



Pastures, Conservation and Climate Action, Mongolia

Annual report year 1

From April 1st 2015 to March 31st 2016

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Mongolian Society for Range Management (MSRM)

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Annual report year 1 (1st April 2015 – 31st March 2016)

Submitted by: Professor D. Dorligsuren and D. Dulmaa, Mongolian Society for Range Management (MSRM)
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Summary

Project overview	
Reporting period	April 2015 – March 2016
Geographical areas	3 herder community (<i>heseg</i>) areas at sites across Mongolia: i) Hongor Ovoo <i>heseg</i> , Ikh Tamir <i>soum</i> (district), Arkhangai <i>aimag</i> (region) (36,756ha) ii) Ikh Am <i>heseg</i> , Undurshireet <i>soum</i> , Tuv <i>aimag</i> (18, 241 ha) iii) Dulaan Kharkhain <i>heseg</i> , Bogd <i>soum</i> , Bayankhongor <i>aimag</i> (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 Data	Added/ Issued this period (2015)	Total
No. smallholder households with PES agreements	N/A	0	0
No. community groups with PES agreements (where applicable)	N/A	3	3
Approximate number of households (or individuals) in these community groups	N/A	174	174
Area under management (ha) where PES agreements are in place	N/A	77,482	77,482
Total PES payments made to participants (USD)	N/A	0	0
Total sum held in trust for future PES payments (USD)	N/A	0	0
Allocation to Plan Vivo buffer (tCO ₂)	N/A	4,793	4,793
Saleable emissions reductions achieved (tCO ₂)	N/A	27,607	27,607
Adjustments corresponding to previous years	N/A	0	0
Vintage 2015 (current request)	N/A	20,015	20,015
Total Unsold Stock (PVC)	N/A	20,015	20,015
Plan Vivo Certificates (PVCs) issued to date			0
Plan Vivo Certificates requested for issuance (2015 Vintage)			20,015
Total PVCs issued (including this report)			20,015

Part A: Project updates

A1 Key events

April 2015 – March 2016 was the initial year of the project and therefore the year in which Plan Vivo (PV) agreements were developed and finalised with participating herder groups (*heseg*). With the agreement of Plan Vivo, the project has been backdated to an April 2015 start date as herders were already implementing their revised pasture use plans in spring/summer 2015, despite the fact that the PDD was still being finalised and the project not yet validated. The PDD was approved in August/ September 2015 and the project subsequently validated, with the Validation Report being finalised in early 2016. Three herder groups, as identified above, developed their *plan vivos* and detailed activity and management plans with the support of MSRM. These three groups have now signed producer/ group agreements with MSRM for the initial 4-year commitment period.

A2 Successes and challenges

The main success is in developing and initiating the project, the first of its kind in Mongolia, and the first rangeland carbon project for Plan Vivo. The novelty of this approach for local herders, officials and policy makers in Mongolia inevitably also acted as a source of challenges. The project activity is based on self-governing herder groups, which have very good support from member herder households and the wider community. The main point of these self-governing groups is not top down decision-making and implementation, but the principle of community-based resource utilization. This is still a relatively novel concept in rural Mongolia. Furthermore, the PV model, based on reward in exchange for delivery against targets, is relatively unfamiliar in a rural development context wherein short term aid based handouts are more familiar. For the participating herder groups, MSRM has worked extensively with them in development of the *plan vivos* and in capacity building and will continue to do so as the initial commitment period unfolds. The maintenance of close links with local governors and officials has also been integral to the project's success to date and will be sustained into the future.

A3 Project developments

None at this stage.

Table 1: Document updates

PDD (including technical specifications) document version:		
PDD section	Date change	Short description of update
(N/A)		

The project validator did not submit any formal CARs. However, he did make the following observations in the Validation Report, which we take 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 training on tree seedling production and planting before the main planting season in 2016, for the relevant *heseg*. Further training will also be provided in activities planned by other *heseg* and in mapping and recording techniques for herder group leaders, to enable them to better train and support their own members.

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 has planned further training in land management techniques for *heseg* members in summer 2016.

Table 2: Progress against corrective actions

Document	Corrective action	Activity against this
Validation Report	<p>Section 2.4: Permanence.</p> <p>Observation by Validator: additional training required according to the specific planned actions of the herder groups (e.g. tree planting)</p>	MSRM plan to provide further, ongoing training in specific activities with herder groups in Summer 2016 (May- September). To be reported on in the next AR (for Year 2)
Validation Report	<p>Section 2.7: Monitoring</p> <p>Observation by Validator: MSRM need to provide continued training and ensure that herders and local officials are gaining knowledge from land management techniques.</p>	MSRM plan to provide further, ongoing training with herder groups in Summer 2016 (May- September). Local officials will also be invited to specific training events, and training materials and project outputs will be shared with all parties. To be reported on in the next AR (for Year 2).

A4 Future Developments

At this early stage we are not planning any further expansion of activities, although a number of potential investors have expressed interest in the expansion of activities into other areas of the country. In our view it is important to test the approach in the existing sites first. Having said that, we do plan to continue to work with the herders of Dert *heseg*, Ulzit *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 have got part way through this process, but adverse weather conditions and the absence of many herders on long distance migration during key planning periods has precluded their full engagement with the PV process to date. We aim to support them in continuing this development of their *plan vivo* at their request, and at their timescales.

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 Year 1 for each site are as specified in Table 5 below. A further indicator here, as set out in the Annex 5 Management Plans, was the % of herders who complied with the agreed schedule, with at least 70% required to do so for all sites in Year 1.

In addition, as part of the PDD, herder groups (*heseg*) each identified a range of other activities, not specifically related to carbon sequestration, against which progress is to be evaluated (see B2 below).

Table 3: Project activity summary

Name of technical specification	Area (Ha)	No smallholder households	No Community Groups
TS1	77482 (total pasture areas for all three sites – see Project Indicators, above)	174	3

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.

For Hongor Owoo heseg: In Year One of the project these entailed: a) establishment of herder group partnerships for environmental protection, with MOU signed with local administration by end December 2015; b) cooperation in groups for forest cleaning and protection, with initial patrol routes established in summer 2015 and baseline vegetation and bird surveys completed (with Zoological Society of London – ZSL), also cleaning of initial 2ha area by end 2015; c) herders' increased participation in decision-making on environmental issues (e.g. licences for wood cutting), with herders' committee established and recognised by local administration by September 2015; d) production of tree seedlings, the establishment of tree nurseries and planting, with no targets against this action until end 2016; e) repair of fences and winter shelters, with 5 fences/ shelters repaired in Year 1; f) collaborative production and marketing of local brand milk products, with first local brand named milk products produced by the end of 2015; g) enhanced household income from gathering and sale of wild fruit and nuts, with no targets against this action until end 2016; h) comb yak wool and deliver to markets, again with no targets against this action until end 2016.

