Pastures, Conservation and Climate Action, Mongolia

Annual Report Year 5 (01.04.2019-31.03.2020)

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Summary

Project overview	
Reporting period	1st April 2019- 31st March 2020
Geographical areas	3 herder community (*heseg*) areas at sites across Mongolia: *i)* Hongor Ovoo *heseg*, Ikh Tamir *soum* (district), Arkhangai *aimag* (region) (36,756 ha) ii) Ikh Am *heseg*, Undurshireet *soum*, Tuv *aimag* (18,241 ha) iii) Dulaan Khairkhan *heseg*, Bogd *soum*, Bayankhongor *aimag* (22,485 ha)
Technical specifications in use	Technical Specifications as set out in Part G of approved Phase II PDD (27/6/2022) 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, Phase II PDD)

Project indicators	Historical (Years April 2015 -March 2019)	Added/ Issued this period (April 2019- March 2020)	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	124	0	116
Area under management (ha) where PES agreements are in place	77482	0	77,482
Total PES payments made to participants (USD)	13,128.00	65162.70	78,290.7
Total sum held in trust for future PES payments (USD)	6058.62	64393.68	64393.68
Allocation to Plan Vivo buffer (tCO_2) (including this issuance)	16,518	1,936	18,454
Saleable emissions reductions tCO2)	90,674	10,096	100,770
Unsold Stock at time of Submission (PVC)			0
Plan Vivo Certificates available for future issuance			**0**
Buffer credits available for future allocation (after current issuance)			**0**
Plan Vivo Certificates (PVCs) issued to date			**90,674**
Plan Vivo Certificates requested for issuance in this period			**10,096**
Total PVCs issued (including this report)			**100,770**

Part A: Project updates

A1 Key events

Participating herder groups (heseg) continued to show their commitment to the project through successful implementation of planned activities across a range of pasture management, livelihood and conservation issues. As in Years 2, 3 and 4, they conducted activities over and above those planned in the PDD to include additional conservation and livelihood support activities, as specified in Section E, below. Sales of and demand for certificates continued to increase above levels in previous years. Proceeds from certificate sales (less agreed MSRM management costs of 30%) continued to be distributed across the participating project sites, to be allocated to activities as agreed by the herder groups (heseg) themselves.

In Year 5, these funds continued to be used by herder groups primarily to create and maintain mutual funds, through which members could be offered low interest loans for critical activities such as winter preparations, marketing of livestock products and seasonal movements throughout the year.

A2 Successes and challenges

As noted in previous reports, the continued functioning of the project and commitment of herders to it is a significant success in itself, given that this is the first of its kind in Mongolia. An even greater indicator of success is that at the end of the Phase 1 commitment period (April 2015 - March 2019), coinciding with the end of Year 4, all participating herder groups expressed a strong desire and commitment to continue with PCCA into Phase 2 (April 2019 onwards). This is despite the originally unfamiliar nature of the funding model, based on reward in exchange for delivery against mutually agreed targets, and the quite slow progress of certificate sales. The latter did, however, improve in Year 4 and continuing into Year 5, with some major sales to new purchasers. Good pasture yields in summer 2019 compared to 2017 and 2018 reduced the need for many participating herders to make long distance *otor* movements and facilitated compliance with pasture management plans. However, restrictions on marketing and offtake of livestock due to disease-related quarantine restrictions (e.g. linked to covid pandemic), combined with falling market prices for some livestock product, resulted in some increases in stocking rates, as discussed in Section E1 below. Nonetheless, mobility between seasonal pastures and pasture yields, enabled some carbon sequestration as modelled at participating sites. As in Phase I, extensive biodiversity monitoring proved a challenge at some sites, as specified in Sections B and E, below, due to financial constraints. 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 previous Annual Reports, the project validator did not submit any formal CARs. However, he did make the following observations in the original Validation Report, which we continue to act on:

'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). These points for action were discharged by MSRM training for heseg on planting green fodder (oats and barley). They were also discharged by further training on pasture degradation and ways to reduce this, on rotational pasture use and on carbon sequestration throughout Years 2-5.

1. '*MSRM needs to provide continued training and ensure that herders 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, as noted in this and previous Annual Reports, MSRM instituted further training in land management techniques for *heseg* members in 2016, and 2017,2018, and also in 2019. 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 according to the specific planned actions of the herder groups (e.g., tree and fodder planting).	MSRM provided further ongoing training in specific activities with herder groups in Summer 2016 (May-September), 2018 and 2019 (Years 2, 3, 4 and 5).
Validation Report	**Section 2.7: Monitoring** Observation by Validator: MSRM needs 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), 2018 and 2019. Local officials were also invited to specific training events, and training materials and project outputs shared with all parties.

In addition, Phase I of the project successfully completed the formal PV verification process with an independent auditor. Covid-related travel restrictions meant there were unavoidable delays in the process, but it was successfully completed and signed off by Plan Vivo in 2021, following which the Phase II PDD was also submitted and approved by Plan Vivo. This Phase II PDD document is publically available on the Plan Vivo website at Pastures, Conservation, Climate Action – Mongolia | Plan Vivo Foundation.

A4 Future Developments

Throughout Year 4, we worked with existing PCCA herder groups to determine whether and in what form they wish to continue the project across the existing areas. All 3 groups confirmed their wish and intention to move into a second commitment period, Phase 2, from April 2019. The details of this are as set out in the updated Phase I PDD document (2019 version 2) and the subsequent Phase II PDD (27/6/22). Year 5 was thus the first year of Phase II commitments, with Phase II set to run from 2019-2029.

Other major conservation organisations and government bodies active in Mongolia continue to show interest in adopting the PCCA approach, which may result in it being rolled out to other areas and sites in the future. These discussions are ongoing.

Part B: Project activities

B1 Project activities generating Plan Vivo Certificates

The Technical specification is as set out in Part G of the approved Phase II PDD (27/6/2022). This mirrors the Technical specification used in the Phase I PDD, with the continuation of this Technical specification approved by Plan Vivo and their technical advisors. As in Phase I, this Phase II specification is linked to Plan Vivo Climate Benefit Quantification Approved Approach 'Carbon sequestration through improved grassland and natural resources management in extensively managed grasslands' Version 1 (Annex 8, Phase II PDD), hereafter referred to as TS1. This is linked in turn 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 in the Phase II PDD. Modelled carbon reductions in Year 5 for each site are as specified in Section C, Table 4 below. 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 specification	Area (Ha)	No herding households	No Community Groups
TS1	77,482 ha (total pasture areas for all three sites – see Project Indicators, above)	116	3

There have been no new technical specifications submitted to the PV Foundation for approval during or since completion of Phase I, nor are there any currently in development. The project has not expanded to new communities or geographical areas in this reporting period (Year 5). The slight reduction in numbers of herding households reflects permanent relocation of some member household since Year 4.

