy products cooperatively (although not through an officially registered cooperative structure). 20HH again participated in Lunar New Year Fair in Ulaanbaatar in 2018, representing the heseg as a whole. Products also sold through Yak festival in Ikh Tamir soum, with each HH earning average 300,000tg. *Year 2*: Some 80% of HH picked berries and nuts, and each family made revenue of about 2 million tg. *Year 3*: Again 80% of HH picked berries

	iv) Comb yak wool and deliver to markets	*Year 2:* Enhanced HH income against baseline *Year 3*: Enhanced HH income against baseline.	and nuts, and each family made revenue of 100,000-500,000tg, lower than Year 2 due to lower yields. In 2016/17, HO made a contract with Jinst Murun Co. Ltd. and Bayalag UlziiCo. Ltd. and prepared 1.2 tons of yak wool and sold it for 6500 tugrugs per kg. They also made a contract with Devshikh Shagai Co. Ltd and collected 5 tons of sheep wool among the group and sold it for 850 tugrugs per kg. In 2017 they collected 2 tons sheep wool from the whole heseg and sold it for 2000tg per kg. 500kg yak wool were sold for 7000tg per kg.
Ikh Am Heseg			
1.Pasture management (carbon sequestration)	*Years 2 & 3*: Annual pasture use schedule developed and implemented, with grazing pressure equivalent to modelled carbon sequestration rates for different pasture types *Year 2*: ii) Dig hand wells	*Year 2*: At least 80% of households comply with schedule in summer/winter 2016. 10% reduction in livestock (sheep units) against baseline by end March 2017 (end *Year* 2). *Year 3*: At least 90% of households comply with schedule in summer/winter 2017. 20% reduction in livestock (sheep units) against baseline by end 2018. 1 hand well completed by end 2016 (in addition to that already completed in *Year 1*).	*Year 2: Heseg* leader reported 90% compliance in 2016. Confirmed by MSRM. However, 10% reduction in livestock numbers not achieved in Year 2 by comparison with the baseline. Reasons for this and implications are examined further below. *Year* 3: *Heseg* leader reported 90% compliance in 2016. Confirmed by MSRM. However, reductions of 5% in livestock numbers were achieved in Year 3 against baseline, not 20%. Reasons for this and implications are examined further below. Hand well completed. No official target for Year 3. However, a deep well was also built in Year 3 in previously underused pasture in Suundlin Enger, in addition to the planned activities; funded through heseg's own contributions and soum budget.

2.Biodiversity Conservation	*Years 2 & 3:* Protect red deer, argali and Mongolian gazelle	*Years 2 & 3*: Manned surveys repeated in summers of Year 2 and Year 3 (plus annual camera trap surveys ZSL)	*Year 2*: May 2016: ZSL started total population count of wildlife using manned transect survey. 2 heseg members participated and received field training. (camera trap surveys not repeated, as reported in Year 1). *Year 3*: Herder Nyambuu was issued an official card as a wildlife conservation volunteer by the Ministry of Environment and Tourism. Additional wildlife protection activities including protecting wild sheep, deer and antelopes were conducted. During the heavy snowfall in all parts of Undurshireet soum in 2017, herders put a total of 110 packs of hay and 200 kgs of salt twice in December in the area where deer and antelopes come often. They also provided hay and salt in winter 2016. Heseg members also took turns to guard and patrol deer and antelope to protect from poachers every 30-45 days in autumn and spring (2017/2018).
	ii) Protect bushes/trees at Ovootiin & clean area/ collect rubbish; planting of new areas.	*Year 2*: litter cleaning plus planting of additional 0.5ha *Year 3*: litter cleaning plus planting of additional 1ha	Garbage along the river banks was cleared as planned on at least an annual basis in Years 2 and 3. However, lack of funding precluded additional planting.
3.Socioeconomic activities	*Years 2 & 3:* i) Repair of fences & winter/spring shelters.	*Year 2:* 10 additional fences/shelters repaired by end Year 2. *Year 3:* 10 additional fences/shelters repaired by end Year 3.	*Year 2*: 5 families fixed their winter and spring shelters; total of 10 fences/ shelters in all. *Year 3*: 15 shelters and fences were fixed, exceeding targets.
	ii) Collaborative production and marketing of	*Year 2*: Enhanced HH income against	Herders made dairy products and

	milk and curd in season.  *Dairy products from Ikh Am PUG at the dairy products exhibition, 2017.* iii) Produce felt & deliver to markets.	baseline *Year 3*: Enhanced HH income against baseline	participated in the aimag's dairy product trade fair in both Years 2 and 3 in order to increase their household income. Since the start of the PV project products have been produced and sold more collaboratively, with additional families participating. Each HH earned some 1.2million tg on average per year for Years 2 and 3.
	 *Photo of skin processing factory* iv) Hay preparation	*Year 2*: *Heseg* produces & markets 150m felt by end 2016. Enhanced HH income against baseline. *Year 3: Heseg* produces & markets 200m felt by end 2017. Enhanced HH income against baseline.	150m felt produced in Year 2. 200m felt produced as planned. A small scale factory was also established to process animal skin.
		Years 2 and 3: Increased % HH with adequate hay provision.	*Year 2*: 10,000 kg hay cut and prepared by heseg as a whole, extending hay provision to more HH. In addition, each household prepared hay and fodder individually. Each year for Years 2 and 3, heseg households also prepared bran, leeks, stinging nettles for fodder. *Year* 3: Each HH cut 2500-4000kg hay,

			as planned (plus additional fodder preparation – as above).
Dulaan Kharkhain heseg			
1.Pasture management (carbon sequestration)	*Years 2 & 3*: Annual pasture use schedule developed and implemented, with grazing pressure equivalent to modelled carbon sequestration rates for different pasture types	*Year 2*: At least 80% of households comply with schedule in summer/winter 2016. 1% reduction in livestock (sheep units) against baseline by end March 2017. *Year 3*: At least 90% of households comply with schedule in summer/winter 2017. 3% reduction in livestock (sheep units) against baseline by end March 2018.	*Year 2*: *Heseg* leader reported full (100%) compliance with pasture use schedule in terms of timing and periods of use of different seasonal pastures, confirmed by MSRM through interviews. However, 1% reduction in livestock numbers by comparison with the baseline not achieved. Reasons for this and implications are examined further below. *Year 3*: *Heseg* leader reported full (100%) compliance with pasture use schedule in terms of timing and periods of use of different seasonal pastures, where herders stayed within the heseg territory. This was confirmed by MSRM through interviews. Reduction of 7% in livestock numbers was achieved by comparison with the baseline, exceeding target of 3%.
2.Biodiversity Conservation	*Year 2 & 3* i) Protection of argali, ibex & goitered gazelle.	*Year 2*: Manned surveys completed summer 2016, at baseline survey sites. *Year 3*: Manned surveys completed summer 2017 at baseline survey sites.	*Year 2*: Herders continue to protect wild sheep and goats in Ikh Bogd special protected area. Local wildlife conservation volunteer Togookhuu reported that the number of wild sheep and goat have increased since Year 1. (ZSL camera trapping equipment damaged; unusable). *Year 3*: Herders continue to protect wild sheep and goats in Ikh Bogd special protected area. The local wildlife conservation volunteer Togookhuu reported that number of wild sheep and goat have increased again since Year 2.
	ii) Protection of saxaul forest.	*Year 2*: no of cut stumps decreased by 25% compared to 2015 data.	*Year 2*: The protection of saxaul trees has been supported by the herders every year.

		Year 3: no of cut stumps decreased by 50% compared to 2015 data.	In 2016, the number of new stumps decreased by 25%. In 2017, new stumps decreased by 50%.
	iii) Plant sea buckthorn.  *Planting sea buckthorn, DK heseg*	*Year 2*: 1 ha planted	*Year 2*: 1 ha planted with 50 sea buckthorn seedlings near soum centre, with permission from local administration.
		Year 3: total 1.5ha planted	*Year 3*: Additional 0.5 ha planted; 1.5ha in total.  *Planting sea buckthorn, DK heseg*
3.Socioeconomic activities	*Years 2 & 3*	*Year 2*: 5 shelters/ fences repaired *Year* 2.	*Year 2*: Herders built one winter shelter, two spring shelters and fixed three winter shelters; exceeded target.
	i) Repair of fences & winter/spring shelters.	*Year 3*: 5 shelters/ fences repaired	*Year 3*: Herders built two winter shelters, one spring shelter and fixed four winter shelters; exceeded target.
	ii) Establish greenhouse for vegetable production & grow vegetables.	*Year 2*: Enhanced HH income linked to vegetable production.	Greenhouse constructed in Year 1 not developed further due to lack of funds for irrigation. A water reservoir was built in Year 3. This will enable vegetable production to commence in Year 4. Targets for vegetable production not met in Years 2 and 3.
		Year 3: Enhanced HH income linked to vegetable production.	
	iii) Hay preparation	*Year 2*: Increased % HH with adequate hay provision	*Year 2*, each family prepared 5000-7000 kg of natural hay, 100-200 kg of bran, 150-200 kg of salt.
		Year 3: Increased % HH with adequate hay provision	*Year 3:* each HH prepared 4-6000 kg hay (plus fodder and salt)

N.B. The ‘traffic light’ system (red, orange and green dots) relates to the activity-based monitoring set out in Section K of the PDD, where green denotes the project is on track and all payments should be made in full; orange denotes that some activities have fallen short of targets and that corrective action(s) may be required; red denotes that project activities have fallen far short of requirements and corrective action is necessary.

