

XINJIANG BURQIN IMPROVED GRASSLAND MANAGEMENT PROJECT



Document Prepared by Climate Bridge (Shanghai) Ltd.

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Project Proponent(s)	Burqin Jinhua Urban Construction and Investment Co. Ltd. Xue Ruxue 3F, No.5, Building of Hydropower Company, Shenxianwan Road, Burqin County, Altai Region, Xinjiang Uygur Autonomous Region, China +86 21 2301 9950 projects@climatebridge.com 3542346576@qq.com
Prepared By	Climate Bridge (Shanghai) Ltd. Wu Siran Block B, Level 24, Jiangong Mansion, 33 Fushan Road, Pudong New Area, Shanghai, China wu.siran@climatebridge.com projects@climatebridge.com +86 21 6246 2036
Validation/Verification Body	TÜV NORD CERT GmbH

GHG Accounting/ Crediting Period	Stefan Winter, Fancy Zhao swinter@tuev-nord.de / fzhao@climate-sustainability.com +49 201 825 2392
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History of CCB Status	Under validation combined with the first verification
Gold Level Criteria	/

¹ According to the methodology, the monitoring of SOC stock should be at the end of growing season in the year measured, therefore the field monitoring activities for this monitoring period has been conducted in September of 2021, and the monitoring period end at the end of the year measured, i.e. 31-December-2021.

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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1) Restored 65,000.00 ha of degraded grassland and improve grassland productivity and forage quality in the project zone, and prevented continued degradation of grassland, which could significantly improve the ecological aesthetics value of local touristic resources.	Restore 65,000.00 ha of degraded grassland system by seeding grass, fence building and sustainable grassland management.	2.1	Restore 65,000.00 ha of degraded grassland system by seeding grass, fence building and sustainable grassland management.
2) Organized special community cultural activities for local residents, improved the interaction within the local Kazakh community, increased connection between local Kazakh herders and other community members and indirectly promote the diffusion of traditional culture.	The project offered 2,870 job positions for local Kazakhs and provided opportunities for them to work together and organize special community cultural activities during their traditional holidays, which improved interaction within the local minorities, and indirectly promoted the diffusion of traditional culture.	4.1	The project offered 2,870 job positions for local Kazakhs and provided opportunities for them to work together and organize special community cultural activities during their traditional holidays, which improved interaction within the local minorities, and indirectly promoted the diffusion of traditional culture.
3) Improve the habitat environment of wildlife and increase the biodiversity of the project area.	Native grass species of <i>Elymus nutans</i> (Hook head grass), <i>Agropyron cristatum</i> (Ice grass), <i>Festuca rubra</i> (Pennlawn) and <i>Artemisia sphaerocephala</i> (sagebrush) were seeded and grown well in the project area which has reduced the threat to endangered animals, and more birds and other animals have been observed around the project area, therefore the	5.1	Native grass species of <i>Elymus nutans</i> (Hook head grass), <i>Agropyron cristatum</i> (Ice grass), <i>Festuca rubra</i> (Pennlawn) and <i>Artemisia sphaerocephala</i> (sagebrush) were seeded and grown well in the project area which has reduced the threat to endangered animals, and more birds and other animals have been observed around the project area, therefore the

	biodiversity in the project zone has increased		biodiversity in the project zone has increased.
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1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	752,472 t CO ₂ e	3.2	752,472 t CO ₂ e
	Net estimated emission reductions in the project area, measured against the without-project scenario	/	/	/
Forest ² cover	For REDD ³ projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	Not applicable	/	/
	For ARR ⁴ projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	Not applicable	/	/
Improved land management	Number of hectares of existing production forest land in which IFM ⁵ practices have occurred as a result of the project's activities, measured against the without-project scenario	Not applicable	/	/
	Number of hectares of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario	Not applicable	/	/
Training	Total number of community members who have improved skills and/or	4,875	2.3	4,875

² Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

³ Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)

⁴ Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)

⁵ Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (*VCS Program Definitions*)

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	knowledge resulting from training provided as part of project activities			
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities	1,950	2.3	2,014
Employment	Total number of people employed in of project activities, ⁶ expressed as number of full time employees ⁷	812 ⁸	4.3	812
	Number of women employed in project activities, expressed as number of full time employees	325	4.3	324
Livelihoods	Total number of people with improved livelihoods ⁹ or income generated as a result of project activities	4,875	2.3	4,875
	Number of women with improved livelihoods or income generated as a result of project activities	1,950	2.3	1,950
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	Not applicable	/	Not applicable
	Number of women for whom health services were improved as a result of	Not applicable	/	Not applicable

⁶ Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

⁷ Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])

⁸ During this monitoring period, about 4,875 local herders participated in grass seeding and fences building, of which more than 40% were women. According to the payment records, the working hours was 1,624,000 hours per year during this monitoring period, and the legal working hours is 2,000 hours per year according to Labour Law of China. Therefore, total number of people employed in the project expressed as number of full-time employees is 812 (1,624,000/2,000 = 812).