B2 Project activities in addition to those generating Plan Vivo Certificates

The activities reported are those set out in the Phase II 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 Phase II 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 Year 5 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 Year 5;
- Herders' increased participation in decision-making on environmental issues with herders' committee established and recognised by local administration in Year 1 and indicators in subsequent years as set by that committee;
- The forest cooperative in Ikh Tamir soum purchased oat seeds with the PCCA project funding and the project participating herder families planted animal fodder. Planting animal fodder is beneficial for herders as it is much cheaper than purchasing animal fodder from the market as well as it helps to rotate and rest the pastureland. In 2019, 15 herder families in Ikh Tamir soum harvested 15 tonnes of green fodder.
- Repair of fences and winter shelters, with 18 fences/ shelters repaired in Year 5, in addition to those repaired in previous years;
- Collaborative production and marketing of local brand milk products, and following the establishment of a cooperative in Year 3, resulting in increased household income against 2015 baselines;
- Enhanced household income from gathering and sale of wild fruit and nuts;
- Combing of yak wool and delivery to markets, with enhanced household income from this source.

Monitoring results against these activities and associated indicators are summarised in Part E, Table 8b.

For Ikh Am heseg: In Year 5 of the project, these additional activities entailed:

- Protection of red deer, argali, marmot and Mongolian gazelle, e.g. through herder patrols;
- Repair of fences/ winter or spring shelters;
- Collaborative production and marketing of milk and curd in season, with enhanced household income from this source against 2015 baselines;
- Production of felt and delivery to markets, with 250m felt produced and marketed in Year 5, linked to enhanced household income;
- Hay preparation, with hayfield established by end 2015 and increased % of households with adequate hay provision in Year 5 and in accordance with targets set in Year 1.
- Encouraging herders who have reduced the number of livestock to engage in other types of production and services, such as sewing and purchasing good breeds of dairy cattle.

Monitoring results against these activities and associated indicators are summarised in Part E, Table 8b.

For Dulaan Khairkhan herder group: In Year 5 of the project these additional activities entailed:

- Protection of argali, ibex and goitered gazelle, e.g. through herder patrols and surveys;
- Protection of saxaul forest, with numbers of cut stumps decreased by >80% by comparison with 2015 baseline data by the end of Year 5;
- Repair of fences/winter or spring shelters;
- Enhanced income through vegetable production in Year 5, following earlier establishment of a greenhouse;
- Hay preparation, with increased percentage of herders with adequate hay provision in Year 5, and according to PDD targets.

Monitoring results against these activities and associated indicators are summarised in Part E, Table 8b.

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

The project requests the issuance of a further 10539 certificates, already earned through activities in Year 5, and to meet buyer demands. For Year 5, and as discussed in Section E below, despite some increases in livestock numbers at the sites, these were offset by some higher pasture yields (as in Year 4) and greater mobility of herders at some sites and pastures. This resulted in carbon sequestration still being achieved.

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

Table 4: Statement of tCO_2 reductions available for issuance as Plan Vivo Certificates based on activity for reporting period 04/19– 03/20
NB: Risk buffer allocations are different across the three sites (H.O. 10%, L.A. 20%, D.K. 20%)

Area ID	Total area (ha)	Tech. Spec	Saleable ER's (tCO_2) generated in previous periods* (end Phase I)	Total ER's (tCO_2) achieved this period**	% Buffer	No. of PVCs allocated to buffer from ER's achieved this period	Saleable ER's (tCO_2) from this period	Issuance request (PVCs)	ER's (tCO_2) available for future issuances
Hongor Ovoo	36756	Improved grassland management	44,287	4702	10	470	4232	4232	0
Ikh Am	18241		12,707	4283	20	857	3426	3426	0
Dulaan Khairkhan	22485		33,680	3047	20	609	2438	2438	0
TOTAL	**77482**		**90,674***	**12032**		**1936**	**10096**	**10096**	**0**

*these saleable ERs from Phase I were accounted for and sold during Years 5 and 7, so are not included in further calculations here

C3 Allocation of issuance request

Table 5: Allocation of issuance request

Buyer name/ Unsold Stock	No. PVCs transacted	Registry ID (if available) or Project ID if destined for Unsold Stock	Tech spec(s) associated with issuance
PCCA (unsold stock)	*28389*	*PCCA*	*TS1*
TOTAL			

C4 Data to support issuance request

Under the Management Plans in the Phase II PDD, evidence for carbon sequestration is through grazing pressure, movement patterns and stocking rates for each site and its different pasture types. Tables C and D for Hongor Ovoo and Dulaan Khairkhan are found in Annex 5 of the PDD, with equivalent tables for Ikh Am included as Table F1a and F1c in the main body 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 Technical Specification). Actual rates for Year 5 per site are summarised in C2, Table 4 above and in E1, Table 8a, with underpinning spreadsheets, based on Phase II PDD Annex 5, as set out in Annex 2 tables in 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 Year 5 of the project, MSRM checked reported actions in July/ August and then again at the end of the year. A training seminar was also conducted with participants in September. Overall, monitoring undertaken at the end of Year 5 was thus designed to monitor compliance with site specific Management Plans, and to confirm climate, livelihood and biodiversity benefits against PDD baselines.

Detailed tables of activities for each site, showing progress against agreed activities and indicators

are included in Part E, Monitoring Results. MSRM's Annual Report for Year 5 is included at 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.

Part D: Sales of Plan Vivo Certificates

D1: Sales of Plan Vivo Certificates

Table 6: Sales of Plan Vivo Certificates in Year 5

Invoice Date	Date of receipt by MSRM	Vintage	Buyer	No of PVCs	Price per PVC ($)*	Total sale amount ($)*	% received by participants *
2019/10/02	2019.11.11	2016-2017	ZeroMission	624			70%
2020/02/06	2020/02/13	2016-2017	ZeroMission	454			70%
2020/03/02	2020.04.13	2016-2017	ZeroMission	1181			70%
2020/03/16	2020/03/20	2016-2017	CLevel	300			70%
Total				***2559***			

*Pricing reported for internal monitoring purposes only and is removed from the final published document.

