Technical Assistance Closure Report Template

Objective of the technical assistance (TA) Closure Report:

- To communicate publicly in one document a summary of progress made and lessons learned during the TA towards the anticipated impact (sections 1-4).
- To document qualitative and quantitative data collected during TA, for use in donor and UN reporting (Annex 1).

Steps for completing the TA closure report:

1. The lead TA implementer submits the closure report at the end of the technical assistance as a final deliverable. The TA closure report will capture outputs, outcomes and impacts of all activities conducted under the TA. Please copy and summarise relevant material from previous TA outputs/deliverables and the Response Plan, as relevant.
2. A CTCN Manager will review and revise the closure report before final approval by the CTCN Deputy Director.

Important note on public and internal use of the closure report:
Once approved by the CTCN Deputy Director, the TA closure report will be a public document available on the CTCN website www.ctc-n.org. Selected content will be used for targeted communication activities. Annex 2 is for internal use only and will not be publicly available.

Closure Report for CTCN Technical Assistance

1. Basic information

Title of response plan	**Enhancing climate resilience and economic sustainability of livestock farming in a rural community of Mongolia**
Technical assistance reference number	**2021000014**
Country / countries	**Mongolia**
NDE organisation	**Climate Change Department, Ministry of Environment and Tourism of Mongolia, United Nations Street 5/2, Ulaanbaatar, Mongolia**
NDE focal point	**Tserendulam Sh., Climate Change Senior Officer** Climate Change Department, Ministry of Environment and Tourism of Mongolia, United Nations Street 5/2, Ulaanbaatar, Mongolia
NDE contact information	*tserendulam@met.gov.mn*
Proponent focal point and organisation	*L. Lhagvasuren Executive Director* *Northeast-Asian Environmental and Agricultural Research Center (NEARC), 4th brigade, Bayantümen sum, Dornod Province, Mongolia* *Lhagva1999@gmail.com*
Designer of the response plan	L. Lhagvasuren Executive Director Northeast-Asian Environmental and Agricultural Research Center (NEARC), 4th brigade, Bayantümen *soum*, Dornod Province, Mongolia Lhagva1999@gmail.com
Implementer(s) of technical assistance	Alinea international 200, 14707 Bannister Road SE, Calgary, AB, Canada T2X 1Z2 Deb Rasmussen, Project Manager drasmussen@alineainternational.ca
Beneficiaries	*L. Lhagvasuren Executive Director* *Northeast-Asian Environmental and Agricultural Research Center (NEARC);* Bayantumen Soum, 4th Bagh, Key Stakeholders Group
Sector(s) addressed	*Agriculture and Forestry*
Technologies supported	MITIGATION • Grassland management • Soil carbon measurement • Carbon stock measurement, monitoring and verification • Improvement of Agri-food processes • Livestock management • Manure Management ADAPTATION • Terrestrial ecosystems management Biodiversity management systems • Increasing crop resilience and productivity Fodder crops; Crop diversification and new varieties; Crop rotation • Livestock management Pasture, Grazing land management Fodder banks, Livestock feed optimisation Straw ammonisation and silage Livestock disease management Manure management Selective breeding via controlled mating • Land management training Community-based agricultural extension Farmer field school

Implementation start date	*25/11/2021*
Implementation end date	*25/05/2023*
Total budget for implementation	*$209,000 USD*