For the majority of sites and across the range of indicators, most targets were met in Years 2 and 3, as indicated by the green status of 'traffic lights' for most activities. A number were even exceeded, with additional activities being undertaken. However, stocking rates were an issue in some cases, as specified below. Detailed livestock figures are presented in MSRM's annual report for Year 3 (see Annex 2, this report).

Hongor Ovoo, Year 2: MSRM monitoring and reporting, supported by official soum level and herder group livestock census data, reveal an increase in livestock numbers by comparison with the baseline. This is explained by a number of factors. In summer 2016, weather conditions and pasture yield were good (the latter estimated at 25-35% higher than for the same period in 2015 in soum meteorological reports), whilst winter was also relatively warm, with little snow. These conditions supported an increase in livestock numbers, whilst falls in market prices for meat and other livestock products also discouraged livestock sales and offtake. Together these produced an overall increase in livestock numbers of some 17% (sheep units, or SU)[4] or 18.5% (actual animal numbers) for Hongor Ovoo heseg against the 2014 baseline. The situation was redressed in Year 3 when significant decreases in livestock numbers of 17% (SU) against Year 2 levels were noted. This equated to a small overall increase in livestock numbers of some 0.2% (SU) against the 2014-15 baseline, due to an increase in the proportion of horses and cattle in the herd, but a reduction of 5% in actual animal numbers. These Year 3 reductions in SUs and total animal numbers against Year 2 levels primarily reflect climatic rather than market conditions, as drought compelled many herders to go to otor (long distance migration) to adjacent areas in Year 3 (e.g. to other *aimag*s or regions, *soum*s or districts). Compliance with the pasture schedule meets the target (90% of HH for Year 3), with both average annual mobility of herding households and numbers of movements showing a marked increase, in excess of that planned in the PDD, between Years 2 and 3 and against the baseline, offsetting the very small overall increase in SU. However, despite Year 2 increases in livestock numbers, carbon reductions, as modelled in the PDD and set out in more detail in Section C, were achieved in both Years 2 and 3, albeit below the maximum modelled volumes and rates set out in the PDD for Year 2. This reflects the higher biomass (pasture yield) in Year 2, as measured in soum level statistics and compared to modelled levels, in conjunction with the greater mobility of the herders, which to some extent mitigated the higher stocking rates. Further details and implications of this for issuance of certificates are as set out in Part C. Figures in Table 5 are derived using the Century model and technical specification set out in the PDD and these actual, rather than target, stocking levels and grazing practices. Data used for the three sites in Years 2 and 3 is presented in Annex 2.

For other activities and indicators Hongor Ovoo met and even exceeded the majority of goals, as summarised above and as indicated by a green 'traffic light' symbol. Significant successes were noted in terms of enhanced herders' roles and activities in environmental governance and biodiversity conservation and livelihood/ risk management activities. Additional activities undertaken by the heseg included some vegetable production and engagement in eco-tourism, as well as production of hay and livestock fodder. These activities further supported livelihoods, food security and risk management.

Ikh Am also had challenges in achieving the planned reductions in livestock numbers in Year 2. As in Hongor Ovoo, MSRM monitoring and reporting, supported by official soum level and herder group livestock census data, reveal an increase in livestock numbers in Ikh Am by comparison with the baseline, and essentially due to the same factors, namely a good summer

[4] Sheep units (SU) are a traditional unit/ conversion factor widely used in Mongolia to analyse stocking rates and grazing pressure. According to this, as set out in the PDD, p.30, 1 adult camel = 5SU, 1 young camel = 1SU, 1 adult cow = 6SU, one young cow/ calf=1.2SU; 1 adult horse = 7SU, 1 young horse = 1.4SU, 1 adult goat =0.9SU, 1 young goat =0.2SU.

and mild winter in 2016 combined with falls in market prices for meat and other livestock products. Together these produced an overall increase in livestock numbers of some 22% (sheep units) for Ikh Am heseg against the 2014-15 baseline. Again, as for Hongor Ovoo, the situation was redressed somewhat in Year 3, when reductions of 4.6% in livestock numbers (SU) against the baseline were achieved. This largely reflected the very dry conditions which compelled many households to move to other soums and bags from spring/ summer 2017. Most returned in November 2017, with some returning the following year. Both the average number of seasonal movements per household and distances moved also increased substantially in Year 3, as compared to Year 2. Therefore, as for Hongor Ovoo, despite Year 2 increases in livestock numbers, some carbon reductions, as modelled in the PDD and set out in more detail in Section C, were achieved in both Years 2 and 3, albeit below the maximum modelled volumes and rates for Year 2. This reflects the higher biomass (pasture yield) in Year 2, as measured in soum level statistics and compared to modelled levels, in conjunction with the greater mobility of the herders, which to some extent mitigated the higher stocking rates. Further details and implications of this for issuance of certificates are as set out in Part C. As for Hongor Ovoo, the ERs in Table 5, Part C are derived using the Century model and technical specification set out in the PDD and the actual, rather than target, stocking levels and grazing practices in Ikh Am. Data used for the three sites in Years 2 and 3 is presented in Annex 2.

For other activities and indicators Ikh Am generally met or even exceeded targets, as indicated by 'traffic lights' and accompanying narratives in Table 8b, above. Environmental conservation activities were very successful, with many conducted over and above the targets set in the PDD. Notably one herder gained official status as a wildlife conservation volunteer, designated by the Ministry of Nature, Environment and Tourism. Herders also organised and took part in patrols to protect wildlife and provided fodder during harsh winters. Limited funds did however preclude additional planting or fencing of existing bushes/ planted areas at Ovootiin. Camera trap surveys for wildlife monitoring were discontinued following Year 1 in accordance with ZSL recommendations, and also following some vandalism of equipment here and at other sites (see Year 1 Annual Report, Annex 5). Risk management and livelihood support activities were very successfully discharged.

For Dulaan Kharkhain, a similar picture was noted in terms of livestock numbers. In Year 2, an increase was noted against the baseline, again due primarily to the same factors as reported for other sites above, namely a good summer and mild winter in 2016 combined with falls in market prices for meat and other livestock products. Together these produced an overall increase in livestock numbers of some 21.5% (sheep units) against the 2014-15 baseline. However, the situation was redressed in Year 3, when reductions of 7.1% in livestock numbers (sheep units) against the baseline were achieved, well in excess of the planned reduction of 3%. This largely reflected the very dry conditions which compelled many households to move to other soums and bags from spring/ summer 2017. Again, as for other sites, despite Year 2 increases in livestock numbers, some carbon reductions, as modelled in the PDD and set out in more detail in Section C, were achieved in Year 2 as well as Year 3, due to variations in biomass and herders' mobility. The significant decrease in livestock numbers in year 3, over and above the target and modelled decreases, resulted in higher than anticipated levels of carbon sequestration for this year. Further details and implications of this for issuance of certificates are as set out in Part C.

For other activities and indicators Dulaan Kharkhain generally reached or exceeded goals. Environmental conservation and monitoring activities were discharged successfully on the whole, with protection of the saxaul forest as per targets set, planting of sea buckthorn and regular activities and surveys led by local conservation volunteers. ZSL did not, however, repeat camera trap surveys, due to funding issues and vandalism of equipment. Livelihood support

and risk management activities were also successfully discharged, with additional activities around sale of livestock products cooperative action within the heseg achieved in addition to those planned. The only exception is vegetable production which is planned to be developed in Year 4, following the heseg's construction of a water reservoir in their territory in Year 3, another activity over and above those planned in the PDD.

MSRM annual monitoring and progress reports are included in Annex 1, in support of the data presented against the agreed PDD indicators in Tables 8a & 8b, above.

For all three sites/ heseg the majority of indicators are green in Table 8b, above, showing that monitoring targets were achieved in full. Areas where targets have not been met in full are indicated by amber markers and summarised in Table 8b. As explained above, where these relate to livestock numbers/ stocking rates, increases in Year 2 across sites are due to a combination of factors, primarily good weather conditions supporting herd growth and survival, and low market prices for livestock products. The price of meat in particular fell in Year 2 as exports were reduced due to animal infectious diseases in some parts of Mongolia, meaning local markets were over-supplied and prices fell countrywide. This is not something which could have been foreseen or managed by the project, and unfortunately provided clear economic incentives for herders to delay slaughtering or selling livestock until prices improved, thus resulting in increases of livestock numbers at participating sites, as elsewhere across the country. Ultimately, as PV certificate sales develop, resultant income to herders is designed to contribute to influencing the decision-making process away from increased herd sizes in such circumstances. This can occur, for example, where PV income is sufficient to offset any loses through immediate sale of livestock products at low prices. However, in Year 2 PV sales had not yet materialised and thus could not be expected to influence herders' decision-making significantly in this way.