Table 7: Summary of Sales in Year 5

International wire bank fees ($)*	
Local bank charges*	
PV issuance fees ($)*	
Total sales after deduction of bank fees and issuance fees ($)*	
Amount assigned to participants (70%)	9,314.13

*Charges and fees reported for internal monitoring purposes only and is removed from the final published document.

Please note that, for this annual report, Table 6 represents sales not yet been reported within any previous annual report, but not all sales made in this monitoring period. This is because we have changed the manner in which it reports on sales data, from this annual report going forwards. The result of this is that some sales that were invoiced in the year 5 monitoring period were reported in the year 4 annual report. For more information, please see Annex 8.

The amount received by participants takes into account the 30% allocated to MSRM for management, monitoring and reporting (calculated after deduction of any bank and PV issuance fees).

The project's full historic sales data, including sales data for this reporting year, is provided in Annex 8.

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 & b, below.

Table 8a: Summary of Carbon Sequestration (Year 5) (for Phase I, Years 1-4, see Year 4 AR)

			C Seq. (tCO_2e) p.a. at different grazing pressures				C Seq. (tCO2e) based on recorded grazing pressure at each site (Year 5)
Site	Pasture type	Season	30%	40%	50%	> 50%	Total Yr 5
i) Hongor Ovoo	Riparian Meadow	Spring/summer/fall	1723	812	23	0	23
	Riparian Meadow	Summer	2725	1764	981	0	981
	Mountain Meadow	Winter	990	466	304	0	304
	Mountain Meadow	Summer/fall	1198	560	-52	0	-52
	Mountain Meadow	Winter/spring	2175	2130	2060	0	2060
	Mountain Steppe	Fall	1241	682	199	0	199
	Mountain Steppe	Summer/fall	1153	418	-84	0	-84
	Mountain Steppe	Winter/spring	2470	2029	1271	0	1271
			13675	**8861**	**4702**	**0**	**4702**
ii) Ikh Am	Riparian Meadow	Spring	988	466	13	0	13
	Mountain Steppe	Spring	628	227	46	0	46
	Mountain Steppe	Winter	4302	3534	2213	0	2213
	Steppe	Spring	1354	490	-98.91	0	-98.91
	Steppe	Winter	4102	3369	2110	0	2110
			11374	**8086**	**4283**	**0**	**4283**
iv) Dulaan Khairkhan	Mtn Desert Steppe	Winter/spring	4973	4086	2559	0	2559
	Mtn Desert Steppe	Fall	3021	1660	485	0	485
	Desert Steppe	Summer/fall	3346	1211	-245	0	-245
	Desert Steppe	Fall	1545	849	248	0	248
			12885	**6952**	**3047**	**0**	**3047**

Table 8b: Summary of Overall Monitoring Results (Year 5)

Site and 'Traffic light'[1] indicator status	Activities & Indicators (Year 5)	Expected result	Results Achieved
Hongor Ovoo heseg			
1.Pasture management (carbon sequestration) 	*Year 5*: Annual pasture use schedule developed and implemented, with grazing pressure equivalent to modelled carbon sequestration rates for different pasture types.  *Harvesting natural hay and green fodder with the tractor purchased by the project funding*  *Herders receiving oat seeds from the project*	*Year 5:* At least 90-100% of households comply with schedule in summer/winter 2018. 5% reduction in livestock (sheep units) against baseline by end March 2019.	*Year 5: 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, the target 5% reduction in livestock numbers (by sheep units) was not achieved in Year 5 by comparison with baseline. Average numbers and distances of movement p.a. has, however, increased by comparison with the baseline. Reasons and implications are outbreak of the corona virus, the export of livestock and meat was stopped, and the price fell. In order to reduce the stocking rate of pastures, the amount of fodder prepared for growing green fodder is being increased.

	 *Animal fodder planted by the herders*		
2.BiodiversityConservation	*Year 5:* 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.  *Collecting waste wood, Hongor Ovoo, 2019* iii) Increased herders' participation in decision-making on environmental issues.	*Year 5:* As per agreements/ MOU in place between herder groups & local administration and annual workplans agreed. Cleaning of additional 2ha forest area by end of Year 5. 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.	*Year 5:* Agreed activities for Year 5: to conduct forest clean up (specific targets and compliance highlighted below); protection from illegal cutting & collection and sale of wood waste. Neg Sanaa and Khaltar Angarkhai cooperatives conducted forest cleanup of total 2 ha in Year 5. Completed as planned. The five forest cooperatives "Shiree bulan", "Haluun us", "Haltar angarhai", "Neg sanaa", and "Ikh ulunt" have been actively working to do forest cleaning and protection according to the plan approved by local administration.

	iv) Nurseries and planting for enhanced provision of forest habitat for native species	*Year 4:* 1000 saplings planted in total over Phase 1 (2015-2019)  *Tree Nursery, Hongor Ovoo*	Additional 200 seedlings planted in 2019.

3. Socioeconomic activities	*Year 5* i) Repair of fences & winter/spring shelters  *Example repair of spring shelter, HO heseg, 2019*	*Year 5: 5* fences/ shelters repaired by end March 2020.	*Year 5*: In 2019, this group fixed 18 winter and spring shelters, exceeding targets.
	ii) Collaborative production & marketing of local brand milk products  *PCCA project herders participating and selling their home made dairy products at the trade fair in Ulaanbaatar city*	*Year* 5: Collaboration on processing and marketing. Linked to enhanced HH income.	*Year 5:* Herders prepared and sold dairy products cooperatively. 15HH again participated in Lunar New Year Fair in Ulaanbaatar in 2020, representing the heseg as a whole, with each HH earning average 250,000tg. Products also sold through the aimag's dairy products trade fair. "Itgel Bayan Taihar" cooperative was established in Hongor Ovoo heseg in 2018 to help herders to sell raw materials and livestock products.
	iii) Gathering and sale of wild fruits and nuts	*Year 5:* Enhanced HH income against baseline.	*Year 5*:25 HH earned 30 million MNT from pine nuts and berries in 2019-2020.

	iv) Comb yak wool and deliver to markets 	*Year 5:* Enhanced HH income against baseline	In 2019-2020 heseg members combined their yak wool and sold 3.0 tonnes – exceeding previous years, & enhancing HH income.
Ikh Am Heseg			
1.Pasture management (carbon sequestration)	*Year 5*: Annual pasture use schedule developed and implemented, with grazing pressure equivalent to modelled carbon sequestration rates for different pasture types *Year 5*: Dig hand wells	*Year 5*: 90-100% of households comply with schedule in summer/winter 2019. 30% reduction in livestock (sheep units) against baseline by end March 2019 (end Year 4). No specific target for Year 5.	*Year 5: Heseg* leader reported 100% compliance in 2019. Confirmed by MSRM. The number of livestock increased by comparison with baseline, however, again linked to Covid 19 and reduced offtake. No official target for Year 5. A deep water well was established in Chandman in 2018 with soum and heseg funds.