For Ikh Am heseg: In Year One of the project these additional activities entailed: a) digging hand wells, with one well to have been completed by the end of 2015; b) protection of red deer, argali, marmot and Mongolian gazelle, with baseline surveys (manned and camera trap) of

each target species completed by September 2015 (by ZSL) and local herders trained in manned survey methods (by ZSL), September 2015; c) protection of bushes at Ovootiin and clean area of rubbish, with 3ha at Ovootiin fenced by end of 2015, or trees protected by collars, area cleared of rubbish; d) repair of fences/ winter or spring shelters, with 10 fences/ shelters in Year 1; e) collaborative production and marketing of milk and curd in season, with no targets until end 2016; f) production of felt and delivery to markets, with 100m felt/or 10m per HH produced and marketed by end 2015; g) hay preparation, with hayfield established by end 2015 and confirmation of targets for adequate hay provision for subsequent years.

For Dulaan Kharkhain herder group: In Year One of the project these additional activities entailed: a) protection of argali, ibex and goitered gazelle, with manned survey and camera trapping completed and reported by September 2015 (ZSL), herders trained in manned survey methods and monitoring information pack produced by ZSL for herders' subsequent use; b) protection of saxaul forest, with extent of illegal cutting estimated and management plan developed by herders with local administration and approved by end 2015; c) planting of sea buckthorn, with permission from local administration and planting of initial 0.5ha area in 2015; d) repair of fences/winter or spring shelters, with 5 fences/ shelters in Year 1; e) establishment of greenhouse and subsequent vegetable production, with greenhouse established by end 2015; e) hay preparation, with annual targets for adequate hay provision to be confirmed by herders by end of 2015.

Part C: Plan Vivo Certificate issuance submission

C1 Contractual statement

This requested issuance is based on signed PES agreements with participants complying with all the minimum requirements stated in these agreements.

C2 (b) Issuance request for projects where issuance is made on the basis of ongoing activities on land already managed by the project (e.g. avoided deforestation, calculated *ex-post*)

The number of credits requested for issuance during this reporting period (2015-2015) is 20,015. The Project Coordinator and the herder groups had discussed the percentage of credits to be issued per year as part of the design process involving local communities. At the end of the discussion, it was agreed that 30% of the total available credits eligible for issuance should be requested in Year 1. This is equivalent of 27,607 credits after the buffer reduction. However, because the project does not have a buyer, the number of credits to be issued in Year 1 was capped at 20,000 in accordance to Plan Vivo regulations.

These 20,000 credits were divided as follows:

- 11,011 credits for Hongor Ovoo¹
- 2,327 credits for Ikh Am
- 6,677 credits to Dulaan Kharkhain

These figures are based on the Ikh Am herder group receiving only 20% of overall modelled carbon credits for their site, rather than the 30% originally allocated for Year 1 for all sites, The revised figure

¹ Hongor Ovoo herder group is issuing more credits than the other two groups because it has a proportionally larger size of land under management (36,756 ha), and also, for some pasture types, a relatively high rate of modelled carbon sequestration per hectare.

of 20% reflects the fact that the Ikh Am herder group were unable to comply fully with their pasture management plan in the summer of Year 1, due to adverse weather conditions (see monitoring results, Table E). However it should be noted that, while the pasture management plans for each group cover the whole year, the carbon modelling for Ikh Am deliberately excluded summer pastures, as it was known in advance that their usage is typically very unpredictable and changeable from year to year at this site. Therefore, the adjustment of the planned issuance from 30% to 20% of credits in Year 1 constitutes a highly conservative approach. No adjustments were made for other sites. For Dulaan Kharkhain, the orange indicator against protection of saxaul forests in Table 8 below reflects the fact that a written management plan has yet to be formally approved by the LA. Nonetheless, herders have provided verbal evidence of cessation of illegal cutting, supported by MSRM's site inspection in May 2016 and subsequent report.

Table 5: Statement of tCO₂ reductions available for issuance as Plan Vivo Certificates based on activity for reporting period 04/2015 – 03/2016

Area ID	Total area (ha)	Tech. Spec	Saleable ER's (tCO ₂) available from previous periods	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	36,756	TS1	0	(30% of 51,139) = 16876	10	1,688	15,188	11,011	4,177
Ikh Am	18,241	TS1	0	(20% of 20,055) = 4011	20	802	3,209	2,327	882
Dulaan Kharkhain	22,485	TS1	0	(30% of 38375) = 11,513	20	2,303	9,210	6,677	2,533
TOTAL							27,607	20,015	7,592

C3 Allocation of issuance request

Table 6: 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
<i>e.g. Project Name (unsold stock)</i>	20,015	<i>Tbc upon registration</i>	TS1
TOTAL			

C4 Data to support issuance request

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 in Annex of the PDD Management Plans also show detailed plans for grazing pressure at each site year in year and how these are translated into carbon sequestration (based in Century modelling, as explained in the TS).

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 1 of the project, MSRM were to check reported actions in August/September 2015, then again at the end of Year 1 (e.g. by end of March 2016).

Summary tables of activities for each site, showing progress against agreed activities and indicators for Year 1, are included in Part E, Monitoring Results.

Part D: Sales of Plan Vivo Certificates

D1: Sales of Plan Vivo Certificates

This is the first Annual Report. No sales have been made as yet.

Table 7: Sales of Plan Vivo Certificates




Vintage	Buyer	No of PVCs	Price per PVC (\$)	Total sale amount (\$)	Price to participants per PVC (\$)	% Sale price received by participants










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 summarised in Table 8, below.

Table 8: Summary of Monitoring Results (03/2016)

Site and 'Traffic light' ¹ indicator status	Activities & Indicators (Year 1)	Expected result	Results Achieved
Hongor Ovoo heseg			
1. Pasture management (carbon sequestration) 	Annual pasture use schedule developed and implemented, with grazing pressure equivalent to modelled carbon sequestration rates for different pasture types.	At least 70% of households comply with schedule in summer/winter 2015.	Heseg leader reported 90% compliance in 2015. Confirmed by MSRM September 2015 (final Year 1 monitoring due end March 2016).
2. Biodiversity Conservation 	i) Establishment of herder group partnerships to protect local environments. ii) Cooperation in groups for forest cleaning & protection. iii) Increased herders' participation in decision-making on environmental issues.	Agreements/ MOUs in place between herder groups & local administration (LA) by end 2015. Forest patrol routes established, baseline bird & vegetation surveys completed (with ZSL, summer 2015); initial cleaning 2ha area (end 2015). By end 2015 herder committees established & recognised by LA.	All 5 environment groups officially registered by LA, with MOUs. All completed. Summary of ZSL report at Annex 5 gives further details. Heseg organised forest cleaning of 2ha in cooperation with other teams. At end 2015 heseg members registered in environmental teams. Final roles in decision-making being agreed with LA.
3. Socioeconomic activities 	i) Repair of fences & winter/spring shelters ii) Collaborative production & marketing of local brand milk products	5 fences/ shelters repaired by end March 2016. Local brand named products produced by end 2015.	TBC by March 2016 monitoring Heseg households participated in sale & exhibition in regional centres during Nadaam and New Year celebrations (2015/16), to showcase their local products.
Ikh Am heseg			