In terms of corrective actions, at the end of and throughout Year 2 MSRM continued to hold training sessions and workshops with participating heseg, to further work with the herders on limiting the number of livestock based on the pasture capacity, and in accordance with pasture use agreements developed between the local soum governors' offices and herders. They also worked with herders to develop the Year 3 annual pasture use schedules, in accordance with the carbon modelling in the PDD, and the agreed movement patterns and livestock numbers built into these (PDD Annex 5 Tables 1c, 1d, Hongor Ovoo; PDD Annex 5 Tables 3c, 3d Dulaan Kharkhain; and Tables F1a and F1c in the main body of the PDD report for Ikh Am).

MSRM also worked with herders to develop additional income sources and to add value to livestock products, as highlighted above, set out in the PDD and including activities such as vegetable production, collaborative processing and marketing of dairy products, which were generally very successful (see Table 8b and MSRM Annual Reports in Annex 1). In Year 3, livestock numbers reduced significantly against Year 2 levels across all 3 sites, with Dulaan Kharkhain exceeding their target for reduction in numbers against the baseline. Ikh Am noted a reduction against the baseline also, whilst for Hongor Ovoo, livestock numbers when converted into SUs had effectively returned to baseline levels. Actual animal numbers went down in HO against the baseline, but was mitigated by the increasing proportion of horses and cattle, when expressed as SUs. As for Year 2, in terms of corrective actions, the number of certificates requested for issuance has been adjusted to reflect any shortfalls against targets in Year 3 and according to specific stocking levels at each of the 3 sites (see Sections C2-C4, this report, for details). Pasture use planning for Year 4 has been based on the carbon modelling in the PDD, and the agreed movement patterns and livestock numbers built into these (PDD Annex 5 Tables 1c, 1d, Hongor Ovoo; Tables 3c, 3d Dulaan Kharkhain and Tables F1a and F1c in the main body of the PDD report for Ikh Am). For other activities, more detailed

biodiversity surveys are planned at the end of Year 4, to enable comparison with the original ZSL baselines.

E2: Maintaining commitments

In this period, all existing herder groups have maintained their commitment to the project (see section H1 for further details around participating households). MSRM is currently assessing the possibility of entering a new commitment period with the herder groups at the end of the current 4 year period. These groups have indicated that they would like to do so.

E3: Socioeconomic monitoring

Monitoring indicators for Years 2 and 3 are as set out for each *heseg* in Section B1 and B2 above, and in Table 8b above.

E4: Environmental and biodiversity monitoring

Monitoring indicators for Years 2 and 3 are as set out for each *heseg* in Sections B1 and B2 above. B2 sets out biodiversity related activities and monitoring for each site over this period. These are also summarised in Table 8b, above. Further evidence for realisation of the Year 2 and 3 goals and targets is provided in MSRM Annual Reports (Annex 1) of this report.

Part F: Impacts

F1: Evidence of outcomes

(to be summarised in Year 4 report)

Part G: Payments for Ecosystem Services

G1: Summary of PES by year

Table 9: Summary of payments made and held in trust

1. Reporting year (mm/yy – mm/yy)	2. Total previous payments (previous reporting periods)	3. Total ongoing payments (in this reporting period)	4. Total payments made (2+3)	5. Total payments held in trust	6. Total payments withheld
Year 1	0	0	0	0	0
Year 2	0	$317.25	$317.25	0	0
Year 3	0	$9209.77	$9209.77	$8912.40	0
TOTAL		**$9,527.02**	**$9,527.02**	**$8912.40**	

All payments have been made in accordance with the PES agreements signed by participating heseg and as set out in the PDD.

Part H: Ongoing participation

H1: Recruitment

No further participants have been recruited during this initial period. The numbers of households in each herder group are set out above. The number of participating heseg are unchanged, although numbers of households within those heseg have decreased, as previously explained. There are now 124 households participating in the project, as compared to 174 at the outset. This reflects a departure of 24 households from project areas, with the remaining difference being due to new census methods of recording households, which only include those with their own livestock herds (e.g. omitting dependent households without

livestock).

H2: Project Potential

At present we are continuing to maintain contact with herders in Dert *heseg*, as explained in section A4, above. We do not have a waiting list of other participants at this stage, as we have decided to complete the initial 4 year commitment period before opening the project to new participants. All three existing participating heseg have expressed a clear desire to continue into a second commitment period, while potential investors (purchasers of certificates) who have recently come on board are also keen to see the project continue. MSRM will discuss options with participating heseg during this 4th and final year of the current commitment period.

H3: Community participation

For Years 2 and 3, evidence of community participation is summarised below.

Through a series of meetings with MSRM all members of herder groups have undertaken participatory management and planning activities in relation to the following main issues:

i. *Pasture use planning*;
ii. *Maintenance/ repair of winter and other shelters and hand wells;*
iii. *Cooperation in livestock/ raw material marketing, felt processing and dairy product manufacturing;*
iv. *Environmental protection/ conservation*

Specifically, between April-September 2017 (Year 2) and at the end of the year a team from MSRM visited each of the three participating heseg on three occasions. During these visits, herders were given further training in pasture use planning, in order to develop pasture use strategies in accordance with carbon sequestration targets and modelling as set out in the PDD. In particular the importance of mobility between and within seasonal pastures, as well as stocking rates, were emphasised and strategies for achieving this discussed between heseg members. These meetings were also used as opportunities to discuss the progress of the project; the development of activities agreed under the PDD (e.g. joint repairing of winter shelters and other infrastructure, processing and marketing of livestock products etc.); any issues or problems being encountered in meeting agreed targets and to answer any questions about the sale of certificates or carbon sequestration and modelling. Heseg members also conducted their own informal meetings on numerous occasions throughout the year, but given the nature of these meetings, formal minutes are not kept. The same pattern was repeated in Year 3, with meetings also used as an opportunity to disburse funds from certificate sales. Evidence of activities completed is presented in Table 8, Section E, and in the MSRM reports in Annex 1.

Part I: Project operating costs

I1: Allocation of costs

For Years 2 and 3, MSRM costs in training and capacity building with participating *heseg* and in monitoring were met through their allocation of funds from PV certificate sales, their own resources, and some funding from the Global Challenges Research Fund (GCRF): 'Resilient Pastoralism: Towards Sustainable Futures in Rangelands' project (2016-2017), to enable evaluation of the contributions of the Plan Vivo project to herders' overall resilience.

Table 10: Allocation of costs

Expense	Narrative	Amount (USD$)	Contribution from sale of PVCs	Contribution from other sources
Travel and Subsistence, plus staff time (MSRM staff)	Training, survey and monitoring work in countryside in 2016 and 2017; including vehicle rental and staff costs; in country management of project and Markit account	$13,340	$4,083.28	'Resilient Pastoralism' project, through University of Leicester: $5867.40 MSRM
Training cost	2 days training in UB for 30 participants from 3 Plan Vivo heseg, September 2017	$1,800 USD		South-South cooperation project of China and MSRM

Annexes

Annex 1. Monitoring results for issuance request

Results are presented in Tables 8a and b, Section E, above.

Further supporting information from MSRM Annual reports for Years 2 and 3 is also included below. Data on livestock numbers from the baseline through to Year 3 are included for all sites in the Year 3 report only.

MSRM Year 2 Annual Report

Indicators and end of Year 2 Monitoring, March 2017

1. Hongor Ovoo

In 2016, the number of livestock (converted to sheep units) of Hongor Ovoo heseg increased by 16.7 percent, according to the official livestock census data of the soum and heseg as of December 2016. There are a number of reasons which influenced the livestock increase: (a) In 2016, summer was good and pasture growth was 25-35 percent more compared to 2015; (b) In winter, it was warm and had less snow; (c) Due to the fall in market prices of meat and livestock, herders sold less livestock and livestock products. Therefore, the number of livestock of Ikh Tamir soum as a whole increased by 12.2 percent.

We conducted interviews with herders from Hongor Ovoo heseg of Ikh Tamir soum regarding the implementation of the 2016 Pasture Management Plan. We consider that all herders of the group made seasonal movements according to the pasture use schedule by 100 percent in 2016. In terms of the number of movements, more than 80 percent of the group members moved 3-5 times per year, the distance of their movements ranged between 8-63 kms per year and average annual distance of movement 26 km per year. According to the 2016 heseg Pasture Management Plan, 8300 hectares of pasture were used in rotation. Herders reported that last summer was much better than previous years, therefore, their animals were able to fatten and the rested pasture growth seems to improve. In 2016, about 20 families of Hongor Ovoo heseg residing near Ulunt made seasonal movements to Songinot and Gunj areas. It was planned to graze the remote pastures in Khukh-Nuur and Khukh Davaa in 2016, but the herders did not move to those pastures because the winter condition was quite good. Each family of Hongor Ovoo prepared 2-4 tons of hay. Twenty tons of natural hay was prepared from the fenced hayfield.