Description of delivered outputs and products as well as the activities undertaken to achieve them. In doing so, review the log frame of the original response plan and refer to it as appropriate	• Climate Change Vulnerability Assessment (CCVA) and Gender Assessment (Jun 2022).
	  • Participatory, gender sensitive CCVA on livestock farming conducted in Bayantumen soum, Mongolia in June 2022. Approx 110 participants, equally balanced between men and women.
	  • Gender assessment considered division of labor, decision making ownership and perceptions of climate change.
	  • TOOL: Gender-sensitive CCVA survey tool
	• Pasture Status Report (Jun 2022) and Pasture Systems Report (Aug 2022)
	  • Assessment of current pasture conditions
	  • Identification of potential pastureland management improvements for climate-resilient livestock farming prioritized through participatory ranking with community stakeholders (M/W)
	  • Modelling of herd restructuring, annual offtake and winter herd size with integration in to improved value chains.
	  • Calculation of life-cycle impact on GHG reduction and carbon sequestration
	• Slaughterhouse Feasibility Assessment Report (Oct 2022)
	  • Assessment of current system
	  • Identification of options for community-scale slaughterhouse
	  • Identification of market and food safety issues
	  • Conclusions regarding feasibility and potential actions
	  • TOOL: Development of slaughterhouse feasibility Decision Support Tool for non-technical officials and investors
	• Business Models for Sustainable Livestock Farming (Oct 2022)
	  • Value chain analysis
	  • Calculation of potential household income benefits from herd restructuring and adoption of new value chain approaches
	  • Modelling of feedlot investment, operations, profitability and resource requirements
	  • Modelling of slaughterhouse investment, operations, profitability and resource requirements
	  • Assessment of the integrated value-chain including overall resources requirements, technical and financial viability, risk profiles and sensitivity analysis in Bayantumen.
	  • Recommended business models for sustainable development
	  • Gender / social impacts of the proposed integrated value-chain business model
	  • TOOL: Decision-Support Tool for evaluating “readiness” for an integrated livestock value-chain model in a given location.
	• Workshop Report and Training Materials (Apr 2023) on enhanced capacity of government bodies for climate-resilient livestock farming.
	  • Capacity development was carried out during each mission:
	  ○ Workshops
	  ○ Participatory Planning
	  ○ Information sharing
	  ○ Site visits
	  ○ Training
	  • Compilation Report (Apr 2023).
	  ○ The findings of the study were complied into one report document and provided in English and Mongolian to support

	the widespread distribution and use. Compilation and translation in a single document enhances the understanding of the overarching systems approach embedded in the analysis and sustainable development and climate change adaptation approach.
Methodologies applied to produce outputs and products	• Survey – participatory, gender-sensitive survey tool / data collection with key stakeholders, (M, W, youth, migrants, government officers) • Semi-structured interviews with key stakeholders • Stakeholder focus groups (women) • Climate change vulnerability assessment: exposure, sensitivity, adaptive capacity, vulnerability and risk, gendered perceptions and experience. • Gender assessment: division of labour, authority/decision making, property ownership and perceptions of climate change • Participatory ranking • Pasture assessment: site visits, review of literature • Slaughterhouse assessment: review of documentation, review of regulations, site inspection, interviews • Business Models: herder livestock income calculations, value chain analysis, market assessment, feed, water, land resource calculations, technical feasibility, financial feasibility, risk assessment and sensitivity analysis. Socio-economic impact. • Capacity building: training, workshops, site visits, local study tour
Reference to knowledge resources	*none*
Deviations	*none*

Anticipated follow-up activities and next steps	• Dissemination of report drafted by the CTCN – July 2023
	• Webinar organized by CTCN – July 2023
	• Use of new expertise acquired during training led by CTCN.
	  ○ Use of decision support tools by MET, aimag/soum gov't, projects and private sector
	  ○ Use of value-chain/feeding models by academia and private sector
	  ○ Use of CGG/Carbon sequestration calculations by academia and Ministries/agencies

2. Lessons learned

	Lessons learned	Recommendations
Lessons learned from the CTCN TA process	Interaction with the UN-Secretariat Regional Office on technical issues was efficient. The process for Deliverables approval via the local focal point at the MET was time consuming given the frequent turnover of staff and their very high workloads. The role and responsibilities of the project proponent can be unclear and made complicated by any expectations developed during project design process.	Recommendations: • Streamline the approval process at the local level given the workload of local staff or incorporate longer timelines into implementation to allow for delays. • Make the tendering processes clearer for applicants to manage expectations around project implementation. • Provide more process information to project implementors to understand the background of the project development.
Lessons learned related to climate technology transfer	Markets are emerging in Mongolia for higher value products focused on quality versus quantity. This creates new opportunities for herders to change production practices, escape the poverty-environmental vortex and build climate change resilience. These new markets are still relatively small, and the value chains are incomplete with a notable lack of market and production infrastructure or reliable, cost-effective inputs (seed, feeds, genetics, equipment, advisory services, credit). Women have less access, authority and ownership than men and are disadvantaged in taking advantage of these new markets. Local soum government have limited information and capacity to develop climate adaptation strategies and create an enabling environment within the soum or bagh.	Introducing climate smart technologies with broad adoption across the commercial livestock /herding sector will require a systems approach that strengthens the capacity of: • Herders and herder groups to work collaboratively in resource management, planning and marketing (PUGs, coops, assn.). • Women to fully participate in resource management, decision-making and ownership in livestock production and marketing. • The agriculture innovation system to provide adapted inputs (seeds, genetics, equipment), conduct action research in collaboration with producers, and deliver advisory services geared to the needs of herders including men, women, youth and migrants. • Marketing systems to establish and operate grades, auctions, contracts and info systems. • Soum technicians, herders and farmers to use early warning and pasture monitoring systems. • Provide adequate agricultural credit for processors, feeders, farmers and herders (M, W, Y, migrants) to invest. • Local gov't to develop CC strategies