2.Biodiversity Conservation 	*Year 5:* Protect red deer, argali and Mongolian gazelle ii) Protect bushes/trees at Ovootiin & clean area/ collect rubbish; planting of new areas.	*Year 5*: litter cleaning plus planting of additional 1ha	*Year 5*: Volunteer ranger Dogsom and Nyambuu patrolled in the area 4 times and located 2 possible poachers, who then left the areas. Other heseg members took turns to guard and patrol deer and antelope to protect from poachers every 45 days in spring 2019. In March and April 2019 these patrols took place every 30 days to guard deer from poachers who wanted to harvest deer horns. During the heavy snowfall in all parts of Undurshireet soum in December 2018, herders put a total of 100 packs of hay and 200 kgs of salt in grazing areas used by deer and antelope. (Camera trap surveys not repeated, as reported in Year 1). Garbage along the river banks was cleared as planned, with 4 tonnes being removed over the year.

3.Socioeconomic activities	*Year 5:* i) Repair of fences & winter/spring shelters.	*Year 5:* 5 additional fences/shelters repaired by end Year 5.	*Year 5*: Achieved as planned: 1 family built new winter shelters and 8 fixed their shelters.
	ii) Collaborative production and marketing of milk and curd in season.  *Dairy products from Ikh Am PUG at the dairy products exhibition, 2018.*	*Year 5*: Enhanced HH income against baseline	*Year 5*: Herders made dairy products and sold them in their aimag's dairy product exhibition, 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. 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 1,500 000 MNT.
	iii) Produce felt & deliver to markets.  *Animal skin processing station*	*Year 5*: *Heseg* produces & markets 250m felt by end 2018. Enhanced HH income against baseline.	200m felt produced in Year 5. Processing of animal skin also continued using the small-scale factory previously established. Herder Mr. Tsend received a low interest loan from the project fund to expand his animal skin processing factory by purchasing more equipments and raw materials. As a result of increasing the equipment, in previous years, 80-120 sheep and goat skins were processed, but last year, about 150 skins were processed.

	 *Wooden products produced by herder Mr. Gansukh* iv) Hay preparation	*Year 5*: Increased % HH with adequate hay provision.	In order to improve herders' livelihood, it is important for herders to create additional source of income besides herding activities. Therefore, the project has issued low interest rate loans to herders to support their activities. For example, herder Mr. Gansukh received a low interest loan from the project fund and produces wooden products for additional source of income. *Year 5*: in 2019 Hay and fodder preparation: each household prepared 2500-5000 kg of hay, 2000 kg of bran, an increase of some 15 percent above the previous year.
Dulaan Kharkhain heseg			
1.Pasture management (carbon sequestration)	*Year 5*: Annual pasture use schedule developed and implemented, with grazing pressure equivalent to modelled carbon sequestration	*Year 5*: 90-100% of households comply with schedule in summer/winter 2018. 5% reduction in livestock (sheep units) against baseline by end	*Year 5*: *Heseg* leader reported full (100%) compliance with pasture use schedule in terms of timing and periods of use of different seasonal

	rates for different pasture types	March 2020.	pastures, confirmed by MSRM through interviews. However, 5% reduction in livestock numbers by comparison with the baseline not achieved. Reasons for this and implications are highlighted previously e.g. impacts of Covid 19 on livestock sales.
2.Biodiversity Conservation 	*Year 5* i) Protection of argali, ibex & goitered gazelle. ii) Protection of saxaul forest. 	*Year5*: no of cut stumps decreased by >80% compared to 2015 data.	*Year* 5: Herders continue to protect wild sheep and goats in Ikh Bogd special protected area, as well as liquorice plants and saxaul trees (see below). Local wildlife conservation volunteer Togookhuu and Amarsanaa reported that the number of wild sheep and goats continues to increase since Year 1. *Year 5*: The protection of saxaul trees has been supported by the herders every year. In 2019, the number of new stumps decreased by 80%. Herders also campaigned for enactment of a ban on cutting through the Citizen's Representative Hural.

3.Socioeconomic activities	*Year 5* i) Repair of fences & winter/spring shelters. ii) Vegetable production.  *Noodle making equipments purchased with the project funding*	*Year 5*: 5 shelters/ fences repaired.	*Year 5:* Herders built one winter shelters and fixed 4 shelters; thus, meeting the target. Herder Mrs. Uranchimeg received a low interest long term loan from the project fund and bought a small scale noodle making equipments such as a dough mixer, a dough kneeder and a noodle cutter which uses them for preparing noodle dishes in a small restaurant she runs in the soum center.

	iii) Hay preparation  In 2019, the herder group built an animal fodder storage with a capacity 40 ton.	*Year 5*: Increased % HH with adequate hay provision	*Year 5:* Each household prepared and purchased 3-5 tons of natural hay, 200-500 kg of bran, 200-300 kg of salt, and 200-400 kg of handmade fodder.

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 Year 5 (2019-20) all activities are green, with the exception of where some increases in livestock numbers are noted. In these cases, payments based on carbon sequestration have still been earned due to increased mobility, biomass etc still delivering sequestration according to models, and based on conservative 50% stocking rate. All other pasture management –related activities have been met and warrant a green indicator.

For the majority of sites and across the range of indicators, most targets were met in Year 5, 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 5 (see Annex 2, this report).

Hongor Ovoo: 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 and Year 4 (see Annex 1). This is explained by a number of factors. In summer 2019, weather conditions were good, whilst winter was also relatively warm, with little snow. In 2019-2020, meat exports declined sharply due to the spread of infectious diseases such as coronavirus. This year, beef exports stopped and sheep and goat meat exports fell fivefold. Also, due to the introduction of a strict quarantine regime within the country in connection with the outbreak, herders struggled to sell and market their livestock. These conditions supported a local 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 5.0% (actual animal numbers) for Hongor Ovoo heseg against the original 2014 baseline. In view of this increase, requests for issuance are set at the most conservative 50% grazing pressure level in Table 8a, despite the model indicating that lower rates (e.g. 30%) were achieved in some pastures.