<p>1.Pasture management (carbon sequestration)</p>  	<p>i) Annual pasture use schedule developed and implemented, with grazing pressure equivalent to modelled carbon sequestration rates for different pasture types.</p> <p>ii) Dig hand wells</p>	<p>At least 70% of households comply with schedule in summer/winter 2015.</p> <p>1 hand well completed by end 2015.</p>	<p>Heseg leader reported only 37% compliance in 2015, due to adverse climatic conditions in summer period. Confirmed by MSRM September 2015 (final Year 1 monitoring due end March 2016).</p> <p>Evidence to be supplied to and confirmed by MSRM by end March 2016.</p>
<p>2.Biodiversity Conservation</p> 	<p>i) Protect red deer, argali, marmot, Mongolian gazelle.</p> <p>ii) Protect bushes/trees at Ovootiin & clean area/ collect rubbish; planting of new areas.</p>	<p>Baseline survey (manned & camera trap) of target species completed September 2015 (by ZSL), local herders trained in manned survey methods.</p> <p>3ha area fenced or trees protected by collars by end 2015; area free of litter.</p>	<p>Baseline surveys & training completed September 2015. Summary of ZSL report at Annex 5 gives further details.</p> <p>Evidence of fencing/tree collars & litter clearance to be supplied end March 2016</p>
<p>3.Socioeconomic activities</p>   	<p>i) Repair of fences & winter/spring shelters.</p> <p>ii) Produce felt & deliver to markets.</p> <p>iii) Hay preparation</p>	<p>10 fences/shelters repaired by end Year 1.</p> <p>Heseg produces & markets 100m felt/ or each HH produces 10m felt by end 2015.</p> <p>Establishment of hayfield by end 2015; annual targets for HH with adequate hay provision to be confirmed by heseg end 2015.</p>	<p>Repair of fences/ shelters completed as planned. To be verified by MSRM end Year 1.</p> <p>Felt produced as planned.</p> <p>Hayfield has been established. Annual targets for future years being finalised through discussions with the heseg.</p>
Dulaan Kharkhain heseg			
<p>1.Pasture management (carbon sequestration)</p> 	<p>Annual pasture use schedule developed and implemented, with grazing pressure equivalent to modelled carbon sequestration rates for different pasture types.</p>	<p>At least 70% of households comply with schedule in summer/winter 2015.</p>	<p>Heseg households complied with the schedule in 2015, as confirmed by MSRM, September 2015. Final Year 1 monitoring due end March 2016.</p>
<p>2.Biodiversity Conservation</p>  	<p>i) Protection of argali, ibex & goitered gazelle.</p> <p>ii) Protection of saxaul forest.</p>	<p>Baseline survey (manned & camera trap) of target species completed September 2015 (by ZSL), local herders trained in manned survey methods, monitoring schedule established for subsequent events.</p> <p>Baseline number of stumps estimated 2015 (indicative of illegal cutting); management plan developed & approved with LA.</p>	<p>All completed. Summary of ZSL report at Annex 5 gives further detail.</p> <p>Evidence awaited. Due by end of Year 1 (end March, 2016).</p>

	iii) Plant sea buckthorn.	Written authorisation gained from LA in 2015, followed by planting of 0.5ha by end 2015.	Evidence awaited. Due by end of Year 1 (end March, 2016).
3.Socioeconomic activities	i) Repair of fences & winter/spring shelters.	5 shelters/ fences repaired Year 1.	Repair of fences/ shelters completed as planned. To be verified by MSRM end Year 1.
	ii) Establish greenhouse for vegetable production & grow vegetables.	Greenhouse established by end 2015.	Completed as planned. To be verified by MSRM end Year 1.
	iii) Hay preparation	Targets for increased nos HH with adequate hay provision to be confirmed by <i>heseg</i> for subsequent years.	100% <i>heseg</i> HH prepared hay in 2015. Targets for 2016-2019 tbc to MSRM by end March 2016.

1. 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. In the above table, only one dot is used where all activities under a sub heading have achieved the same standard.

For the majority of sites and across the range of indicators, targets were met to this point in Year 1 (1 April 2015 – 31 March 2016), as indicated by the green status of 'traffic lights' for most activities. Further evidence and verification for some indicators is due to be supplied to/ collected by MSRM at the end of Year 1.

The level of compliance with pasture management/ grazing plans in Ikh Am is the main area where targets have not been met thus far. Due to adverse weather conditions (drought) in 2015, only 37% of households were able to comply fully, as reported by the *heseg* leader, with variations from the plan related to use of summer pastures. As a corrective action, the % allocation of certificates in Year 1 has been adjusted from 30% to 20% for this site only, as set out in Table 5. As highlighted above, this is an extremely conservative measure as the carbon modelling deliberately excluded pasture use from July-October, as this is typically highly variable at this site. Detailed discussions will also be held with *heseg* members by MSRM in planning of the Ikh Am pasture use plan for Year 2, to ensure that overall carbon sequestration goals can be achieved as modelled. This will be reported on more fully in an interim report, to be produced following completion of all end of Year 1 monitoring.

E2: Maintaining commitments - (N/A)

E3: Socioeconomic monitoring

Monitoring indicators for Year 1 are as set out for each *heseg* in Section B1 and B2 above, and in Table 8 above.

E4: Environmental and biodiversity monitoring

Monitoring indicators for Year 1 are as set out for each *heseg* in Section B1 and B2 above. B2 sets out biodiversity related activities and monitoring for each site over this period. These are also summarised in Table 8, above. Further evidence for realisation of the Year 1 goals and targets is provided in Annex 5 of this report, which is a summary of Zoological Society of London (ZSL)'s baseline monitoring results and training report, September 2015.

Part F: Impacts

F1: Evidence of outcomes

Not reported against for this first Annual Report.

Part G: Payments for Ecosystem Services

G1: Summary of PES by year

No payments made so far.

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
TOTAL					

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 and are as included in the development of the PDD.

H2: Project Potential

At present we are continuing to work with herders in Dert *heseg*, as explained in section A4, above. We do not have a waiting list of other participants at this early stage,

H3: Community participation

For this initial year, evidence of community participation is summarised below.

All activities within the project were developed by project participants with the support of the project coordinator, MSRM. MSRM have worked with *heseg*/ herder groups to facilitate the participatory development of each group's own activity plan, beginning in 2012 and culminating in 2015. All *heseg* were in existence and functioning prior to the initiation of the PV project and had worked with the project coordinators (MSRM) or Dr Upton previously. Through a series of meetings with MSRM all members of herder groups have undertaken participatory planning 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*

The planning process was conducted through multiple meetings between *heseg* and MSRM from 2012, driven by the requirement to address local needs and priorities, and culminating in an Ulaanbaatar-based workshop in June 2015. This workshop also provided an opportunity for further training by MSRM on Plan Vivo monitoring and implementation and for mutual learning between all parties. Further training was also provided to government officials through this workshop. Herder group leaders also compiled and mapped information on planned activities and secured approval for any planned changes in resource use from local government officials (e.g. *soum* and *bag* governors).