In 2016, this group built two winter shelters and two spring shelters and fixed 14 fences.

All herders of the group participated in developing the “Pasture use and protection plan” for 2017 (Year 3) and had it approved by the group meeting, and herders have been cooperating to protect and use the pasture properly.

A total of five environmental protection partnership were established by herders of Hongor Ovoo heseg with the local administration. They made a contract with the soum governor and were issued with the partnership certificates. Also, “Shiree Bulan”, “Neg Sanaa”, “Ikh Ulunt” partnerships made forest utilization and forest management plans.

The soum governor and the soum forestry unit fenced around 4 hectares. Ikh Ulunt and Shiree Bulan cooperatives conducted forest cleanup of 6 hectares in 2016 and 4 hectares in 2017. Moreover, Khaluun Us and Shiree Bulan cooperatives prepared 500 seedlings and did forest restoration on 3-4 hectares.

Figure 1: After the forest cleanup

Figure 2: Khaluun Us Eenvironmental Protection Partnership's field to plant larch and aspen tree seedlings

In 2016, the heseg families planted potatoes and other vegetables on 4 hectares and harvested 20 tons of potatoes.

Four families received tourists in cooperation with "Ger to Ger" company. This year, each family received 45-60 tourists and had an income of 2-5 million tugrugs. The families are preparing to receive more tourists in 2017.

Figure 3: Before the horseback riding trip for tourists in the autumn of 2016

The heseg herders prepared and sold dairy products and each family had a revenue of 500 thousand tugrugs to 5 million tugrugs. Also, two families of the group participated in the aimag's dairy products trade fair representing the group. Twenty families of the group participated in "Lunar New Year - 2017" trade fair organized in January of 2017 and sold their dairy products which they prepared in the autumn.

About 80 percent of all families picked berries and nuts, and each family made a revenue of about 2 million tugrugs.

To improve the livestock breed, ten rams with extra vertebrae from Khotont, five red mountain male goats from Gobi-Altai aimag were given to the herders based

on their request.

The group made a cooperation agreement with the soum's Sodon Sureg Veterinary Clinic and had all of their animals vaccinated, washed and given laxatives.

In 2016, they made a contract with Jinst Murun Co. Ltd. and Bayalag UlziiCo. Ltd. and prepared 1.2 tons of yak wool and sold it for 6500 tugrugs per kg.

They made a contract with Devshikh Shagai Co. Ltd and collected 5 tons of sheep wool among the group and sold it for 850 tugrugs per kg.

2. Ikh Am

According to the soum's land utilization plan, Ikh Am heseg of Undurshireet soum, Tuv aimag made a Pasture Use Agreement with the land manager based on the soum governor's order on September 12, 2016. In 2016, the number of livestock of Ikh increased. There are a number of reasons which influenced the livestock increase. (a) In 2016, the summer was good and pasture growth was 20-30 percent more compared to 2015. (b) In winter, it was warm and had less snow. (c) Due to the pricefall of meat and livestock last year, herders sold less livestock and livestock products. Therefore, the number of livestock of Undurshireet soum as a whole increased by 6.6 percent, according to the official livestock census data of the soum and heseg, as of December 2016. Heseg herders have used summer and winter pastures rotationally during four seasons according to the PDD schedule.

We conducted interviews with herders from Ikh Am heseg regarding the implementation of the 2016 Pasture Management Plan. We consider that all herders of the group made seasonal movements according to the pasture use schedule by 90 percent in 2016. The herders moved and rotate dthe pastures 4-6 times per year and the distance of their movements ranged between 60-120 kms per year. Average distance of herders' households' movement per year was 76 km.

They prepared 10 tons of natural hay and purchased 4500 packs (each pack is 20 kgs) of hay, 1100 sacks of fodder and 300 sacks of oats for their winter preparation. Five families fixed their winter and spring shelters.

Wildlife protection activities including protecting wild sheep, deer and antelopes have been conducted. During the heavy snowfall in all parts of Undurshireet soum in 2016, there was a danger that wild animals could die due to lack of food, therefore, herders put a total of 110 packs of hay and 200 kgs of salt twice in December in the area where deer and antelopes come often.

Figure 4: Feeding deer and wild animals with salt and hay, Ikh Am heseg

In order to protect the environment, families and animals are not allowed to enter and stay near the bushes in Ovoot Aral.

Figure 5: Protected field in Ovootin Ar

The heseg herders and the local administration officials cleaned up the garbage along the Tuul River banks.

The heseg herders made dairy products and participated in the aimag's dairy product trade fair in order to increase their household income.

Figure 6: Dairy products at the Lunar New Year trade fair presented by herders Narantsetseg and Baasansuren, Ikh Am heseg.

3. Dulaan Kharkhain

According to the soum's land utilization plan, "Dulaan Khairkhan" Herders Group (HG) of Bogd soum, Bayankhongor aimag made a Pasture Use Agreement with the land manager based on the soum governor's order in 2016. In 2016, the number of livestock of "Dulaan Kharkhain" Herders Group (HG) increased by some 21% (SU) against the baseline. There are a number of reasons which influenced the livestock increase: (a) In 2016, summer was good and pasture growth was 16 percent more compared to 2015 in the heseg area; (b) In winter, it was warm and had less snow; (c) Due to the fall in price of meat and livestock last year, herders sold less livestock and meat. Therefore, the number of livestock of Bogd soum has increased since last year, according to the official livestock census data of the soum and HG in December 2016. HG herders have used summer and winter pastures rotationally during four seasons according to the PDD schedule.

We conducted interviews with herders from "Dulaan Khairkhan" Herders group of Bogd soum regarding the implementation of 2016 Pasture Management Plan. The herders made seasonal movements and pasture rotations according to the Pasture Use Agreement and PDD. In 2016, 100% of herders of the group made seasonal movements according to the schedule and the pasture use plan. The herders moved and rotated the pastures 4-6 times per year and the distance of their movements ranged between 50-140 kms per year. Average distance of herder households' movement per year was 84 km.

The HG herders jointly developed a draft plan on pasture use for 2017 and had it approved at the group meeting.

The soum and the group herders jointly established a water reservoir in Zadgai Am which is part of the remote pasture. Establishing the water reservoir enabled water to be supplied for 2700 hectares of pasture, enough to water about 9000 animals of over 20 families from 4th bag and 5th bag. It cost 35 million tugrugs to establish the reservoir and the funding came from different sources; 10 million tugrugs from the Local Development Fund, 10 million tugrugs from the Sustainable Cashmere Project, and 7 million tugrugs from the HG herders. The water reservoir was established to collect water from rivers and springs which are sourced from Zadgai Am and a pipe was placed to Zereglee Nuruu for 6 kms to provide water to the pasture. This enabled herders to make full use of the remote pasture and thus reduced the pressure on winter and spring pastures elsewhere.

Figure 7: Water reservoir in Zadgai Am, Dulaan Khairkhan HG

Dulaan Khairkhan HG herders jointly built one winter shelter, two spring shelters and fixed three winter shelters in 2016. In Bogd soum, herders build animal shelters with rocks.

Figure 8: Spring shelter newly built in 2016 by herders Nadmid and Amarsanaa, Dulaan Khairkhan HG

Dulaan Khairkhan HG herders continue to protect licorice plants and saxaul trees. Also, they continue to protect wild sheep and goats in Ikh Bogd special protected area. The local wildlife conservation volunteer Togookhuu reported that the number of wild sheep and goat have increased since last year.

The group planted 50 seabuckthorn seedlings in the field of 1 hectare near the soum center.

Figure 9: Seabuckthorn Field, Dulaan Khairkhan HG

Dulaan Khairkhan HG herders sell their camel wool, goat cashmere and other raw materials through their cooperative.

While we were conducting monitoring on behalf of the Mongolian Society for Rangeland Management, we (MSRM) met all of the heseg herders accompanied by their group leaders and gave them the following suggestions and recommendations.

Ikh Tamir soum, Hongor Ovoo heseg

1. The increase in the number of livestock is the most challenging issue for implementing our project. Therefore, we recommended to decrease the number of livestock by 1% each year as specified in the project documents. In this regard, we suggested to improve their livestock quality by improving weight gain and health of their livestock which would lead to increased livestock sales.
2. We suggested to increase their income by getting their yak wool and making dairy products with yak milk.
3. We also suggested to increase their income by sorting and changing the types of their livestock by raising more yaks and cows, and less sheep and goats.
4. The forest protection cooperative needs to continue to make specific plans to closely cooperate with local authorities and environmental protection officers.

Undurshireet soum, Ikh Am heseg.