Compliance with the pasture schedule meets the target (100% of HH for Year 5), for both average annual mobility of herding households and numbers of movements.

However, despite Year 5 increases in livestock numbers, carbon reductions, as modelled in the PDD and set out in more detail in Section C, were achieved in Year 5. This reflects the higher biomass (pasture yield) in Year 5, as measured in soum level statistics and compared to baseline/ previous years 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 4 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 5 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: Ikh Am also had challenges in achieving the planned reductions in livestock numbers in Year 5. 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 by comparison with the baseline, and essentially due to the same factors, namely a good summer and mild winter in 2019. In summer 2019, weather conditions were good, whilst winter was also relatively warm, with little snow. In 2019-2020, meat exports declined sharply due to the spread of the pandemic coronavirus disease. As highlighted above, beef

exports stopped and sheep and goat meat exports fell fivefold. Also, due to the introduction of a strict quarantine regime within the country in connection with the outbreak, herders struggled to sell and market their livestock. These conditions supported an increase in livestock numbers, whilst falls in market prices for meat and other livestock products further discouraged livestock sales and offtake. Together these produced an overall increase in livestock numbers of some 5% for Ikh Am heseg against the 2014-15 baseline. In view of this increase, requests for issuance are set at the most conservative 50% grazing pressure level in Table 8a, despite the model indicating that lower rates (e.g. 30%) were achieved in some pastures.

There have been no significant changes in the average number of seasonal movements per household and distances as compared to Year 4.

Further details and implications of Year 5 grazing patterns in winter and spring pastures for issuance of certificates are as set out in Part C. As for Hongor Ovoo, the ERs in Table 4, 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 Year 5 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. In addition, herders used PCCA funds to build a livestock washing basin and vaccinate and wash livestock to prevent the spread of disease. Environmental conservation activities were very successful, with many conducted over and above the targets set in the PDD. Herders continued to organise and take 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. Risk management and livelihood support activities were very successfully discharged.

Dulaan Khairkhan: For Dulaan Khairkhan, a similar picture was noted in terms of livestock numbers. In Year 5, an increase was noted against the baseline, again due primarily to the same factors as reported for other sites. Together these produced an overall increase in livestock numbers of some 3.7% for Dulaankhairkhan HG against the 2014-15 baseline. In view of this increase, requests for issuance are set at the most conservative 50% grazing pressure level in Table 8a, despite the model indicating that lower rates (e.g. 30%) were achieved in some pastures.

In 2019, the average number of seasonal movements per household and distances as compared to Year 4 increased slightly.

For other activities and indicators, Dulaan Khairkhan 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. 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. 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 following the heseg's construction of a water reservoir in their territory, 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, smaller than planned reductions in numbers or increases are due to a combination of factors, primarily good weather conditions supporting herd growth and survival, as well as the impacts of the covid pandemic on offtake and marketing. 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, even when pasture conditions are good. Pasture/ climatic conditions and market prices will always continue to influence herders' decision-making, However, PCCA has demonstrated that it has a role to play here in influencing decision-making and practices towards more sustainable ends.

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). All groups have also demonstrated their commitment through opting to enter into this Phase 2 from April 2019.

E3: Socioeconomic monitoring

Monitoring indicators for Year 5 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 Year 5 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.

Part F: Impacts

F1: Evidence of outcomes

As highlighted above and in Table 8b particular, Year 5 activities have continued to secure a range of specific impacts in relation to livelihoods, pasture use and management, carbon sequestration and biodiversity conservation.

The overall impacts of Phase II will be summarised in the end of Phase II 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 (04/19 – 03/20)	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	0	0	0	0
Year 3	0	$6788.00	$6788.00	$2694.31	0
Year 4	$6788.00	$6340.00	$13128.00	$6058.62	0
Year 5	$13128.00	$65,162.7	$78,290.7	64,393.68**	0

*** Payments previously held in trust were disbursed to the participants (herder groups) in the Spring of 2020 upon review of their work report and planned activities.*

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 Year 5. 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 decreased in Years 2, 3 and 5 due to departure of 26 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). No further changes in the numbers of participants were noted in Year 5.

H2: Project Potential

All three existing participating heseg have continued into a second commitment period. As noted, other key organisations in Mongolia have expressed interest in adopting the PCCA approach and thus potentially extending it to new sites and herder groups.

H3: Community participation

For Year 5, 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, in Year 5 a team from MSRM visited each of the three participating heseg. During these visits, herders were given ongoing 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. These meetings were also used as opportunities to discuss the progress of the project; the development of activities agreed under the PDD, 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 furthermore discussed other options for use of funds from sale of PV certificates, with all opting to continue with a micro loan fund with part of these proceeds. 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. Evidence of activities completed is presented in Table 8b, Section E, and in the MSRM reports in Annex 1.

Part I: Project operating costs

I1: Allocation of costs

For Year 5, MSRM costs in training and capacity building with participating heseg and in monitoring were met through their allocation of funds from PV certificate sales.

Table 10: Allocation of costs

Expense	Narrative	Amount (if possible, in USD)	Contribution from sale of PVCs	Contribution from other sources
Travel and Subsistence, plus staff time 2019/20; PCCA workshop August 2019 (MSRM staff)	Training, survey and monitoring work in countryside in 2019/20; including vehicle rental and staff costs; training on global warming, carbon emissions and pasture management techniques Country management of project and Markit account; costs for PCCA workshop June 2019	$32940 USD (Staff cost 15340 USD, travel and Subsistence 9600 USD, workshop cost 6000 USD, other cost 2000)	$32940	

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 Report for Year 5 is also included below.

MSRM Year 5 Annual Report

1. Hongor Ovoo

The Hongor Ovoo herder group 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 units) by 5% in 2019-2020 by comparison with the baseline, the number of livestock increased due to the increase in the number of sheep. The actual number of livestock has increased by 5% in 2019 compared to 2014. In summer 2019, weather conditions were good, whilst winter was also relatively warm, with little snow. In 2019-2020, meat exports declined sharply due to the spread of infectious diseases coronavirus disease. This year, beef exports have stopped and sheep and goat meat exports have fallen fivefold. It is also due to the introduction of a strict quarantine regime within the country in connection with the outbreak. 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 (Table 1).