3. Illustration of the TA and photos

For communication purposes, please provide 2-4 Power Point slides, including illustrations or charts, describing barriers, opportunities, methodology, activities, outputs and achieved results. The illustrations must be copied into the TA Closure report but must also be delivered as power point files. Also, please provide at least five high-resolution pictures in jpg format, capturing technical assistance. The pictures should illustrate how the TA has impacted the lives of the beneficiaries in particular and the communities in general.

Step 1: Climate Change Vulnerability Assessment (CCVA)

June 2022

- **Bayantumen Soum**
- **Participatory**
- **Gender-sensitive**

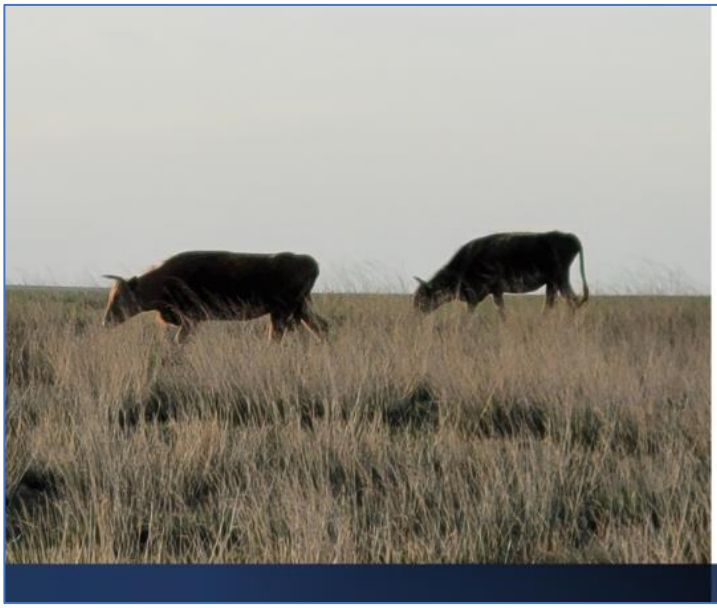
Output:

- **CCVA-Gender Assessment Report**

CCVA Gender Assessment

Women's:

- Division of labor
- Decision making
- Ownership
- Perceptions of climate change



Step 2: Pasture Management Assessment

June and August 2022

- **Pasture condition**
- **Improved Management practices**
- **Climate impact**
  - **GHG reduction**
  - **Carbon sequestration**

Outputs:

- **Pasture Status Report**
- **Pasture Systems Report**

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Step 3: Slaughterhouse Feasibility

October 2022
- **Current System**
- **Community-scale Options**
- **Market issues**
- **Food Safety**
- **Feasibility**

Output:
- **Feasibility Report**

Step 4: Business Models

October 2022
- Value chain analysis
- Technical feasibility
- Financial analysis
- Risk profiles
- Socio-economic impact
- Business models

Output
- Business Models Report

4. Impact Statement

The information in the table below will be used to communicate results and anticipated impacts of this technical assistance publicly. Please copy information from impact statement developed in the M&E Plan and update as relevant.