1. The number of livestock has increased. In 2017, they may experience some weather challenges as many herders talk about moving to other places because of extremely dry weatherand poor pasture growth. We advised them to move longer distances to follow the better pastures.
2. As the soum is located only 160 kms away from Ulaanbaatar city, they can sell their meat and livestock and increase their income.
3. They have been working on protecting wild sheep, wild goats and deer. Due to the shortage of winter and spring pastures, it is important for the group leader, environmental protection volunteers and herders to contact relevant international organizations and environmental protection projects in order to receive assistance in feeding and delivering food to those wild animals. We also suggested them to leave some specific pastures for wild sheep and other wild animals especialy in the higher areas of mountains.
4. We suggested them to move horses to more distant pastures (otor).
5. We also advised them to increase their income by producing felt by hand processing.
6. The soum plans to build fenced and protected area of around 5 hectares near Ovoot. However,due to lack of financing it is difficult to implement this work in full.

Bogd soum, Dulaan Kharkhain Herder Group

1. The number of livestock has exceeded the pasture carrying capacity. However, there is some reserve pasture in the mountains for extended grazing and we suggested that the HG should use these pastures.
2. It is necessary to increase the number of wells and water sources, use the newly built water pool properly and develop user's guidance for herders to use it properly. Another suggestion was to graze other unused pastures and rest their spring and winter pastures.
3. It is also important to cooperate when preparing hay. Therefore, they need to continue cooperating when preparing hay and fixing animal shelters.

4. Protecting saxual trees and wild sheep has been conducted quite well. In order to promote this activity, we suggested that the group leader Amarsanaa ensures monitoring and protection, and takes pictures of their activities as evidence.
5. Planting seabuckthorn trees has been started; the group members mentioned that this work needs funding and some training.

All heseg herders of the project implement soums are pleased to partipate in the project and have been making great efforts for succesful implementation of the project. However, they expect to receive some funding to support the project implementation.

Mongolian Society for Range Management (MSRM) 'Pastures, Conservation and Climate Action' Project. End of Year 3 Monitoring, February/ March 2018

1. Hongor Ovoo

HO heseg has been using the pasture according to the Five-Year Pastureland Management Plan until 2020 which was approved by the soum's Citizens' Representatives Khural in 2015. Although it was planned to reduce the number of livestock (converting all livestock into sheep unit) by 3 % in 2017-2018, the number of livestock has increased by 0.2% against the baseline due to the increase in number of horse and cattle. However, this growth percentage is much lower compared to the growth rate in previous years (Table 1).

Table 1. Livestock numbers converted to Sheep Units (SU), Hongor Ovoo Heseg

Year	camel	horse	cattle	sheep	goat	total	2015-2017/2014*100%
2014	0	4879	8895	4329	3925	22028	100.0
2015	0	4574	9643	4387	4330	22934	104.1
2016	0	5638	10615	5325	4272	25850	117.3
2017	0	5023	9773	4007	3270	22073	100.2

Despite a slight increase in Sheep Units (SU) due to the increased proportion of large animals (especially horses and cattle), the actual number of livestock has decreased by 5% compared to 2014 (Table 2).

Table 2. Hongor Ovoo Heseg actual livestock numbers

Year	camel	horse	cattle	sheep	goat	Total
2014		880	2260	7120	3835	14095
2015		825	2450	7215	3824	14314
2016		1017	2697	8758	4237	16709
2017		906	2483	6590	3414	13393

Increase of livestock number from 2014 year %

2014		100.0	100.0	100.0	100.0	100.0
2015		93.8	108.4	101.3	99.7	101.6
2016		115.6	119.3	123.0	110.5	118.5
2017		103.0	109.9	92.6	89.0	95.0

A number of reasons influenced the decrease in number of livestock. (a) During summer of 2017, the weather was not pleasant and the pasture yield decreased by 10% compared to 2014. (b) As the summer started late and it began raining since August 10, the pasture yield was poor in spring pastureland. Therefore, 10-20 percent of all herder families migrated to pasturelands of other aimags, soums and bags. (c) Numbers of nomadic movement, its distance and duration have been increased. Compared to 2016,the average number of movements per household increased by 39.4 percent, the average distance of total movement by 94.6 percent and the average distance of each movement by 35.9 percent respectively (Table 3).

Table 3. Hongor Ovoo Heseg. Herders' household movements.

Average nos of movements per year			Average distance of herders households movement, km			Average distance of one movement, km		
2016	2017	2017/2016,%	2016	2017	2017/2016,%	2016	2017	2017/2016,%
3.3	4.6	139.4	26	50	194.6	8.0	10.9	135.9

(d) Due to the poor condition of winter pastures, more than 50 percent of herder households moved to uninhabited/ sparsely populated areas with fewer humans and animals, including to mountainous areas such as Khukh Lake, where the pasture yield is relatively good. Therefore, this year, herders moved and rotated their pastures much more than planned in the PDD. Thus, compared to the planned movement in the PDD, Annex 5, all herders of HO heseg of Ikh Tamir soum met or exceeded targets.

Due to the drought in the summer, hay harvesting was poor. Therefore, herders prepared hay from forest and mountain meadows and mountain tops. Each household harvested and prepared 2-3 tons of hay on average. As herders anticipated to have a harsh winter, so some herder families bought 2 tons of green fodder, while some families collected and stored horse dung, aspen tree leaves and stinging nettles and prepared handmade fodder. Each household prepared 200-500 kg of handmade fodder on average and bought 200-500kg of salt.


Figure 1: Collected aspen tree leaves and stinging nettles.

Herders had planned to use distant pastures in Khukh Nuur and Khukh Davaa in 2016 (Year 2), but the winter was quite pleasant, thus herders did not move to these pastures. But in 2017, over 30 herder household of Hongor Ovoo moved to Khukh Lake and Khukh Davaa and have been using the pastures.

Herder B.Purevsuren built a new winter shelter in a place called “Aral” and Baasansuren built a new winter shelter in a place called “Gandigar”. Over ten families fixed their winter and spring shelters.


Figure 2: Winter shelters built by herders B.Purevsuren and Baasansuren of Hongor Ovoo heseg in 2017

All herders of the group participated in developing the “Pasture use and protection plan” of 2017 and had it approved by the group meeting, and herders have been cooperating to protect and use the pasture properly.

Five forest protection cooperatives were established within Hongor Ovoo heseg. These signed an agreement with the soum governor and were issued a cooperative certificate. “Shiree bulan”, “Neg Sanaa”, “Ikh Ulunt”, “Khaltar angarkhai”, “Khaluun Us” cooperatives developed forest organization and forest management plans.

The soum governor and the forest unit designated “Ikh Ulunt” cooperative to do forest cleanup of an area of two hectares in Gantigar and “Shiree” cooperative to do forest cleanup in area of 2 hectares.

Figure 3:The collected waste wood

“Ikh Ulunt” cooperative collected 8m3 of fallen trees, 12m3 of brushwood and 2m3 of tree stumps and "Shireebulan" cooperative collected 12m3 of fallen trees, 10m3 of brushwood and 4m3 of tree stumps from the designated areas. The cooperatives established a "wood market" where they plan to sell the collected waste wood.

Figure 4: The "wood market"

Figure 5: After the forest cleanup

In 2017, twenty families of the heseg planted potatoes and other vegetables on 3 hectares and harvested 15 tons of potatoes.


Figure 6: Herders' small field for potatoes and vegetables and *Harvested potatoes*

Four families of the heseg cooperated with "Ger to Ger" company and received foreign tourists in 2017. This year, the number of tourists which they received reached 60, an increase of 10 percent with each hosting family earning 2-5 million tugrugs. The families have been planning and preparing to receive more tourists in 2018.

Figure 7: Tourists preparing for a horseback riding trip in the autumn of 2017

Last year, the heseg herders produced and sold their dairy products and each family had a revenue of around 500,000 tugrugs to 5 million tugrugs. Three families of the group participated in the aimag's dairy products trade fair representing their group. About 20 families participated in the "Lunar New Year–2018" trade fair organized on January 25, 2018 in Ulaanbaatar where each family represented their neighbour families and sold their dairy products which they prepared in the autumn. All herder families produce various dairy products during summer time. This year, the sales of dairy products has increased because of the Yak Festival organized last summer in Ikh Tamir sum. Each family milked 15-16 cows and prepared 50-60 kg of butter and curds, and earned about 300,000 tugrugs on average.

About 80 percent of all families picked berries and nuts, and each family made a revenue of about 100,000-500,000 tugrugs on average.

The heseg made a cooperation agreement with the soum's "Sodon Sureg" Veterinary Clinic and had all of their animals vaccinated, washed and given laxatives.

In 2017, they made a contract with Jinst Murun Co. Ltd. and Bayalag Ulzii Co. Ltd. and prepared 500 kgs of yak wool and sold it for 7000 tugrugs per kg. They also made a contract with Devjikh Shagai Co. Ltd and collected two tons of sheep wool among the group and sold it for 2000 tugrugs per kg.

Figure 8: The Hongor Ovoo heseg herders receiving the project funding of 5,550,000 tugrugs from sales of Plan Vivo Certificates.

As for 2018-2019, the heseg is planning to implement the activities according to the monitoring plan. In addition, they are planning to build fences around their hay field and assign them to each household, use the waste wood market efficiently and establish a market for selling livestock products in the soum center.