Table 1. 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
2018		804	2432	7120	3448	13804
2019		652	2895	8203	3143	14893

The number of livestock movements is similar to that of the previous year.

All herders from HO heseg of Ikhtamir soum made seasonal movements and pasture rotations by 100 percent as planned.

Each household harvested and prepared 2 tons of hay in average. Some herder families purchased 1-2 tons of green fodder, while some families collected horse dung, aspen tree leaves and stinging nettle and prepared homemade livestock fodder. Each household prepared 100-400 kg of homemade livestock fodder in average and purchased 200-500 kg of salt. The forest cooperative in Ikh Tamir soum purchased oat seeds with the PCCA project funding and the project participating herder families planted animal fodder in their pastureland. Planting animal fodder is beneficial for herders as it is much cheaper than purchasing animal fodder from the market as well as it helps to rotate and rest the pastureland. In 2019, 15 herder families in Ikh Tamir soum harvested 15 tonnes of green fodder.


Herders receiving oat seeds from the project. Animal fodder planted by the herders

The project herders purchased a small-scale tractor with the project funding which they use it for harvesting natural hay. This allows them to save labour as well as prepare more natural hay for winter preparation.


Harvesting natural hay with the tractor purchased by the project funding

Every year, 30 % herder household fixed their winter and spring shelters.

All herders of the group participated in developing the "Pasture use and protection plan" of 2019 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 Khongor Ovoo PUG and 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 plans for forest organization and forest management.
The soum governor and the forest unit designated "Ikh ulunt" cooperative to do forest cleanup of an area of 0.5 hectares and "Khaltar Angarkhai" cooperative to do forest cleanup in area of 0.5 hectare.

Ikh Tamir soum has a large number of cattle and yaks, and herders in this soum prepare various homemade dairy products which are well known in the country thus selling homemade dairy products is one of the main income sources for the herder families in this soum. There is a major dairy products trade fair organized by the Ministry of Environment and Tourism of Mongolia in Ulaanbaatar city each year prior which herders from all parts of the country gather and sell their self-prepared dairy products brought from their hometowns. The PCCA project participating herder families collaboratively participated in this trade fair organized in Ulaanbaatar city and sold their home made dairy products transported from their area. The project has assisted the herders to collaborate as a team to participate in the trade fair and to transport their dairy products to the city. In 2019, the group herders combed their yak wool and sold 3.0 tons of yak wool.

Herders have developed a micro loan fund with the funds from the sales of PV certificates which issues low interest rate loans to the community herders who have urgent needs for paying health care costs, purchasing hay and fodder, fixing animal shelters or running a small business and etc. Generally, herders often get a loan from banks with high interest rate loan and with complex application procedures. Therefore, herders are very pleased with the project micro loan fund which allows them easy access and low interest loans.

Herders receiving micro loans from the community project leader

In 2017 and 2019, the project funding of 86 115,000 MNT was transferred to HO heseg. The herders in the group discussed how to use the money at their group meeting and agreed to establish a mutual micro loan fund to lend money to their herders. Mongolian nomadic herders receive their income only twice a year; in spring from combing their goat cashmere and in autumn around October and November from selling their livestock. Herders often do not have any other fixed income in other times of the year, so they frequently get loans from the bank. Over 90 percent of all herders take bank loans with a monthly interest rate of 2.5-3 percent for 3-9 months. This way the project funding is being raised and used in a transparent way to inform and implement the project objectives, and accessible for all herders to use it for activities such as building and repairing animal shelters, preparing hay, making 'otor' movements, operating wells, selling livestock products at the soum center and in centralized markets. Participants are also discussing about increasing this fund by investing money from the group herders.

2. Ikh Am

According to the soum's land utilization plan, "Ikh Am" PUG 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 in 2019-2020 against the baseline according to the monitoring plan, it was increased by 5.4 percent, following marked reductions in 2017 and 2018.

Table 2. Ikh Am Heseg actual livestock numbers

	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**
2018	2	809	985	10529	6046	**18371**
2019		971	982	11710	7156	**20819**

As explained for other sites, increases reflect local conditions and national restrictions in 2019-20. Specifically, in summer 2019, weather conditions were good, whilst winter was also relatively warm, with little snow. In 2019-2020, meat exports declined sharply due to the spread of infectious diseases, particularly coronavirus. This year, beef exports have stopped and sheep and goat meat exports have fallen fivefold. It is also due to the introduction of a strict quarantine regime within the country in connection with the outbreak. 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 for Ikh Am heseg against the 2014-15 baseline.

The heseg herders have been using pastures in seasonal rotation as scheduled.

The data on pasture yield was obtained from the pasture monitoring study by the soum meteorological station. In 2019, due to favourable weather conditions, pasture yields increased by 24.3 percent compared to 2018. Pasture yield and pasture carrying capacity are highly dependent on climatic conditions. In 2019, the average number of seasonal movements per household and distances as compared to Year 4 decreased by 13.8 % due to increased pasture yields.

Hay and fodder preparation: each household prepared 100-150 packs (1 pack of hay - 25 kg) or 2500-3750 kg of hay, 50 sacks (1 sack - 40 kg) or 2000 kg of bran, and pickled 200-500 kg of leeks, stinging nettles, and stored horse dung.

Mr. Nyambuu and Mr. Dogsom, herders from Ikh Am PUG were issuedwith volunteer ranger's licenses by the Ministry of Nature and Environment. The herders have been taking actions to protect wildlife such as wild sheep, deer, and antelopes.

In order to protect wildlife including deer and antelopes from poachers, the heseg herders took turns to patrol and guard them every 45 days in fall. In spring, herders rotated every 30 days to patrol and guard deer from poachers who try to poach deer for their horns. These actions help wildlife to raise naturally.

10% of the herder families fixed their winter and spring shelters.

In 2019-2020, besides implementing activities specified in the monitoring plan, the herders planned to make hand-made sheep wool products, and produce more dairy products to increase their revenue. The 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 1,5 000 000 MNT.

In 2017-2019, the project funding of 64 420,000 MNT was transferred to Ikh Am heseg. The herders in the group discussed how to use the money at their group meeting and agreed to establish a mutual micro loan fund to lend money to their herders. Mongolian nomadic herders receive their income only twice a year; in spring from combing their goat cashmere and in autumn around October and November from selling their livestock. Herders do not have any other fixed income in other times of the year, so they frequently get loans from the bank. Over 90 percent of all herders take bank loans with a monthly interest rate of 2.5-3 % for 3-9 months. Therefore, a mutual fund was created to meet this need. This way the project funding is being raised and used in a transparent way to inform and implement the project objectives, and accessible for all herders to use it for activities such as building and repairing animal shelters, preparing hay, making 'otor' movements, operating wells, selling livestock products at the soum center and centralized markets. Participants are also discussing about raising this fund by investing money from the group herders.