Ulaanbaatar workshop, June 2015

Subsequent meetings and training events conducted by MSRM and ZSL at the study sites in summer and autumn 2015 included further training in the Plan Vivo process, issues of pasture management, monitoring and sketch mapping and, in the case of ZSL, training of herders in biodiversity surveying techniques (as reported in more detail in Annex 5, below). The images below illustrate some of these 2015 training events at the three sites.





MSRM training and monitoring with heseg members at the three sites, August/September 2015

Part I: Project operating costs

I1: Allocation of costs

For Year 1, MSRM costs in training and capacity building with participating *heseg* and in initial monitoring were met through the Darwin Initiative funded project 'Values and Valuation: New Approaches to Conservation in Mongolia' (2012-2015). Funding for this project ceased at the end of March 2015, albeit with some previously allocated funds being carried over with Darwin's permission to support the summer 2015 activities (i.e. Year 1 of the Plan Vivo project). The exact proportion carried over by the various partners is a matter of their own records and exact details are not available here. ZSLs cost in baseline surveys and herder training were also met in the same way. Other sources of funding were not available.

Table 11: Allocation of costs

Expense	Narrative	Amount (if possible in USD\$)	Contribution from sale of PVCs	Contribution from other sources
Travel and Subsistence (MSRM staff)	Herder group (<i>heseg</i>) training and visits summer 2015	(see above)	None	Darwin project.
ZSL consultancy	Including biodiversity surveys, <i>heseg</i> training, reporting, travel and subsistence.	(see above)	None	Darwin project.

Annexes

Annex 1. Monitoring results for issuance request

MSRM excel database, attached. Key results are summarised in Table 8 above.

Table A5. 1a): Management plan by project intervention, Hongor Ovoo heseg, Ikh Tamir, Arkhangai aimag

Project Interventions	Specific Activities (2015-2019)	Result/ Outcome	Monitoring details/ protocols	Indicator (1) & targets	Indicator (2/3):	Report for 2015/16
Pasture management (incl. C sequestration)	Develop & implement schedule for seasonal pasture use (rotation).	Herder group (HG)/ heseg members have schedule for seasonal camps/ pasture use approved by HG meeting and local administration (LA) and MSRM. Herder group members comply with schedule. From Year 1 'with project' schedule to be equivalent to 50% grazing pressure or less across seasonal pasture areas & taking account of biomass etc to meet carbon sequestration targets in accordance with carbon modelling.	2 x p.a. Self-reported by heseg members, subject to biannual confirmation by MSRM August/ September 2015, February/ March 2016, then repeated at same intervals for PV project duration.	Development of agreed annual schedule (approved by HG members & LA (by end March each year) which is equivalent to 50% grazing pressure or less for seasonal pasture areas and in accordance with carbon modelling. Any subsequent updates/ changes also agreed and approved by same parties. 1% reduction in livestock (sheep units) against baseline by end March 2017; 3% by end March 2018; 5% by end March 2019. % of HG households that comply with schedule (70% in summer and winter 2015; 80%, 2016, 90% 2017, 90-100% 2018/19).	<ul style="list-style-type: none"> Average annual mobility (km pa) by household. Baseline developed through socio-economic survey. Indicators will be year in year increase in heseg/ HG mean km pa 	Heseg Leader Nerguibaatar reported that 90% of heseg members followed pasture management plan for 2015 -16.
	Organise seasonal camping in underused areas (Khanuin gol, Khukh nuur).	Improved pasture conservation through using reserve (less used) pasture and camping.	Built into pasture use planning - above. No other specific indicators or monitoring for this activity.			Reserve pasture was fixed and put in to Pasture management plan in negotiation with Soum land office

Biodiversity conservation	Establish herders' partnership to protect local environment at each mountain pass in the herder group area.	Objectives, work plans, responsibilities, mission statements and registration documents for herder groups produced. Herder groups able to conduct collaborative work to protect local habitat, through collaboration with LA.	Herder groups will report to local administration on planned and conducted activities at quarterly meetings. Copies of reports, with LA confirmation of activities to be supplied to MSRM biannually (June, December).	MoUs signed by herder group partnerships by end 2015.	Work plans and objectives of herder groups are documented by the project and completed according to agreed work plans, according to biannual targets as set out in MoU. (indicators can be updated for 2016 onwards once indicator 1 is achieved and according to targets agreed therein).	All 5 environment teams are registered by Soum Forest office officially and cooperated on forest cleaning at local community
	Cooperate in groups for forest cleaning and protection.	Reduced decline of forest habitat and target mammal and plant species.	Annual bird and vegetation surveys, highlighting improved population of target species conducted by heseg. Self-reported 'cleaning' (removal of dead undergrowth to encourage natural regeneration) of target 2 ha per year.	July/ August 2015 forest patrol routes established; baseline vegetation and bird surveys completed (ZSL). By end 2015 cleaning of initial 2ha area. Summer 2016 - 1 repeat vegetation survey and bird survey conducted and reported against baselines. Cleaning of further 2ha area by end 2016. Summer 2017- repeat vegetation and bird surveys conducted and reported against baselines. Cleaning of further 2ha area by end 2017. Summer 2018 - repeat vegetation and bird surveys conducted. All surveys will use agreed protocols supplied by ZSL. ZSL will train heseg members in vegetation surveys in 2015/16. Other surveys to be carried out by ZSL.	Statistically significant increase in populations of key species by 2019 against 2015 baselines.	ZSL baseline surveys and training completed. Heseg organized forest cleaning at planned 2 ha in cooperation with other 4 teams
	Increased herders' participation in decision-making on environmental issues - e.g. licenses for wood cutting.	Develop a herder representative committee to liaise with local administration (may be linked to herders' partnership, above).	Meeting minutes, as supplied by the committee to show input into decision making process by heseg. Independently validated on annual basis by LA/ MSRM.	By September 2015 herder committees are established and recognised and integrated into local administration decision making process for environment issues.	Subsequent indicators are annual/ biannual targets met, as set by the committee.	End 2015 all teams are registered and involvement of environmental teams in decision making is being finalised in discussion with LA.