Challenge	The primary challenge to climate resilience and economic sustainability of livestock production in Mongolia is that rangeland health, the set of environmental conditions that sustain the productivity and biodiversity of rangelands and the livelihoods of herders, is in decline. Vulnerability to climate change is amplified by overgrazing, leading to degradation, desertification, water scarcity, increased dust events and lack of forage. This reduced the carrying capacity of the rangelands and leads to reduced well-being of herders.
CTCN Assistance	The TA in Bayantumen soum produced the following outputs: • Completion of a participatory, gender sensitive climate change vulnerability assessment on livestock farming and detailed gender assessment. • Identification of pastureland management measures for climate-resilient livestock farming with lifecycle analysis of potential GHG reduction/carbon sequestration impacts. • Development of business models for a community-scale meat-processing system for climate-resilient livestock farming. • Enhanced capacity of government bodies for climate-resilient livestock farming.
Anticipated impact	This CTCN TA will strengthen climate-resilient livestock farming while deriving the economic sustainability for vulnerable herding communities in Bayantümen soum and contributing to Mongolia's NDC and national climate change adaptation and mitigation priorities.
Co-benefits: Achieved or anticipated co-benefits from the TA	Application of the business models with community-scale meat-processing system to be designed through the TA are expected to increase employment opportunities to women in Bayantümen soum. Moreover, follow-up projects/programmes on implementing pastureland management practices and associated technologies to be selected through the TA as the most appropriate measures for climate-resilient livestock farming are expected to bring about social and environmental welfare to women and vulnerable groups living in the target area.
Gender aspects of the TA	Women play an important role as stewards of natural resources especially in livestock and forage production. As frontline decision makers, they can have significant impact on local climate resilience. However, they often do not have equal access to the extension services, training, technical support or financing necessary to deploy new, climate smart practices. Given women and men's important, but different, roles in herding, viewing climate change impacts and potential solutions through a gender lens is imperative. A gender assessment was conducted to leverage women's roles to mitigate and adapt to climate risks, protect natural resources, and safeguard livelihoods. Rural women spend the most time on production activities, of which 71 percent of production activities are on household final products for consumption. Therefore, our research participants confirmed that "men are involved in agricultural production activities, and women are dominantly involved in milk and milk products processing and housechores". In addition, it proves that rural women have lack of opportunities to "earn" cash income from agricultural activities.

	The relatively low participation of female herders in the agricultural production activities is related to the fact that the herder families are live separately in the soum center and countryside during the school year. In Bayantumen soum, 185 families live separately in the soum or aimag center during schooling, including 28 families from the target bagh who live separately in the soum center. This separate living has reduced women's participation in livestock production as well as their income and power (or authority) in the family. In addition, when the woman is absent and only one family member is producing the household products, it limits both production and income, increases human resource constraints, and increases household expenses as well, if these products must be purchased. Statistical information on Bayantumen soum and 4th bagh female herders show they have very limited opportunities to share interest and present voice in decision making processes and that they lack the possibility to benefit equally from the public policies and measures (Table 30). To ensure gender equality in sustainable livestock herding and slaughtering, it is necessary to create a structure that can effectively ensure women's real participation: 1. Create a sub-council of women within herders' groups or cooperatives; 2. Organize trainings with aims to develop members' life skills and leadership of the sub-councils; 3. Update herder groups and cooperatives bylaws to integrate sub-councils' voice; and, 4. Integrate participatory monitoring and evaluation into herder group or cooperative management. The strategies developed address women's access to and control of natural resources and their leadership in resource management, business, and local planning. The direct employment opportunities from the slaughterhouse and feedlot are quite small. The proposed slaughterhouse would provide up to 10 jobs. Roughly half of these would be in butchering has traditionally been done more often by men than women. Similarly, drivers are more commonly men. The positions of veterinarian, accountant and manager have higher participation by women. Another one or two jobs would be created at the feedlot feeding animals, cleaning pens, moving animals, and tending to animal health. The larger and significant impact of the new value chain model will be at the herder household because of the increased revenues earned by selling younger stock. 52% of the soum families would benefit from sheep sales and 5% from cattle sales. The projected 66% increase in revenue from sheep and cattle sales would ease household vulnerability and lift some households out of poverty entirely. Women-headed households, migrant households and young families would benefit. Caring for fewer animals through the winter would reduce the workload in the household, including for women. This would reduce their burden of unpaid work. Because animals would be better able to survive hard winters, households would also become more resilient against climate disasters. Gender was mainstreamed into all project activities, assessments, and strategies. This work was led by the Gender Expert working in collaboration with all other team members. Women represented 36% of the Key Stakeholder group. The majority of CCVA participants were women (M 53, W 57, T109). Near parity was achieved in the training and technical activities overall with 47% of participants women (M 156, W 140, T 296).