2. Ikh Am

According to the soum's land utilization plan, "Ikh Am" heseg of Undurshireet soum, Tuv aimag made a Pasture Use Agreement with the soum's land inspector based on the soum governor's order of September 12, 2017.

Although the number of livestock should be reduced by 10 percent in 2017-2018 according to the monitoring plan, it was reduced by 4.6 percent. While the number of livestock increased in the previous years, it has declined in 2017 (Table 4).

Table 4. Livestock numbers converted to Sheep Units (SU), Ikh am heseg

Year	camel	horse	cattle	sheep	goat	total	2015-2017/2014*100%
2014	0	6586	4499	6358	3925	21368	100
2015	81	8333	5262	7224	4330	25230	118.1
2016	130	8189	5420	8209	4272	26219	122.7
2017	117	6437	3956	6599	3270	20377	95.4

There are a number of reasons which influenced the decrease in the number of livestock: (a) The summer of 2017 was extremely dry which caused severe droughts in about 80 percent of the total territory of Mongolia especially in the steppe zone. Undurshireet soum, located in the steppe zone, had a severe drought where the pasture yield was 10-15 percent lower compared to 2015. (b) Due to this reason, 10-15 percent of all herder families moved to territories of Buren soum of Tuv aimag and to Adaatsag soum and Erdenedalai soum of Dundgobi aimag starting from May of 2017 and planned to stay there for the coming winter and spring. (c) Consequently, the number and the distance of seasonal movements have been increased. Compared to 2016, the average number of seasonal movements per household has increased by 12.5%, average distance by 58.1% and the average distance of each movement by 40.4% respectively (Table 5).

Table 5. Ikh Am heseg. Herders' household movements.

Average nos of movements per year			Average distance of herders households movement, km			Average distance of one movement, km		
2016	2017	2017/2016,%	2016	2017	2017/2016,%	2016	2017	2017/2016,%
4	4.5	112.5	76	120	158.1	19.0	26.7	140.4

(d) Sales of livestock increased which is largely due to poor growth of pasture yield as well as early snow fall and severe winter. Due to heavy

snow fall and storm, the grass was covered with snow which in some areas the depth of snow was 40 cm.

The official livestock census data as of December 2017 and the number of heseg livestock are attached (Table 6).

Table 6. Ikh Am Heseg actual livestock numbers

Year	camel	horse	cattle	sheep	goat	Total
2014	0	1188	1143	10457	6960	19748
2015	18	1503	1337	11882	7677	22417
2016	29	1477	1377	13501	7574	23958
2017	26	1161	1005	10853	5798	18843
Increase of livestock number from 2014 year %						
2014		100.0	100.0	100.0	100.0	100.0
2015		126.5	117.0	113.6	110.3	113.5
2016		124.3	120.5	129.1	108.8	121.3
2017		97.7	87.9	103.8	83.3	95.4

The herders of the heseg have all been using summer and winter pastures in rotation in four seasons as scheduled in the PDD.

Figure 9: Heseg meeting

The summer and autumn grazing area of 1500 hectares from Tsahirin Bulan to Ovootin Denj was rested, and vegetation such as Mongolian grass and worm wood grew up to 20 cm tall. Pastures near winter shelters in Doloon Hudgiin Am and Dashgai were also left abandoned and

rested for eight months which resulted in some pasture restoration and regrowth.

A deep well was built in spring pasture in Suudlin Enger which enabled about ten herder families to graze their livestock of about 8000 heads in that area.

Figure 10: Suudliin enger deep well

Hay and fodder preparation: each household prepared 100-150 packs (1 pack of hay - 25 kg) or 2500-4000 kg of hay, 10 sacks (1 sack - 40 kg) or 400 kg of bran, and pickled 500-1000 kg of leeks, stinging nettles, also picked and stored horse dung.

Figure 11: The stored horse dung.

Mr. Nyambuu, herder from Ikh Am heseg was issued with a volunteer ranger's license by the Ministry of Nature and Environment. The heseg herders have been taking actions to protect wildlife such as wild sheep, deer, antelope. As there was heavy snowfall in all areas of Undurshireet soum in 2017, wild animals in the area were at risk of dying from shortage of food, thus the herders put 150 packs of hay and also salt in their grazing area in early December.


Figure 12: Herder Dogsom is feeding deer and wild animals with hay and fodder, Ikh Am heseg.

In order to protect wildlife including deer and antelope from poachers, the heseg herders took turns to patrol and guard them every 45 days in the autumn. In spring, the herders rotated every 30 days to patrol and guard deer from poachers who try to poach deer for their horns.

The herders and the local administration officials cleaned up the waste along the banks of the Tuul river.

Families of Ya.Myagmarsuren, Naransambuu, Nyambul, Gantumur, Erdenebat and D.Myagmarsuren fixed their winter shelters.

The heseg herders prepared dairy products and sold them at the their provincial dairy product exhibition. Every year, each household sells approximately 60 kg of butter, 25 kg of curd, 100 liters of milk, 25 kg of dried cheese, 120 kg of sour cheese and earn around 1,260,000 tugrug.

Figure 13: Dairy products prepared by Mrs. Baasansuren, herder from Ikh Am heseg and displayed at the dairy products exhibition

In order to protect against frequently occuring epidemic animal diseases such as anthrax, cattle plague and foot-and-mouth disease in Mongolia, the herders vaccinated and cleaned their livestock in a timely matter. For this reason, they built a livestock washing basin with their shared

effort and funding, through collection of 40,000 tugrug from each family.

Figure 14: Livestock washing basin

In order to increase the selling price of their livestock meat, herder families of Mr. Dogsom, Mr. Nyambuu and Mr. Myagmasurenbuilt a meat storage cell which can contain 2-5 tons of meat and they are planning to sell the stored meat in May when the meat price goes up.

Figure 15: The Ikh Am heseg herders receiving the project funding of 5,555,000 tugrug from sales of Plan Vivo Certificates

In 2018-2019, besides implementing activities specified in the monitoring plan, the heseg herders also plan to plant vegetables near their newly built well, make hand-made sheep wool products, and produce more dairy products to increase their revenue.

3. Dulaan Kharkhain

According to the soum's land utilization plan, Dulaan Kharkhain herder group of Bogd soum, Bayanhongor aimag made a Pastureland Use Agreement with the soum land inspector based on the soum governor's order in 2017. According to the monitoring plan, the number of livestock (converting to sheep units) was planned to be reduced by 3 percent by March 2018 whereas it was actually reduced by 5.1 percent. The number of livestock increased in the previous years, but declined even more than the target rates in 2017 (See Table 7).

Table 7. Livestock numbers converted to Sheep Units (SU), Dulaan Kharkhain heseg.

Year	camel	horse	cattle	sheep	goat	total	2015-2017/2014*100%
2014	900	471	256	323	2222	4173	100
2015	874	532	252	368	2472	4498	107.8
2016	1030	615	287	437	2700	5070	121.5
2017	708	399	248	342	2179	3876	92.9

Table 8. Dulaan Kharkhain actual number livestock numbers.

year	camel	horse	cattle	sheep	goat	total
2014	201	85	65	531	3940	4822
2015	195	96	64	606	4383	5344
2016	230	111	73	719	4787	5920
2017	158	72	63	562	3864	4719
Increase of livestock number from 2014 year %						
2014	100.0	100.0	100.0	100.0	100.0	100.0
2015	97.0	112.9	98.5	114.1	111.2	110.8
2016	114.4	130.6	112.3	135.4	121.5	122.8
2017	78.6	84.7	96.9	105.8	98.1	97.9

There are a number of reasons which influenced the decrease in the number of livestock: (a) In 2017, about 80 percent of the total territory of Mongolia had drought especially in steppe and desert steppe zones. It was more severe in Bogd soum of Bayankhongor which is located in the desert steppe. Therefore, the yield was 10-15% lower than in 2015; (b) Therefore, over 40 percent of all households migrated to less occupied pastures in Durulj, Tsagaan

Nuruu and Zadgai which are 80-150 km away for three to six months; (c) As a result, the number and distance of movements have increased. Compared to 2016, the number of movements of each herder household increased by 16.3 percent, average distance of movement by 84 percent, and duration between movements by 55 percent respectively (See Table 9).

Table 9. Dulaan Khairkhan heseg. Herders' household movement. 2017

Average movement per year			Average distance of herders households movement , km			Average distance of one movement, km		
2016	2017	2017/2016 ,%	2016	2017	2017/2016 ,%	2016	2017	2017/2016 ,%
4.3	5	116.3	84	155	184.5	20.0	31.0	155.0

(d) Selling of livestock increased substantially because of the poor pasture yield as well as the early snowfall in winter which led herders to expect a severe winter.