In order to improve herders' livelihood, it is important for herders to create additional source of income besides herding activities. Therefore, the project has issued low interest rate loans to herders to support their activities. For example, herder Mr. Gansukh received a low interest loan from the project fund and produces wooden products for additional source of income.

Wooden products produced by herder Mr. Gansukh

Herder Mr. Tsend received a low interest loan from the project fund to expand his animal skin processing factory by purchasing more equipments and raw materials. The animal skin processing factory processes sheep skin which were previously left unused and sell the process skin in the local market or makes clothing with the processed sheep skin.

A herder woman making clothes with the processed sheep skin

3.Dulaan Kharkhain

According to the soum's land management plan, Dulaankhairkhan HG of Bogd soum, Bayankhongor aimag made a Pastureland Use Agreement with the soum land inspector based on the soum governor's order in 2017. The number of livestock (converted to sheep unit) increased in the previous years, but started declining in 2017. The actual livestock number reduced by 7.1% in 2017, and it slightly increased by 3.7%, against the baseline in 2019/20. In summer 2019, weather conditions were good, whilst winter was also relatively warm, with little snow. In 2019-2020, meat exports declined sharply due to the spread of infectious diseases, such as the coronavirus disease. This year, beef exports have stopped and sheep and goat meat exports have fallen fivefold. It is also due to the introduction of a strict quarantine regime within the country in connection with the outbreak. 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.

In 2019 the average number of seasonal movements per household and distances as compared to Year 4 increased slightly.

Table 3. Dulaan Kharkhain actual livestock numbers

	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
2018	202	91	47	528	4008	4876
2019	224	98	39	531	4109	5001

One of the factors contributing to pasture improvement is the traditional rotational grazing.
Herders' household movement has increased 14.3 % compared with previous years. The data on pasture yield was obtained from the pasture monitoring study by the soum meteorological station. In 2019, the pasture yield shows a decrease compared to the previous year due to the drought in the spring and summer of 2019. This fluctuation affects the number and distance of movement, number of livestock, and biomass utilization rate. Pasture yield and pasture carrying capacity are highly dependent on climatic conditions.

The heseg herders made a plan to collectively protect saxaul trees and requested the Citizens' Representative Khural to ban cutting and using saxaul trees for fuel. As a result, saxaul forest is renegerating and new trees are growing. The numbers of stumps decreased by up to 80%.

Dulaankhairkhan HG herders continue to protect liquorice plants and saxaul trees as well as wild sheep and goats in Ikh Bogd special protected area. The local wildlife conservation volunteer Togookhuu and Amarsanaa reported that the number of wild sheep and goats have increased since the previous year. Dulaan Khairkhan HG herders jointly built 1 winter shelters, fixed 4 winter shelters.

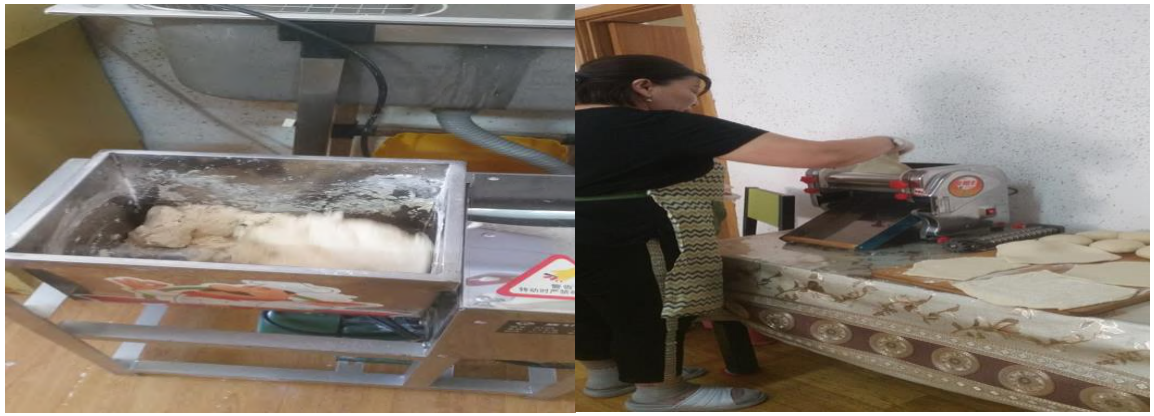
Each household prepared 3-5 tons of natural hay, 200-500 kg of bran, 200-300 kg of salt, and 200-400 kg of handmade fodder.

In 2017 and 2019, the project funding of 53,330,000 MNT was transferred to Dulaankhairkhan heseg. The herders in the group discussed how to use the money at their group meeting and agreed to establish a mutual micro loan fund to lend money to their herders. This way the project funding is being raised and used in a transparent way to inform and implement the project objectives, and accessible for all herders to use it for activities such as building and repairing animal shelters, preparing hay, making 'otor' movements, operating wells, buying gas for transporting their livestock products to sell at the soum center and centralized markets. accessible and transparent.

Herder Mr. Amarsanaa purchased a carpentry equipment with a low interest loan from the project fund and makes wooden products for additional source of income. The herders group participated in a trade fair organized in Ulaanbaatar city to sell their hand made products with support from the project.

A wooden bucket made by herder Amarsanaa and other handicrafts made by other herders displayed at the trade fair in Ulaanbaatar city

Herder Mrs. Uranchimeg received a low interest long term loan from the project fund and bought a small scale noodle making equipments such as a dough mixer, a dough kneeder and a noodle cutter which uses them for preparing noodle dishes in a small restaurant she runs in the soum center.



Noodle making equipments purchased with the project funding

In 2019, the herder group built an animal fodder storage, capacity of which is 40 tn.

Herders of Dulaankhairkhan HG has sold their camel wool, goat cashmere and other raw materials through their cooperative. Herders send their raw materials to their cooperative along with a note with their name, address and the amount of the raw materials, and receive their sales income from the cooperative.

Annex 2. Ongoing monitoring results for all participants

Monitoring results for Year 5 are summarised in Section E, Table 8a & 8b.

Further supporting information from MSRM Annual reports for Year 5 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 Year 5, as presented in Section C, Table 4 of the main report.