Anticipated contribution to NDC	The TA is in line with Mongolian national climate change strategies and plans: • Nationally Determined Contribution adaptation targets for livestock, pastureland and livelihood and social safeguards. • Mongolia Sustainable Development Vision 2030 resilience of pastoral livestock, manufacture of meat products and the business and economics of herders and herder groups.
The narrative story	Mongolia is facing adverse impact of climate change, from the increased frequency of heavy storms, droughts and record-breaking hot temperatures in the summer to the cold winters that are challenging the survival of humans and animals. Declining rangeland health makes the natural and socio-economic systems for vulnerable to climate change. There is need for adaptation measures to be developed and implemented to protect economies and livelihoods of the vulnerable livestock farming community. Challenges and barriers making the communities more vulnerable and constraining the use of new pasture management and value-added strategies include: • a lack of socially organized income and risk management for herding families • unstable meat exports due to zoonotic/animal diseases. • limited market power for herders based on the existing multi-layers market structure. • lack of financing and expertise to identify and build a technologically suitable facility, purchase the equipment, and receive training on industry-standard butchering practices. • inadequate electricity grids, which makes electric refrigeration difficult in herding communities.
Contribution to SDGs A complete list of SDGs and their targets is available here: https://sustainabledevelopment.un.org/partnership/register/	**SDG #2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture**. This TA will identify the most appropriate pastureland management practices and associated technologies for climate-resilient livestock farming, which will contribute to promoting sustainable agriculture in Bayantümen soum against climate change. **SDG #13: Take urgent action to combat climate change and its impacts** **13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries:** This TA will contribute to enhancing climate-resilient livestock farming in Bayantümen soum by identifying the most appropriate pastureland management practices and associated technologies as well as designing business models with community-scale meat-processing system. **13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning:** This TA will provide the 1-day workshop for national/local government officials, supporting them to increase their knowledge on and their capacity for climate-resilient livestock farming. Additionally, the E-Nomads programme administrated by the proponent (NEARC) has been building a social network of rural communities in Mongolia. Findings from the TA would be disseminated to rural herding communities not only in Bayantümen soum but also other soums in Mongolia by using the network.

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Annex 1 Technical assistance data collection

Please add quantitative and qualitative values for the indicators selected in the M&E plan and monitored throughout the technical assistance in the tables below. Indicators which have been monitored in addition to the proposed indicators below may be added at the end of table A. Non-relevant indicators should be left blank.

A. Output and outcome indicators

Indicator Please note indicators below highlighted as **anticipated**	**Quantitative value** *Numerals only; disaggregates must sum to the total*	**Qualitative description** *List the various elements corresponding to the quantitative value as well as timelines and responsible institutions*
Total number of events organized by proponents and implementing partners	*16*	
Number of participants in events organized by proponents and implementing partners	*296*	
a) Number of men	*156*	
b) Number of women	*140*	
Number of climate technology RD&D related events	*5*	*Apr 4 Kickoff; Alinea (A)/NEAAC (N)* *Apr 4-5 Tech Meet, A/N* *Apr 4 Soum meeting, A/N* *Mar 31 - Apr 10 meetings, UB, A* *Apr, CCVA-Gender survey, A/N*
Number of participants in climate technology RD&D events	*142*	
a) Number of men	*68*	
b) Number of women	*74*	
Number of training organized by proponents and implementing partners	*11*	*Apr 6 Bagh, presentation A/N* *Jun 6, Soum presentation, A/N* *Jun 6, bagh training meeting, A/N* *Jun 10, Workshop, A/N* *Jun 10, Key Stakeholder A/N* *Jun 13, NFPUG training, A* *Aug 31 Stakeholder Training, A/N* *Oct 13, Stakeholder training, A/N*
Number of participants in trainings organized by proponents and implementing partners	*154*	
a) Number of men	**88**	
b) Number of women	**66**	
Total number of institutions trained	*45*	
a) Governmental (national or subnational)	**16**	*Min of Env and Tourism, CC Department* *Aimag Gov't - senior leadership* *Aimag Gov't - foreign investment* *Dept. Env and Toursim* *Dept. of Animal Husbandry* *Dept of Veterinary Servies*