	Production of tree seedlings (native species) for reforestation.	Nurseries established to produce birch, fir and larch seedlings. Initial planting activities completed. Enhanced provision of forest habitat to native species.	Each planted sapling will be mapped and surveyed to indicate successful development into maturation.	By end 2016 nursery is established and has produced first year of seedlings ready for planting.	By end 2017 200 saplings have been replanted in soum forest area. By end 2018 1000 saplings have been planted.	(No targets for Year 1)
Socio-economic (incl. risk management)	Repair fences & winter/spring shelters.	20 shelters/ fences repaired in total.	Self-reported. Annual verification by MSRM.	5 fences/ shelters p.a. 1st monitoring spring 2016.		Heseg members report that 7 shelter and livestock fences repaired by 20 families working together. TBC by MSRM in end of year monitoring.
	Collaborative production & marketing of local brand milk products.	Increased income through marketing milk products.	Self-reported; heseg accounts and meeting minutes. Annual verification by MSRM.	Local brand named milk products produced by end 2015. Collaboration on processing and marketing within heseg by end 2016. Cooperative established by end 2017.	Enhanced household income by end 2016 and in subsequent years - (% households with increased income, evaluated against baseline).	Heseg households participated in sale-exhibition organized in soum and aimag centre during Naadam and Tsagaan Tsar celebration. During the Sale/Exhibition the 25 participating households improved their income by an average of 250\$.
	Gathering and sale of wild fruit & nuts.	Increased income.	Self-reported; heseg accounts and meeting minutes. Annual verification by MSRM.	Enhanced household income by end 2016 and in subsequent years (% households with increased income, evaluated against pre project baseline)		All heseg households gathered nuts and increased their household increased income (by up to 500\$) as this year tree nut growth was very good. (no official targets against this activity for Year 1).
	Comb yak wool & deliver to markets.	Increased income through marketing wool/ wool products.	Self-reported; heseg accounts and meeting minutes. Annual verification by MSRM.	Enhanced household income by end 2016 and in subsequent years - (% households with increased income, evaluated against baseline).		Not reported yet on the processing. No official targets against this activity for Year 1.

Table A5 2a): Management plan by project intervention, Ikh Am heseg, Undurshireet, Tov aimag						
Project Interventions	Specific Activities (2015-2019)	Result/ Outcome	Monitoring details/ protocols	Indicator (1) & targets	Indicator (2/3):	Report for 2015/16
Pasture management (incl. C sequestration)	Develop & implement schedule for seasonal pasture use (rotation).	Herder group (HG)/ heseg members have schedule for seasonal camps/ pasture use approved by HG meeting and local administration (LA) and MSRM. Herder group members comply with schedule. From Year 1 'with project' schedule to be equivalent to 50% grazing pressure or less across seasonal pasture areas & taking account of biomass etc to meet carbon sequestration targets in accordance with carbon modelling.	2 x p.a. Self-reported by heseg members, subject to biannual confirmation by MSRM August/ September 2015, February/ March 2016, then repeated at same intervals for project duration.	Development of agreed annual schedule (approved by HG members & LA (by end March each year) which is equivalent to 50% grazing pressure or less for seasonal pasture areas and in accordance with carbon modelling. Any subsequent updates/ changes also agreed and approved by same parties. 10% reduction in livestock (sheep units) against baseline by end March 2017; 20% by end March 2018; 30% by end March 2019. % of HG households that comply with schedule (70% in summer and winter 2015; 80%, 2016, 90% 2017, 90-100% 2018/19).	Average annual mobility (km pa) by household. Baseline developed through socio-economic survey. Indicators will be year in year increase in heseg/ HG mean km pa.	Heseg members have developed Pasture management plan and got it approved by Soum Land office. Due to harsh summer drought only 37% of HH were able to follow planned camping schedule for 2015. Some of them camped more than planned. Final report and confirmation by MSRM due end March 2016.
	Dig hand wells.	2 new hand wells created, enhancing water supply in currently under-used pasture areas.	Photographic evidence supplied by heseg. Confirmation by MSRM.	1 well completed by end 2015; 1 well completed by end 2016.		Not reported yet. Due end March 2016.

<p>Biodiversity conservation</p>	<p>Protect red deer, argali, marmot and Mongolian gazelle - through conservation measures outlined in the IUCN summary Action Plans for the target species.</p>	<p>Enhanced populations of target species as measured against baselines.</p>	<p>Camera traps will be used to define species' local distribution. Manned surveys will be conducted to confirm the baseline population (summer 2015). Established methods of data collection and analysis, approved by ZSL, will be used. 2015 to 2019 will involve annual camera trap surveys of 30 cameras active for up to 1 month at the site managed by ZSL, in conjunction with heseg members. Annual reports in August/September each year.</p>	<p>Baseline survey (manned survey and camera trap methods) of each target species completed and reported by project team (ZSL) by beginning of September 2015. 4-5 local heseg herders trained in survey methods by beginning of September 2015. For manned surveys, baseline and subsequent surveys will comprise 4 events per year over the summer from May to August, repeated at the same time and locations annually. Monitoring information pack produced for manned surveys (by ZSL), including standardised data collection sheets for herders to use and complete by summer 2015; Subsequent annual manned surveys completed and reported to ZSL by herders trained by ZSL and using approved methods and data sheets. ZSL to check and report to MSRM. From 2015 baseline, annual camera trap surveys completed and reported (by ZSL). By 2019 statistically significant increase in target population size of each target species against 2015 baselines. Annual surveys to show year on year increase against baselines.</p>	<p>Work plans and objectives of herder groups are documented by the project and completed according to agreed work plans.</p>	<p>ZSL surveys and training completed summer 2015 (see Annex 5 report). In addition, heseg members participated in counting of wild animals organized by Local government, and transported 100 bales of hay to areas where wild animals had a lack of fodder. Photo report to be sent to MSRM by end March 2016.</p>
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	Protect bushes at Ovootiin island and clean area (collect rubbish brought downriver from Ulaanbaatar and deposited locally).	Area of 3ha fenced in order to prevent ungulates from grazing willow saplings; planting of new areas.	ZSL report confirming benefits of fencing and lack of adverse impacts on wider grazing patterns and mobility and evaluation of alternatives (e.g. collars) (summer 2015). Training of herders (e.g. in collaring of trees) as appropriate. Photographic evidence of fence/collars, confirmed by MSRM (December 2015). Annual reports and photographic evidence of any new planting, confirmed by MSRM. Also to include photographic evidence of and reports on cleaning/litter collection (3x per year).	Area of 3ha at Ovootiin island is fenced by end of 2015 or trees protected using collars according to recommendations of ZSL report in summer 2015. Planting of additional 0.5 ha in 2016, 2017, 1ha in 2018. Recreational/aesthetic qualities of area improved through heseg members' regular litter collection.	Evidence of fencing/tree collars & litter clearance to be supplied by end March 2016.
Socio-economic (incl. risk management)	Repair fences & winter/spring shelters.	10 shelters/ fences repaired p.a.	Self-reported. Annual verification by MSRM.	10 fences/ shelters p.a. 1st monitoring December 2015.	All planned 10 shelters are repaired. Photo report will be supplied and verified by MSRM at end Year 1 (end March 2016).