The herders made seasonal movements and pasture rotations according to the Pasture Use Agreement and the PDD. The heseg herders jointly developed a draft plan on pasture use for 2017 and had it approved at the group meeting. They renovated the water reservoir which was built in 2016. In 2017, they extended the water flowing channel by two kilometers, for which each herder family spent 50,000 tugrug, in order to improve the distant pasture use capacity and decrease the use of winter and spring pastures.

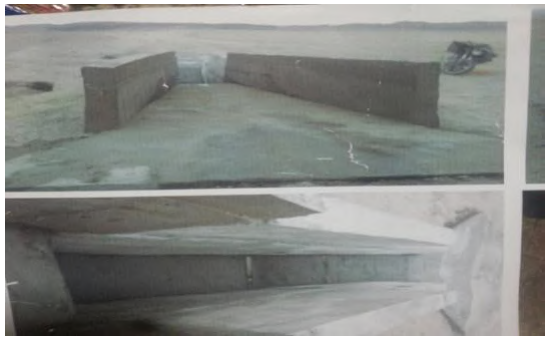

Figure 16: Renovation of the water reservoir in Zadgai am, Dulaan Khairkhan herder group.

The herders also renovated the well in Durulj.

All families prepared hay and fodder in adequate amount, 2-3 tons more than in previous years.

Dulaan Khairkhan herders continued to protect licorice plants and saxaul trees. Also, they continued to protect wild sheep and goats in Ikh Bogd special protected area. The local wildlife conservation volunteer Togookhuu reported that the number of wild sheep and goats have increased since the previous year.

The group planted 50 seabuckthorn seedlings in the field of 1 hectare near the soum center in 2016. Fifty percent of the planted seedlings have grown well in 2017.


Figure 17: Seabuckthorn Field, Dulaan Khairkhan HG

In 2017, Mr. Gantogoo and Mr. Namdag, herders of Dulaan Khairkhan HG built two new winter shelters, one spring shelter and fixed four winter shelters in the places Oroitin Zaaran Khudag, Duruljiin Khukh Tolgoi.

Figure 18: Newly built structure by Mr. Gantogoo and Mr. Namdag, herders of Dulaan Khairkhan

In order to increase the sales of livestock and reduce animal diseases and improve leather quality, DK herders collected 150,000 tugrug from each family and built a livestock washing bath with size of 1.2x6 meters and 1.4 meters deep in Zadgai am and had all their sheep and goats washed. They built block fences surrounding the bath which are 18 and 32 meters long to keep the livestock and one side of the fence is built with cement.

Each family prepared 4-6 tons of natural hay, 200-500 kg of bran, 200-300 kg of salt, 200-400 of handmade fodder.

Figure 19: Hay store, Dulaan Khairkhan HG.

Herders of Dulaan Khairkhan HG have been selling their camel wool, goat cashmere and other raw materials through their cooperative. Herders send their raw materials along with a note with their name, address and the amount of the raw materials to their cooperative, and receive their sales income from the cooperative. In 2017, the PUG herders sold 10 tons of cashmere, 20 tons of wool and 4000 pieces of livestock skin.

Figure 20: Collecting cashmere from the herders' cooperative, Dulaan Khairkhan HG

Figure 21: The Dulaan Khairkhan HG herders receiving the project funding of 5,550,000 tugrugs from sales of Plan Vivo Certificates.

In 2018-2019, besides implementing activities specified in the monitoring plan, the herders also plan to plant vegetables, livestock fodder, and trees making use of their newly built water reservoir. They also plan to increase their goat cashmere yield by studying and adopting new experiences.

4. Certificate Sales and Funding

Sales income from carbon buyers (minus bank fees) was received on May 15, 2017 and at the end of October, 2017 which totalled 33,325,468 Mongolian tugrugs according to the Central bank rate of November 10 (1 euro = 2731 tugrugs, 1 USD = 2452 tugrugs).

According to the contract signed by the PUG, 50 percent of the total received funding was divided into three equal amounts (5,550,000 tugrugs) for the three PUGs and was transferred to their accounts on November 13, 2017. Thirty percent (9,997,640 tugrugs) of the received funding was distributed for the MSRM project and management costs. An additional 20 percent (6,665,093 tugrugs) was released to herder groups in Dec 2018 upon approval of the Annual Report.

This was the first round of funding disbursed under the project. It was a large incentive for the herders who plan to use the money for implementing planned activities, selling their livestock to regulate the number of livestock, and prepare hay and fodder. Heseg reported that they plan to spend the funding for establishing water wells, preparing and purchasing hay and fodder, building a livestock washing basin, selling livestock, meat and raw materials,

making otor migration, establishing a small shop to sell raw materials, building and fixing shelters and fences.

Please note that some of the photographs in the report were taken by the herders with their mobile phone and some of the pictures are not quite clear.

Report written by Prof. D.Dorligsuren (MSRM).

Annex 2. Ongoing monitoring results for all participants

Monitoring results for Years 2 and 3 are summarised in Section E, Table 8a & 8b.

Further supporting information from MSRM Annual reports for Years 2 and 3 is also included as part of Annex 1, above.

Carbon modelling calculations are presented in the following tables. These underpin the figures for carbon sequestration achieved in Years 2 and 3, as presented in Section C, Table 5 of the main report.

Table Annex 2a: Hongor Ovoo, Ikh Tamir soum. Grazing Management Activity Description by Grazing Location

	Grazing location	Riparian meadow		Mountain meadow			Mountain steppe		
		spring/summer/fall	summer	winter	summer/fall	winter/spring	fall	winter/spring	summer/fall
	Year 2 (2016-17)								
	start of grazing season (dd/mm)	25-Mar-16	12-Jun-16	15-Oct-16	25-May-16	1-Nov-16	20-Aug-16	15-Oct-16	25-May-16
	end of grazing season (dd/mm)	20-Aug-16	1-Aug-16	25-Mar-17	1-Nov-16	1-May-17	15-Oct-16	25-May-17	15-Oct-16
	number of days grazing in location	148	50	161	160	181	56	222	143
	average number of moves (camps) in this location	4	2	1	3	2	2	3	3
	average number of sheep units grazing in this location	5832	10124	9849	1691	4605	3543	9514	2779
	area (ha)	1,483.5	2,651.2	4,639.4	786.4	2,169.1	1,647.9	4,481.8	1,292.6
	yield (kg DM ha)	**946.3**	**919.3**	**1250.0**	**517.5**	**1250.0**	**517.5**	**1250.0**	**517.5**
	total yield (kg DM)	1403761.9	2437124.8	5799212.5	406962.0	2711375.0	852767.6	5602250.0	668930.9
	estimation of sustainable carrying capacity								
	recommended biomass utilization rate (%)	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3
	kg DM per sheep unit per day	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	number of days grazing for each plot in this location	37	25	161	53	91	28	74	48
	total no. Sheep unit that can be grazed to sequester carbon	8129.9	20889.6	10291.4	2180.2	6420.0	6526.3	16222.7	3007.2
		0.72	**0.48**	**0.96**	**0.78**	**0.72**	**0.54**	**0.59**	**0.92**
	Year 3 (2017-18)								
	start of grazing season (dd/mm)	25-Mar-17	12-Jun-17	15-Oct-17	25-May-17	1-Nov-17	20-Aug-17	15-Oct-17	25-May-17
	end of grazing season (dd/mm)	20-Aug-17	1-Aug-17	25-Mar-18	1-Nov-17	1-May-18	15-Oct-17	25-May-18	15-Oct-17
	number of days grazing in this location	148	50	161	160	181	56	222	143
	average number of moves (camps) in this location	6	4	3	6	4	4	5	5
	average number of sheep units grazing in this location	5043	8756	8518	1462	3982	3064	8228	2403
	area (ha)	1,483.5	2,651.2	4,639.4	786.4	2,169.1	1,647.9	4,481.8	1,292.6
	yield (kg DM ha)	**681.3**	**662**	**900**	**372.6**	**900**	**372.6**	**900**	**372.6**
	total yield (kg DM)	1010708.6	1754729.9	4175433.0	293012.6	1952190.0	613992.6	4033620.0	481630.2
	estimation of sustainable carrying capacity								
	recommended biomass utilization rate (%)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	kg DM per sheep unit per day	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	number of days grazing for each plot in this location	25	13	54	27	45	14	44	29
	total no. Sheep unit that can be grazed to sequester carbon	8780.3	30081.1	16672.1	2354.6	9244.8	9397.8	19467.3	3608.6
		0.57	**0.29**	**0.51**	**0.62**	**0.43**	**0.33**	**0.42**	**0.67**

Table Annex 2b: Ikh Am, Undurshireet soum. Grazing Management Activity Description by Grazing Location