		Dept Public Policy *Soum Citizen's Khural* *Soum Governor* *Soum Agriculture* *Soum gender/public policy* *Soum land* *Soum meterology* *Bagh Governor* *Bagh Women's Committee* *Bagh Retired Person's Committee*
b) Private sector (bank, corporation, etc.)	**13**	*Lavai LLC* *Bayandelgur meats* *Shine usult magazine* *Climate Green Investment Corporation (CGIC) LLC* *Komit service LLC* *ETI LLC* *MetaGro* *Businessman* *Ulaanbaatar investment and management company* *Dornod LLC* *Khaan Khuun* *Zulgen sor farm* *Herders*
c) Nongovernmental (NGO, University, etc.)	**16**	*NFPUG* *WWF* *Mongolian Meat Assn* *CCSD* *Asia Foundation* *Professional assns. (2)* *CGFC* *Aimag PUG* *Soum PUG* *NEAARC* *FAO* *Mongolia-Indian Business Council* *MULS* *U of Finance and Economics* *U of Alaska*
Percentage of participants reporting satisfaction with CTCN training (from CTCN training feedback form)	**4.1 on average**	*Satisfied= 4+ on 5-pt scale*
Percentage of participants reporting increased knowledge, capacity and/or understanding as a result of CTCN training (from CTCN training feedback form)	**Increased from 2.3 to 3.4 on average**	*Increased knowledge, capacity and/or understanding= 4+ on 5-pt scale*
a) Percentage of men		
b) Percentage of women		
Total number of deliverables produced during the assistance (excluding mission, progress and internal reports)	*86*	
a) Number of communication materials, including news releases, newsletters, articles, presentations, social media postings, etc.	**41**	*Social Media posts on project FB group (40)* *Project brochure (1)*
b) Number of tools and technical documents strengthened, revised or developed	**15**	*D1.0 Workplan*

		D2.1/D2.2 Technical Reports – Situational Overview of Value Chain and Stakeholders *D2.3 CCVA survey tool* *D2.3 CCVA Report* *D2.3 Gender Assessment Report* *D3.1 Pasture Assessment* *D3.2 Pasture Management Options* *D4.1 Slaughterhouse Feasibility St.* *D4.1 Slaughterhouse checklist* *D4.2 Business Models Rep.* *D4.2 Feedlot checklist* *D4.2 Readiness Checklist* *D5.3 Compilation Report – ENG* *D5.3 Compilation Report - MON*
c) Number of other information materials strengthened, revised or created (For example training and workshop reports, Power Points, exercise docs etc.)	**30**	*D2.1: PPT (3) Pasture, CCVA, Objs* *D2.4 Training Report* *D2.4 3 PPTs* *D2.4 Stakeholder minutes* *D3.3 Stakeholder Workshop Rep.* *D3.3 PPT – Pasture Models* *D3.3 PPT – CCVA results* *D4.3 Stakeholder Workshop Rep.* *D4.3 PPT – Slaughterhouse feasibility* *D4.3 PPT – Business Models* *D5.1 Final Workshop Report* *D5.2 WORKSHOP - 7 PPTs results* *D5.2 WORKHSOP - 1 youtube* *D5.2 TRAINING – 6 PPTs* *D5.2 TRAINING - 1 youtube*
Total number of policies, strategies, plans, laws, agreements or regulations supported by the assistance	*2*	
a) Adaptation related	**2**	Climate smart pasture strategy Integrated livestock feeding and slaughter strategy
b) Mitigation related	**0**	
c) Both adaptation- and mitigation related	**0**	
Anticipated number of policies, strategies, plans, laws, agreements or regulations proposed, adopted or implemented as a result of the TA	*4*	
a) Adaptation related	**3**	*Soum level CC Adaptation strategy* *Soum/bagh Climate Smart Pasture management strategy* *Soum/bagh Integrated livestock feeding and slaughter strategy*
b) Mitigation related	**1**	*Energy efficiency strategy for agro processing*
c) Both adaptation- and mitigation related	**0**	
Anticipated number of technologies transferred or deployed as a result of CTCN support	*18*	MITIGATION • Grassland management • Soil carbon measurement • Carbon stock measurement, monitoring and verification • Livestock management

		• Manure Management ADAPTATION • Biodiversity management • Fodder crops • Crop diversification/varieties • Crop rotation • Livestock management • Pasture management • Fodder banks, Livestock feed optimisation • Livestock disease management • Manure management • Selective breeding via controlled mating • Land management training • Community-based agricultural extension • Farmer field school
Anticipated number of collaborations facilitated or enabled as a result of technical assistance	*List total number here*	
a) Number of South-South collaborations		
b) Number of RD&D collaborations		
c) Number of private sector collaborations		
Number of countries with strengthened National System of Innovation as a result of CTCN support	**1**	*Mongolia*
Insert any additional indicators here		

B. Core impact indicators

Please fill in the tables for anticipated impacts of the CTCN assistance. Every technical assistance should contribute to at least one of the indicators below. For guidance on how to report on core indicators see the 'M&E Guidance Document for TA Implementers'.