	Collaborative production & marketing of milk and curd in season.	Increased income through marketing milk products.	Self-reported; heseg accounts and meeting minutes. Annual verification by MSRM.	Enhanced household income by end 2016 and in subsequent years – linked to milk products (% households with increased income, evaluated against baseline).		As Ikh Am had a severe drought in 2015 HH and so were not able to produce milk products in excess of requirements for their own household consumption. In any case, progress against this activity is not due until end 2016. In addition, in 2015/16 the heseg organised livestock slaughtering teams and delivery of products to city meat markets. This additional activity helped to increase household income by an average of 600\$.
	Produce felt and deliver to markets.	Increased income through marketing wool/ wool products.	Self-reported; heseg accounts and meeting minutes. Annual verification by MSRM.	Each heseg household produces 10m felt from prepared wool by end 2015, or 100m from heseg as a whole and markets it. Heseg produces a further 150m by end 2016; 200m in 2017 and 250m in 2018. Enhanced household income by end 2015 and in subsequent years (% households with increased income, evaluated against baseline).		Produced planned 100m felt
	Hay preparation.	Establishment of heseg hayfield. Every heseg family to prepare hay annually.	Self-reported; heseg meeting minutes. Annual verification by MSRM.	Establishment of hayfield by end 2015. Increased % of heseg households with adequate hay provision year on year from end 2015. Annual targets to be confirmed by heseg end 2015.		Could not prepare hay because of harsh drought. However, the hayfield has been established as planned for Year 1.

Table A5 3a): Management plan by project intervention, Dulaan Khairkhan HG, Bogd, Bayanhongor aimag						
Project Interventions	Specific Activities (2015-2019)	Result/ Outcome	Monitoring details/ protocols	Indicator (1) & targets	Indicator (2/3)	Report for 2015/16
Pasture management (incl. C sequestration)	Develop & implement schedule for seasonal pasture use (rotation).	Herder group (HG)/ heseg members have annual schedule for seasonal camps/ pasture use approved by HG meeting and local administration (LA) and MSRM. Herder group members comply with schedule. From Year 1 'with project' schedule to be equivalent to 50% grazing pressure or less across seasonal pasture areas & taking account of biomass etc to meet carbon sequestration targets in accordance with carbon modelling.	2 x p.a. Self-reported by heseg members, subject to biannual confirmation by MSRM August/ September 2015, February/ March 2016, then repeated at same intervals for PV project duration.	Development of agreed annual schedule (approved by HG members & LA (by end March each year) which is equivalent to 50% grazing pressure or less for seasonal pasture areas and in accordance with carbon modelling. Any subsequent updates/ changes also agreed and approved by same parties. 1% reduction in livestock (sheep units) against baseline by end March 2017; 3% by end March 2018; 5% by end March 2019. % of HG households that comply with schedule (70% in summer and winter 2015; 80%, 2016, 90% 2017, 90-100% 2018/19).	• Average annual mobility (km pa) by household. Baseline developed through socio-economic survey. Indicators will be year in year increase in heseg/ HG mean km pa	Heseg members have fulfilled the Pasture Use Plan, assisted by good weather conditions in spring and summer 2015.
	Organise seasonal camping in underused areas	Improved pasture conservation through using reserve (less used) pasture and reducing grazing pressure in other areas.	Built into pasture use planning – above. No other specific indicators or monitoring for this activity.			

Biodiversity conservation	Protection of Argali, ibex and goitered gazelle.	Baselines for target species populations are established. Capacity to conduct monitoring is established. Enhanced populations of target species as measured against baselines.	Production of baseline. Established wildlife survey methods used and detailed in the summer 2015 report to allow for replication. ZSL to approve methods and analysis. Ongoing wildlife monitoring methods will be developed and approved by ZSL in conjunction with HG members. Monitoring schedule will be developed collaboratively and submitted to MSRM by ZSL summer 2015.	Manned survey and camera trapping completed and reported by September 2015. 30 cameras active for up to 1 month for camera trapping. 4-5 herders from heseg trained in manned survey methods. For manned surveys, baseline and subsequent surveys will comprise 4 events per year over the summer from May to August, repeated at the same times and locations annually. Monitoring info pack produced for manned surveys by (ZSL), including standardised data collection sheets, for herders to use and complete: summer 2015. Annual manned surveys completed and reported to ZSL by herders trained by ZSL and using approved methods and data sheets. ZSL to check and report to MSRM. Subsequent annual HG activities completed in accordance with agreed monitoring schedules.	Current population sizes of target species known by summer 2015. Trend data on target populations established by the end of 2015 and to continue at least to 2018. By 2019 the populations of each of the three target species have shown a statistically significant increase from the baseline taken in 2015.	All completed as planned for Year 1. Summary of ZSL report at Annex 5 gives further detail.
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	Protection of saxaul forest.	Regular controlled monitoring of saxaul forest by HG established. Patrol routes, times and staff will be recorded and, where necessary, amended by the soum government and pasture user groups. Throughout 2015 the project should analyse data collected by the patrols and use it to make management decisions regarding protection activities.	Annually – by HG. Verified by MSRM. Patrol routes, times and staff recorded, data presented and analysed by HG. Provided to MSRM on annual basis.	By end September 2015- baseline number of stumps estimated (indicative of illegal cutting). December 2015: management plan developed and approved with local administration.	By end 2016 – number of new stumps decreased by 25% on 2015 data. End 2017 – Number of stumps decreased by 50% on 2015 data. By 2018 number of stumps reduced by >80% on 2015 data.	Evidence awaited. Due by end of Year 1 (end March, 2016).
	Plant sea buckthorn.	Sea buckthorn plantation established.	Signed and stamped letter of authorisation by local administration head to indicate previous uses of site and confirm no loss of significant areas for biodiversity conservation. Self-reported planting confirmed by photographs. Verified and mapped (incl GPS coordinates) by MSRM.	Gain written LA authorisation for planting by September 2015.	By end September 2015 an area of 0.5ha has been planted with alfalfa and sea buckthorn. By September 2016 1ha has been planted, by 2017 a total of 1.5ha is planted.	Issues with water availability affected some of planting and some herders decided to plant fruit trees instead. However, 0.5ha target met overall. Final report of activities due end Year 1.
Socio-economic (incl. risk management)	Repair fences & winter/spring shelters.	5 shelters/ fences repaired p.a.	Self-reported. Annual verification by MSRM.	5 fences/ shelters pa.		All planned shelters and fences are repaired. Verification due by MSRM end of Year 1.

	Establish greenhouse for vegetable production and grow vegetables.	HG has greenhouse. Regular sales of vegetables to local markets (linked to enhanced income and livelihood diversification).	Self-reported; heseg accounts and meeting minutes. Annual verification by MSRM.	Greenhouse established by December 2015.	Enhanced household income by end 2015 and in subsequent years – linked to vegetable production (% households with increased income, evaluated against baseline).	Greenhouse established. To be verified by MSRM end of Year 1.
	Hay preparation		Self-reported; heseg meeting minutes. Annual verification by MSRM.	Increased % of heseg HH with adequate hay provision year on year from end 2015. Annual targets to be confirmed by heseg end 2015.		All heseg households prepared on average 2.5 hay for winter feed in Year 1. Targets for 2016-2019 tbc to MSRM by end March 2016.