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

1	Grazing location	Riparian meadow		Mountain meadow			Mountain steppe		
		spring/summer/fall	summer	winter	summer/fall	winter/spring	fall	winter/spring	summer/fall
	Year 5 (2019-20)								
	start of grazing season (dd/mm)	25-Mar-19	12-Jun-19	15-Oct-19	25-May-19	1-Nov-19	20-Aug-19	15-Oct-18	25-May-19
	end of grazing season (dd/mm)	20-Aug-19	1-Aug-19	25-Mar-20	1-Nov-19	1-May-20	15-Oct-19	25-May-19	15-Oct-19
	number of days grazing in this location	148	50	162	160	182	56	222	143
	average number of moves (camps) in this location	6	4	3	5	4	4	4	5
	average number of sheep units grazing in this location	6448	11195	10890	1869	5092	3917	10520	3073
	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)	**568**	**662**	**1000**	**393**	**900**	**393**	**900**	**407**
	total yield (kg DM)	842628.0	1754729.9	4639370.0	309055.2	1952190.0	647609.0	4033620.0	526096.3
	estimation of sustainable carrying capacity								
	recommended biomass utilization rate (%)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

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	32	46	14	56	29
total number of Sheep unit that can be grazed to sequester carbon	12200.2	50135.1	30683.7	3449.3	15323.3	16520.6	25956.4	6569.6
	0.53	**0.22**	**0.35**	**0.54**	**0.33**	**0.24**	**0.41**	**0.47**

[1]Note: PDD. Phase II, pp -28. Sheep units (SU) are based on the following conversions and in accordance with accepted best practice in Mongolia:
adult camel: 5 SU; young camel: 1 SU; adult cattle: 6 SU; young cattle: 1.2 SU; adult horse: 7 SU; young horse: 1.4 SU; adult goats: 0.9 SU; young goats: 0.2 SU

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

Location 1	Riparian meadow	Mountain steppe		Steppe	
	Spring	**Spring**	**Winter**	**Spring**	**Winter**
Year 5 (2019-20)					
start of grazing season (dd/mm)	1-Mar-19	1-Mar-19	20-Nov-19	1-Mar-18	20-Nov-18
end of grazing season (dd/mm)	10-Jun-19	10-Jun-19	1-Mar-20	10-Jun-18	1-Mar-19
number of days grazing in this location	101	101	101	101	101
average number of moves (camps) in this location	6	6	3	6	2
average number of sheep units grazing in this location	9427	6055	14749	9553	10286
area (ha)	851.7	703.3	7804.8	1517.1	7441.3
yield (kg DM ha)	**750**	**533**	**333**	**533**	**333**
total yield (kg DM)	638775.0	374858.9	2598998.4	808614.3	2477952.9
estimation of sustainable carrying capacity					
recommended biomass utilization rate (%)	0.5	0.5	0.5	0.5	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	34	17	51
total number of Sheep unit that can be grazed to sequester carbon	13552.5	7953.2	27570.7	17155.9	17524.4
	0.70	**0.76**	**0.53**	**0.56**	**0.59**

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 5 (2019-20)				
	start of grazing season (dd/mm)	10-Nov-19	20-Aug-19	1-May-19	20-Aug-19
	end of grazing season (dd/mm)	1-May-20	10-Nov-19	10-Nov-19	10-Nov-19
	number of days grazing in this location	173	82	193	82
	average number of moves (camps) in this location	4	3	4	3
	average number of sheep units grazing in this location	5282	2956	815	1512
	area (ha)	9023	4010	3750	2051
	yield (kg DM ha)	**173**	**150**	**173**	**125**
	total yield (kg DM)	1560979.0	601500.0	191165.0	256375.0
	estimation of sustainable carrying capacity				
	recommended biomass utilization rate (%)	0.5	0.5	0.5	0.5
	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 number of Sheep unit that can be grazed to sequester carbon	12890.0	7859.3	4802.0	3349.8
		0.41	**0.38**	**0.17**	**0.45**

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

See Table 8a in main text**.**

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

See Table 8a in main text**.**

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

See Table 8a in main text**.**

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.

Annex 8. Historic sales data

The full sales data, since the project's inception, is provided by Table 11. In this table the sales made during this annual report's monitoring period are highlighted yellow. Normally, this highlighted data would be first introduced in this annual report and would mirror the data in Table 6. However, since the last annual report, the project has changed how the sales data is reported against the monitoring periods. Specifically, the annual report that a payment is recorded within is now aligned to the date of invoice for each payment. This has resulted in the overlap of sales recorded in Table 6 of this annual report and previous annual reports, but has not had any impact on the total historic sales made by the project, as out lined by the below table.

Table 11 – Historic sales data

Invoice Date	Date of receipt by MSRM	Vintage	Buyer	No of PVCs	Price per PVC ($)	Total sale amount ($)*	% received by participants *
06/02/2017	15/05/2017	2015-2016	CLevel	50			70%
01/07/2017	04/10/2017	2015-2016	ZeroMission	2500			70%
15/12/2017	27/11/2018	2015-2016	ZeroMission	500			70%
31/05/2018	27/11/2018	2015-2016	ZeroMission	1000			70%
02/04/2019	05/04/2019	2015-2016	CLevel	140			70%
09/03/2019	PV escrow	2015-2016	ZeroMission	700			70%
07/05/2019	15/05/2019	2015-2016	ZeroMission	1653			70%
05/06/2019	18/06/2019	2015-2016	ZeroMission	328			70%

26/07/2019	19/02/2020	2015-2016	CLevel	50			70%
05/09/2019	18/10/2020	2015-2016	myclimate	12784			70%
05/09/2019	18/10/2020	2015-2016	myclimate	310			70%
05/09/2020	18/10/2020	2016-2017	myclimate	6906			70%
02/10/2019	11/11/2019	2016-2017	ZeroMission	624			70%
06/02/2020	13/02/2020	2016-2017	ZeroMission	454			70%
02/03/2020	13/04/2020	2016-2017	ZeroMission	1181			70%
16/03/2020	20/03/2020	2016-2017	CLevel	300			70%
				29480			

Table 11: Summary of historic sales data

International bank wire fees ($)*	
Local bank charges *	
PV issuance fees ($)*	
Payment received after the reporting period *	
Total sales after deduction of bank fees and issuance fees ($)*	
Amount assigned to participants (70%)	142,684

*Charges and fees reported for internal monitoring purposes only and is removed from the final published document.