Core indicator 1	**Anticipated metric tons of CO_2 equivalent (CO_2e) emissions reduced or avoided as a result of CTCN TA** *Please add your calculations in word or excel format as an Annex to this Closure Report, where applicable.*	
	Anticipated metric tons of CO_2e reduced or avoided as a result of the TA **on annual basis**	Anticipated metric tons of CO_2e reduced or avoided as a result of the TA **in total**
Quantitative value *(emissions reductions)*	*Total number (numerals only, no rounding or abbreviations)* ***113,000***	*Total number (numerals only, no rounding or abbreviations)* **565,000** From 2023 – 2028 (5 years)
Unit	tCO_2e	tCO_2e
GHG assessment boundary (project emissions) Identify expected post-TA activities, associated effects and assess boundary for quantification of GHG emission reductions	*Considering this historical rate of change, by 2025, the total livestock population in the soum can be potentially increased by 143 thousand heads of livestock, which translates to an estimated total of 91.8 thousand tons of extra CO2e emissions from the livestock sector.* *Taking livestock population measures such as restructuring cattle herds and sheep flocks and preventing further increases in the populations of other livestock types (in particular, horses and goats) can lead to a projected livestock population size between the 2017 and 2021 levels.*	*If appropriate measures are taken to prevent and remove additional livestock heads from the region, by 2025, a total of 113 thousand tons of extra direct CO2e emissions can potentially be removed from the livestock sector, and the overall GHG emission of the sector can potentially decrease to a level below the 2021 level (Table 17).* *However, when you put these estimates of direct annual GHG emissions in 2025 together with the annual potential carbon sequestration from rangeland, if no adaptive measures are taken to prevent and remove additional livestock from the landscape and rehabilitate soil and vegetation of degraded rangelands in the soum, then in the year 2025 alone, an estimated total GHG emission removal opportunity of 479 to 1010 thousand tons of CO2e from the soum's livestock sector will be missed. This would roughly equal annual carbon removal by 23.9 to 50.5 thousand trees (i.e., 20 kg CO2e/yr removal by a single young tree).*
Baseline emissions Describe baseline scenario, baseline candidates, emission	*Total Mongolia, 2021: 143.9 annually* *A relatively high annual rate (on average, 145 and 143 tCO2e) and per unit live weight of GHG emission (32.3 and 23.1*	

factors and emissions calculated	*kgCO2e) were respectively estimated for the traditional cattle and sheep herds.*	
Methodology Explain the method or process of verifying the indicator and how data was gathered	*The overall GHG emissions were estimated using the reported emission intensity factors for different livestock types and production practices. The information on GHG emission intensity was then integrated with information on cattle herds and sheep flocks for an average herder household. This includes herd composition, total herd size based on adult cows and sheep, final live weight of sold livestock, and slaughter age (see sections 4 & 5). The rate (kgCO2e/kg live weight) and total annual CO2e emissions (tCO2e/yr) from the current herd and under the proposed cattle and sheep herd restructuring scenarios were then estimated and compared (Table 14). All estimates were obtained by assuming an average climate and livestock-marketing year and based on the best available data from open-access studies and datasets.*	
Assumptions Describe assumptions made during calculation and quantification of GHG reductions	*Relevant previous studies and existing GHG assessment tools (e.g., GLEAM and LEAP) were reviewed to obtain realistic uncertainty ranges (i.e., min and max) of GHG emission intensity or kg of carbon dioxide equivalents (CO2e) per head of adult livestock per year. This included GHG emission intensities for cattle and sheep meat production under grass-fed or grass-finished (i.e., mainly raised and fattened on pastures) and mixed operation (i.e. raised and fattened on a combination of pastures and creep feeding or feedlots), as well as under improved grazing and pasture, and livestock productivity management (see Table A1 in Appendix).*	