	Grazing Location	Riparian meadow	Mountain steppe		Steppe	
		Spring	Spring	Winter	Spring	Winter
	Year 2 (2016-17)					
	start of grazing season (dd/mm)	1-Mar-16	1-Mar-16	20-Nov-16	1-Mar-16	20-Nov-16
	end of grazing season (dd/mm)	10-Jun-16	10-Jun-16	1-Mar-17	10-Jun-16	1-Mar-17
	number of days grazing in this location	101	101	101	101	101
	average number of moves (camps) in this location	6	6	2	6	1
	average number of sheep units grazing in this location	9873	6341	17293	10005	8914
	area (ha)	851.7	703.3	7804.8	1517.1	7441.3
	yield (kg DM ha)	**675**	**525**	**525**	**415**	**415**
	total yield (kg DM)	574897.5	369232.5	4097520.0	629596.5	3088139.5
	estimation of sustainable carrying capacity					
	recommended biomass utilization rate (%)	0.5	0.5	0.5	0.4	0.5
	kg DM per sheep unit per day	1.4	1.4	1.4	1.4	1.4
	number of days grazing for each plot in this location	17	17	51	17	101
	total no. Sheep unit that can be grazed to sequester carbon	12197.3	7833.8	28978.2	10686.2	10919.9
		0.81	**0.81**	**0.60**	**0.94**	**0.82**
	Year 3 (2017-18)					
	start of grazing season (dd/mm)	1-Mar-17	1-Mar-17	20-Nov-17	1-Mar-17	20-Nov-17
	end of grazing season (dd/mm)	10-Jun-17	10-Jun-17	1-Mar-18	10-Jun-17	1-Mar-18
	number of days grazing in this location	101	101	101	101	101
	average number of moves (camps) in this location	8	8	3	8	2
	average number sheep units grazing in this location	7673	4928	13440	7776	6928
	area (ha)	851.7	703.3	7804.8	1517.1	7441.3
	yield (kg DM ha)	**405**	**315**	**315**	**230**	**230**
	total yield (kg DM)	344938.5	221539.5	2458512.0	349539.8	1714475.5
	estimation of sustainable carrying capacity					
	recommended biomass utilization rate (%)	0.4	0.4	0.5	0.4	0.5
	kg DM per sheep unit per day	1.4	1.4	1.4	1.4	1.4
	number of days grazing for each plot in this location	13	13	34	13	51
	total no. Sheep unit can be grazed to sequester carbon	7806.2	5013.6	26080.4	7910.4	12125.0
		0.98	**0.98**	**0.52**	**0.98**	**0.57**

Table Annex 2c: Dulaan Khairkhan, Bogd soum. Grazing Management Activity Description by Grazing Location

	Grazing location	Mountain desert steppe		Desert steppe	
		winter/spring	fall	summer/fall	fall
	Year 2 (2016-17)				
	start of grazing season (dd/mm)	10-Nov-16	20-Aug-16	1-May-16	20-Aug-16
	end of grazing season (dd/mm)	1-May-17	10-Nov-16	10-Nov-16	10-Nov-16
	number of days grazing in this location	172	82	193	82
	average number of moves (camps) in this location	3	2	3	2
	average number of sheep units grazing in this location	5070	2837	782	1451
	area (ha)	9023	4010	1105	2051
	yield (kg DM ha)	**162**	**244**	**244**	**244**
	total yield (kg DM)	1465335.2	976836.0	269178.0	499623.6
	estimation of sustainable carrying capacity				
	recommended biomass utilization rate (%)	0.3	0.3	0.3	0.3
	kg DM per sheep unit per day	1.4	1.4	1.4	1.4
	number of days grazing for each plot in this location	57	41	64	41
	total no. Sheep unit that can be grazed to sequester carbon	5476.8	5105.4	896.6	2611.3
		0.93	**0.56**	**0.87**	**0.56**
	Year 3 (2017-18)				
	start of grazing season (dd/mm)	10-Nov-17	20-Aug-17	1-May-17	20-Aug-17
	end of grazing season (dd/mm)	1-May-18	10-Nov-17	10-Nov-17	10-Nov-17
	number of days grazing in this location	172	82	193	82
	average number of moves (camps) in this location	4	3	4	3
	average number of sheep units grazing in this location	3876	2169	598	1109
	area (ha)	9023	4010	1105	2051
	yield (kg DM ha)	**126**	**189**	**189**	**189**
	total yield (kg DM)	1136898.0	757890.0	208845.0	387639.0
	estimation of sustainable carrying capacity				
	recommended biomass utilization rate (%)	0.3	0.3	0.3	0.3
	kg DM per sheep unit per day	1.4	1.4	1.4	1.4
	number of days grazing for each plot in this location	43	27	48	27
	total no. of Sheep unit that can be grazed to sequester carbon	5665.6	5941.6	927.5	3039.0
		0.68	**0.37**	**0.64**	**0.37**

Table Annex 2d: C sequestration per ha by pasture type under differing grazing pressures, Hongor Ovoo

Ikh Tamir Hongor Ovoo	Area (ha)	C per ha pa at 30% grazing pressure (with project)*	Total C pa for 30%	C per ha pa at 40% grazing pressure (with project)*	Total C pa for 40%	C per ha pa at 50% grazing pressure (with project)*	Total C pa for 50%
Riparian Meadow							
Mar- Aug	1485.3	1.1600	1723	0.5468	812	0.0156	23
May- Aug	2652	1.0274	2725	0.6652	1764	0.3699	981
Mountain Meadow							
Oct-Mar	4639.8	0.2133	990	0.1004	466	0.0656	304
May-Oct	786.4	1.523	1198	0.7123	560	-0.0664	-52
Oct-May	2169.1	1.0025	2175	0.9822	2130	0.9497	2060
Mountain Steppe							
Aug-Oct	1,647.9	0.7534	1241	0.4139	682	0.1209	199
May-Oct	1,292.6	0.8923	1153	0.323	418	-0.0652	-84
Oct-May	4,481.8	0.5512	2470	0.4528	2029	0.2836	1271

*Figures for C sequestration per ha for the different grazing pressures and pasture types are as derived from the CENTURY modelling (see Technical Specification in PDD). As part of the conservative approach taken here, grazing pressures exceeding 50% are considered not to sequester any carbon. Actual grazing pressures as calculated in Table Annex 2a above for the various pasture types in Years 2 and 3 are used in conjunction with the above rates per ha for these pasture types to calculate total carbon sequestered, as presented in Section C.

Table Annex 2e: C sequestration per ha by pasture type under differing grazing pressures, Ikh Am

Undurshireet Ikh Am	Area (ha)	C per ha pa at 30% grazing pressure (with project)*	Total C pa for 30%	C per ha pa at 40% grazing pressure (with project)*	Total C pa for 40%	C per ha pa at 50% grazing pressure (with project)*	Total C pa for 50%
Riparian Meadow							
Mar- June	851.7	1.1600	988	0.5468	466	0.0156	13
Mountain Steppe							
Mar- June	703.3	0.8923	628	0.323	227	0.0656	46
Nov-March	7804.8	0.5512	4302	0.4528	3534	0.2836	2213
Steppe							
Mar- June	1,517.0	0.8923	1354	0.323	490	0.0656	100
Nov-March	7,441.3	0.5512	4102	0.4528	3369	0.2836	2110

*Figures for C sequestration per ha for the different grazing pressures and pasture types are as derived from the CENTURY modelling (see Technical Specification in PDD). As part of the conservative approach taken here, grazing pressures exceeding 50% are considered not to sequester any carbon. Actual grazing pressures as calculated in Table Annex 2b above for the various pasture types in Years 2 and 3 are used in conjunction with the above rates per ha for these pasture types to calculate total carbon sequestered, as presented in Section C.

Table Annex 2f: C sequestration per ha by pasture type under differing grazing pressures, Dulaan Kharkhain

Bogd Dulaan Khairkhan	Area (ha)	C per ha pa at 30% grazing pressure (with project)*	Total C pa for 30%	C per ha pa at 40% grazing pressure (with project)*	Total C pa for 40%	C per ha pa at 50% grazing pressure (with project)*	Total C pa for 50%
Mountain desert Steppe							
Nov-May	9023	0.5512	4973	0.4528	4086	0.2836	2559
desert steppe							
Aug-Nov (1)	4010	0.7534	3021	0.4139	1660	0.1209	485
May-Nov	1,105.0	0.8923	986	0.323	357	0.0652	72
Aug-Nov (2)	2,051.0	0.7534	1545	0.4139	849	0.1209	248

*Figures for C sequestration per ha for the different grazing pressures and pasture types are as derived from the CENTURY modelling (see Technical Specification in PDD). As part of the conservative approach taken here, grazing pressures exceeding 50% are considered not to sequester any carbon. Actual grazing pressures as calculated in Table Annex 2c above for the various pasture types in Years 2 and 3 are used in conjunction with the above rates per ha for these pasture types to calculate total carbon sequestered, as presented in Section C.

Annex 3. Reallocation of commitments

n/a

Annex 4. Socioeconomic monitoring results

Again, these are reported in Table 8b.

MSRM's annual reports, which provide further details of herders' activities and successes, are included at Annex 1, above.

Annex 5. Conservation and monitoring results

These are reported in Tables 8a, 8b, referring to Annex 2.

Annex 6. Impacts

Monitoring results as reported in previous annexes and in Table 8.

Annex 7. Community meeting records (summary)

Meetings and training events with *heseg* members are described in Section H above.