Annex 2. Ongoing monitoring results for all participants

Monitoring results for Year 1 are summarised in Table 8. Further monitoring due at the end of Year 1 (31 March 2016) is also summarised for all relevant indicators and for each of the three sites and their activities in Table 8. In brief, this end of year monitoring will focus on MSRM's verification of herders' self-reported activities and collation of reports, photos and so on in order to confirm activities such as repairing of wells and shelters; herders' collaborative activities as environmental teams with local administrations; fencing/ collaring of trees etc., as relevant at particular sites.

Annex 3. Reallocation of commitments

(N/A)

Annex 4. Socioeconomic monitoring results

Again, these are reported in Table 8, with end of year monitoring to be completed also summarised in Table 8. MSRM's trainings and ongoing assessment of progress with herders against agreed indicators in summer/ autumn 2015 is depicted below and in Section H3.



MSRM monitoring and training with *heseg* members, August/ September 2015

Annex 5. Conservation and monitoring results

1. Introduction and methods

ZSL Mongolia conducted monitoring with *heseg* at the project sites in summer 2015. As there was little available previous baseline data on wildlife population numbers in these areas, survey effort in 2015 focused on provision of baseline information against which trends over coming years can be measured. The surveys also provide a test of the proposed methods, including the ability of herder groups to work independently and provide usable monitoring information over the duration of the Plan Vivo project. Assessments at these sites involved camera trapping and transect methods at both Ikh Am and Bogd to survey medium and large mammals and involved bird surveys at Ikh Tamir.

Two basic methods were proposed for wildlife surveys at the Undurshireet and Dulaan Kharkhain sites: Camera trapping and transect surveys. In Hongor Ovoo, the biodiversity focus was on forest health and bird surveys. For the camera trapping 'Scoutguard 550' cameras were placed at 1km intervals in a 3 x 5 grid. Each site contained two grids representing predominant habitat types at each *heseg*. Site selection and camera set-up followed standard ZSL camera trap protocols.

GPS coordinates were used to delineate the project management zones and *heseg* boundaries. The first camera station location for each grid was randomly selected within the management zones and subsequent points were mapped from there using GIS. Camera stations were uniquely identified by line letter and number.

2. Timing and logistics of surveys July-September 2015

Staff from ZSL made two trips to each of the Tov and Bayanhongor sites, one in July and a second in August 2015. Discussions were had with Herder group leaders during the first visit to each site to confirm and reiterate priority species and plans for surveys. On the basis of these discussions, transect routes were determined and the first set of transect counts of wildlife were trialled. Two grids of camera traps were also installed in this first visit.

In the second visit to the Undurshireet and Dulaan Kharkhain sites, approximately one month after the first, ZSL staff retrieved the camera traps and had further discussions with herder group leaders concerning their independent collection of more wildlife transect data, which will be included in considerations for future activities.

2.1 Tov aimag, Undurshireet soum, Ikh Am *heseg*.

The research team met with Undurshireet soum representative, Mrs. Oyun, and the Ikh Am *heseg* leader on 26th & 27th of July and deployed cameras on those same days. Cameras were collected from Ikh Am on the 23rd and 24th of August.

Two grids of remote cameras were set up; 15 cameras in mountain steppe habitat and 11 in the valley steppe (four camera locations were not used because of proximity to roads or to family settlements).

After consultation with the *heseg* leader and two other herder representatives, three transect routes were chosen for surveying the target species Mongolian gazelle *Procapra gutturosa* and red deer *Cervus elaphus*, argali *Ovis ammon*. These can be completed by motorbikes or on horseback, both common modes of transport, and followed established tracks along high vantage points generally up/down valleys or over saddles between valleys and peaks. Two were in areas of mountain steppe (targeting red deer and argali) and one in the main valley of Ikh Am (targeting gazelle).

Ikh Am Heseq, Undurshireet



Map showing camera trap points at 1km spacing (red) in two grids at Ikh Am heseq (shaded green).

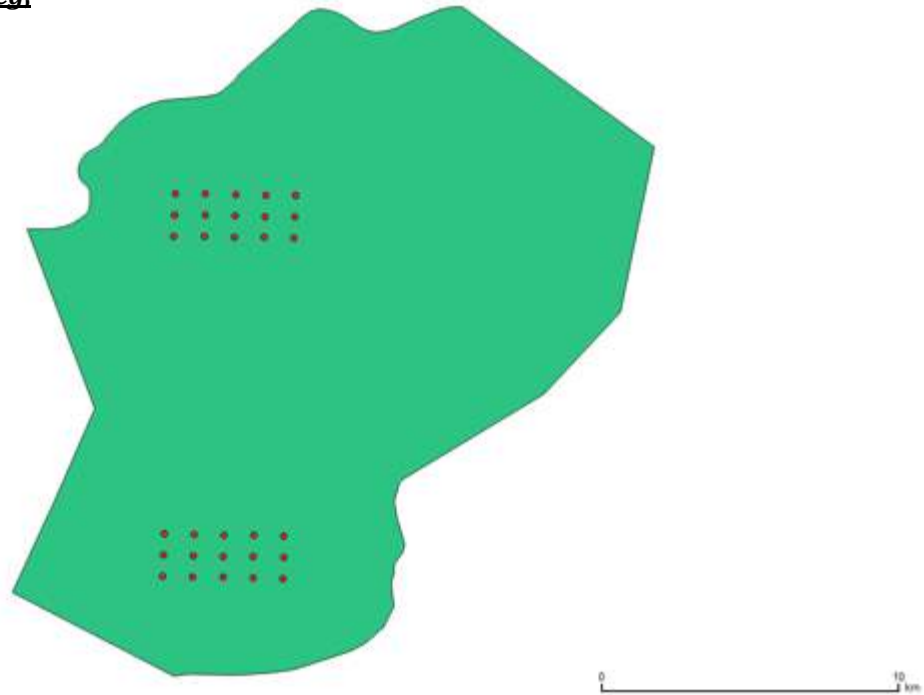
2.2 Bayanhongor aimag, Bogd soum, Dulaan Khairkhan herder group.

The project team met with the Bogd soum Governor and Dulaan Khairkhan *heseq* leader and deployed camera traps on July 29th and 30th. Camera traps were collect from this site on the 23rd and 24th August.

Two grids of remote cameras were set up; 15 cameras in rocky mountain steppe and 15 in an area of sand dunes and saxaul shrub.