Core indicator 2	**Anticipated increased economic, health, well-being, infrastructure and built environment, and ecosystems resilience to climate change impacts as a result of technical assistance** *Please provide a **qualitative** description of the anticipated impacts on the categories below*
Infrastructure and built environment Anticipated increased infrastructure resilience (avoided/mitigated climate induced damages and strengthened physical assets)	Operation of a climate change resilient meat processing facility in Bayantumen soum. 1 facility in Bayantumen *soum* incorporates renewable energy and energy efficiency features. Energy savings from efficient technologies range up to 50%. **Verification:** Community focus-group discussions/ assessments; mixed and gender specific. Expert opinion. After 3 years and 5 years.
Ecosystems and biodiversity Anticipated increased ecosystem resilience (areas with increased resistance to climate-induced disturbances and with improved recovery rates)	Change in pasture productivity and profitability from livestock farming systems based on: i) community perception and ii) expert opinion. 1 soum (Bayantumen) in Dornod province adopts improved pasture management methods and decreases herd size to match carrying capacity. Slight to moderately degraded pastures recover within 2 to 3 years based on State and Transition Model norms. Biodiversity protection programs within pastures and along river systems allow for the protection and recovery of native species and diversity. **Verification:** Frequency based on the predicted patterns of years with typical/average and extreme climate (eg. dzud) during the expected recovery period for pastures in the target area.
Economic Anticipated increased economic resilience (e.g. less reliance on vulnerable economic sectors or diversification of livelihood)	Change in economic resilience through value-added meat production and wage employment based on: i) community perception and ii) expert opinion. 1 *soum* (Bayantumen) reports an increase in resilience from meat processing and related wage employment. A small number of people benefit directly from salaried positions in the slaughterhouse (<10) and feedlot (<5). The improved market access and value of livestock, especially through sales of sheep, benefits 52% of soum herder households. Improved household income and less winter-feeding and young stock responsibilities benefits women. **Verification:** Community focus-group discussions/assessments; mixed and gender specific. Expert opinion. After 3 years and 5 years.
Health and wellbeing Anticipated increased health and wellbeing of target group (e.g. improved basic health, water and food security)	Herder households involved in the marketing program benefit from improved and more stable household income leading to improved food security. The 1000 urban households (apprx 4000 p) consuming the output of the slaughterhouse benefit from higher quality meat processed in safe conditions, thus improving their food security.

Core indicator 3	Anticipated number of direct and indirect beneficiaries as a result of the TA	
	Quantitative value	**Means of verification**
Total beneficiaries	*11017*	
Number of adaptation beneficiaries		Training/TA training and TA reach to date = 296 Residents of Bayantumen soum via new strategies = 2840 Distribution of TA results/methods to - MET focal points across Mongolia = 21 - Aimag planners & tech staff (21*10) = 210 - Soum gov't/tech staff 365 soums *10 = 3650 - Subtotal = 3881 Consumers, if plant is built (1000 hh) = 4000 Total =11,017
Number of mitigation beneficiaries		
Number of adaptation-and mitigation beneficiaries		

Core indicator 4	Anticipated amount of funding/investment leveraged (USD) as a result of TA (disaggregated by public, private, national, and international sources, as well as between anticipated/confirmed funding)			
	Quantitative value confirmed *in USD*	**Quantitative value anticipated** *in USD*	**Qualitative description** *List the institutions, timelines, and description or title of the investment*	**Methods** *Describe methods used for quantification of funds leveraged*
Total funding	*7,600,000*	*200,000*		
Anticipated amount of public funding mobilised from national/domestic sources				
Anticipated amount of public funding mobilised from international/ regional sources	7,500,000		Global Affairs Canada: ECCO-FARM project, 2023-2028	Value of GAC contract.
Anticipated amount of private funding mobilised from national/domestic sources	 100,000	200,000	Corporate contributions to PES services pilot project in ECCO-FARM JMI IMPEX integrated meat plant feasibility study, 2023.	Estimated value of PES payments Est'd value of contract.
Anticipated amount of private funds mobilised from international/regional sources				

Annex 2 (for internal use – to be filled in by the CTCN)

CTCN evaluation
This section will be completed by the relevant CTCN Technology Manager.

- Evaluation of the timeliness of the TA implementation as measured against the timeline included in the response plan;
- Evaluation of TA quality as defined in the response plan;
- Overall performance of the Implementers;
- Overall engagement of the NDE and Proponent;
- Lessons learned on the CTCN process and steps taken by the CTCN to improve.