After consultation with the *heseq* leader and five other herder representatives, four transect routes where chosen for surveys. Two were completed by 4WD vehicles and followed access tracks that joined vantage points for wildlife viewing: one was on rocky mountain steppe (targeting marmot, argali and ibex); the other started in the sand dune/saxaul shrub (targeting gazelle) and ended on mountain steppe. The other two transects ran along rugged mountain ridges and peaks and were only accessible by motorbike (targeting argali and ibex). Participation by herders with motorbikes was essential for completion of these upper transects in the south (indicated below), and they also assisted with setting out the camera traps.

Dulaan Khairkhan heseg,
Bogd



Camera grids at Bogd, Dulaan Khairkhan heseg.

2.3 Arkhangai aimag, Ikh Tamir soum, Hongor Ovoo heseg

Bird surveys were carried in areas proposed for forest cleaning along the Tamir River basin and Khan-Undur mountain range within the Hongor Ovoo *heseg* area during the period of 30th August to September 7th 2015. To assess the density of species several different habitats were selected such as pine and cedar forests, river valleys and river banks and used a line transect method to complete the assessment. Numbers of each bird species seen or identified by calls were recorded. Bird surveys were carried out by ornithologists from the National University of Mongolia (NUM), led by Prof. S. Gombobaatar of Steppe Forward and NUM.



Survey habitats at Hongor Ovoo site

3. Results

3.1 Dulaan Khaikhan herder group.

Of the 30 cameras deployed at Bogd 6 species of mammal were recorded (excluding livestock); grey wolf, red fox, toloi hare, jerboa (not identified to species level) and the target species goitered gazelle and argali. Of the target species goitered gazelle was recorded as having the greatest number of photo events throughout the study with a maximum estimate of 11.1 events and a mean of 2.9 (s.d.=3.7), this figure provides a basic measure of abundance and can be used relatively over consecutive years.

The transect survey results are tabulated below:

Study area/ transect	GPS	Date / start time	Priority species	Number counted^
Mountain peaks East	Start: 44° 56' 1051N 100° 56' 33.47"E Finish: 44° 55' 41.24N 100° 56' 04.70"E	29 July/10:05	Argali	30 (4)
Mountain peaks West	Start: 44° 56' 29.23N 100° 56' 03.00"E Finish: 44° 56' 08.36"N 100° 55' 25.41"E	29 July/10:10	Argali	3 (1)
Mountain steppe	Start: 44° 55' 36.56"N 100° 55' 45.06"E Finish: 44° 55' 46.75"N 100° 54' 48.80"E	29 July/10:40	Unidentified (ibex/argali)	2 (1)
Saxaul + Mountain steppe	Start: 44° 59' 43.66"N 100° 50' 41.31"E Finish: 44° 59' 09.60"N 100° 48' 05.64"E	29 July/10:45	Black-tailed gazelle Argali	10 (1) 2 (1)

3.2. Ikh Am heseg

Of the 27 cameras deployed at Ikh Am, fewer than Bogd due to the presence of people and roads, three mammal species were detected excluding livestock. Of the three wild mammal species two were target species outlined by the herder groups, Mongolian gazelle *Procapra gutturosa* and red deer *Cervus elaphus*.

The transect survey results are tabulated below:

Study area/ transect	GPS	Date / start time	Priority species	Number counted^
Mountain steppe East	Start: 47° 27' 30.14"N 105° 27' 7.67"E Finish: 47° 29' 52.47"N 105° 31' 11.66"E	27 July/09:30	Red deer Marmot	18 (3) 5 (2)
Mountain steppe West	Start: 47° 26' 22.45"N 105° 21' 51.01"E Finish: 47° 28' 22.28"N 105° 19' 25.58"E	27 July/09:00	-	-
Valley steppe South	Start: 47° 23' 23.52"N 105° 21' 46.93"E Finish: 47° 26' 36.82"N 105° 23' 56.55"E	27 July/15:40	Mongolian Gazelle	0#

3.3. Hongor Ovoo heseg

A total of 54 species of birds were recorded at the research area during the survey period. Based on distribution maps by Gombobaatar *et al.* (2011), it is possible that a total of 188 species of birds occur in the study area. Out of the species observed in the research area, 35% are breeding visitor, 35% are passage migrant, and 30% are Mongolian resident breeding species.

4. Summary

One objective of the Year 1 activities was to establish appropriate methods that would be reasonably robust to allow general species trends in abundance to be assessed over time. This element was also to involve members of the *heseg*, incorporating their extensive local knowledge into the survey design and implementation. In this sense the aims were achieved; the *heseg* members were involved in camera trap survey design at a project meeting in UB held on the 15/16th June 2015. At this meeting *heseg* members and various local officials

were able to discuss with ZSL staff the habitat and suitable places for camera traps given the target species. Based on these discussions camera grid points were randomly projected within advised areas.

In addition to establishing methods for future surveys baseline data have been collected for target species. Data collected have been used to generate a measure of relative abundance (mean events for a given species) which will allow trends in abundance to be established using repeated surveys of the same methods over consecutive years. The camera trap surveys can be continued to perform this function however for other target species, such as the Argali, transects yielded more data and so it is useful to consider the continuation of both methods at the Bogd site.

The project, having established monitoring methods and partnerships in place with local, organised community groups, now has a strong base from which to carry out future conservation works. Furthermore ZSL has incorporated Bayanhongor and Bogd in particular into its strategy for Mongolia given the proximity to existing ZSL work in the Gobi Altai region and the interest, knowledge and willingness to undertake conservation activities by the community in Bogd. Therefore the legacy of the project, in this particular case, is already positive.

The camera trap survey at Ikh Am was not as effective as the more remote Bogd site. This indicates that camera trapping is not an effective or efficient way to continue a monitoring programme at Ikh Am. The transect surveys were more successful and the topography of the valley makes this a reasonable way to continue to monitor in the future. The team established three transects which can be repeated on motorbike or horseback. Red deer, marmot and Mongolian gazelle were all present and easily visible from the valley slopes. The transect survey design would be altered slightly to account for the time of day the gazelle are most visible in the valleys, having discussed this with the local *heseg* leader. ZSL has committed to helping the existing volunteers already conducting basic surveys in standardizing their methods and data collection and has agreed to provide standard methods, protocol and data sheets. This data could then be analysed annually or bi-annually by a ZSL team or a team based at the National University of Mongolia's Biology department.

The bird surveys have provided robust estimates of species and population sizes against which changes as a result of *heseg* members' forest activities can be measured. While the methods employed for the bird surveys are relatively simple bird, identification particularly in a forest environment is not. Therefore, bird surveys at Ikh Tamir did not involve the *heseg* members to the same extent that transect and camera trap surveys did at Bogd and Ikh Am. An important consideration going forward is that future bird surveys and forest activities conducted by the *heseg* members are spatially conducted together. This is especially important for woodland bird species as home ranges can be relatively small, therefore if there is no overlap between the *heseg* activities and the survey site results may not indicate the impact of the *heseg* activities on bird species composition or population sizes.

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.