⁹ Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	project activities, measured against the without-project scenario			
Education	Total number of people for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	Not applicable	/	Not applicable
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	Not applicable	/	Not applicable
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Not applicable	/	Not applicable
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Not applicable	/	Not applicable
Well-being	Total number of community members whose well-being ¹⁰ was improved as a result of project activities	4,875	2.3	4,875
	Number of women whose well-being was improved as a result of project activities	1,950	2.3	1,950

¹⁰ Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation, ¹¹ measured against the without-project scenario	1,079,666 ¹²	2.1	1,079,666
	Number of globally Critically Endangered or Endangered species ¹³ benefiting from reduced threats as a result of project activities, ¹⁴ measured against the without-project scenario	4 ¹⁵	5.1	4

¹¹ Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation.

¹² According to PRA Report, the total area of Burqin County is 1,079,666 ha. The project restored degraded grassland, guided herders to graze reasonably, prevented sustainable degradation of grassland, provided more habitats for wild animals and increased biodiversity in the project zone.

¹³ Per IUCN's Red List of Threatened Species

¹⁴ In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

¹⁵ The number is globally Critically Endangered or Endangered species that were protected result of the reduced threats

2 GENERAL

2.1 Project Description

2.1.1 Implementation Description

Xinjiang Burqin Improved Grassland Management Project (hereafter as “the project”) is located in Burqin County, Altai City, Xinjiang Uygur Autonomous Region, China. The project is aimed to restore the local degraded grassland ecosystem from adoption of sustainable grassland management practices, such as improving the rotation of grazing animals between summer and winter pastures, limiting the timing and number of grazing animals on degraded pastures, and restoration of severely degraded land by replanting with perennial grasses and ensuring appropriate management over the long-term. The project proponent is Burqin Jinhua Urban Construction and Investment Co., Ltd.

According to the Parameters for Degradation, Desertification and Salinization of Rangeland (National standard of China, GB19377-2003) and Project Design Report, moderately degraded areas refer to the total grass yield decreased by 21%-50% compared with that before degradation and the total grass yield decreased by 50% compared with that before degradation is regarded as severely degraded grasslands. According to the baseline survey, before the implementation of the project, the grassland in the project area was facing serious degradation and even desertification due to the impact of climate change and human activities, most of them were moderately degraded while some of them even severely degraded for years.

Totally, 65,000.00 ha of degraded grassland have been managed sustainably by rotational and rest grazing through fence building and grass seeding of local high-quality forage.

There are two main restoration measures in the project:

- 1) Grass seeding was implemented in severely degraded grasslands where grass seeds of local high-quality forage was sowed *under the condition of fencing enclosure* for 2 years, and then the grassland should be used reasonably and sustainably according to the local approved livestock carrying capacity. In this project, 5,000 ha of severely degraded grassland (grass yield is about 58.78 Kg/Mu which was decreased by 52.72% compared with the non-degraded grassland data in 2000¹⁶) have been managed sustainably by the implementation of grass seeding. The grass species are all perennial grasses, including *Elymus nutans* (Hook head grass), *Agropyron cristatum* (Ice grass), *Festuca rubra* (Pennlawn) and *Artemisia sphaerocephala* (sagebrush).
- 2) Rest and rotational grazing were implemented in 60,000 ha of moderately degraded grassland where grass yield is about 84.00 Kg/Mu which was decreased by 32.43% compared with the non-degraded grassland data in 2000. For the first five years, grazing was strictly forbidden after the implementation of the project for relevant project area and then, sustainable grassland management methods will be applied, such as rotational grazing in different pastoral areas, limits the time and number of grazing in the project area to protect the natural grassland resources, curb the deterioration of the ecological environment of the natural grassland, It

¹⁶ Annual Survey report of grass yield conducted by Burqin County Forest and Grassland Bureau

requires that the grazing time shall be halved by dividing grasslands into seasonal grazing land according to the livestock carrying capacity of the grassland by fence building. Then based on specified grazing order, grazing cycle and zoning grazing time, the grassland is grazed area by area and used in turn.

Grazing is forbidden for the first five years after the implementation of the project for relevant project area, and then controlled grazing will be allowed depending on the growth situation of the forage. Although the grazing days are strictly managed, reasonable grazing is still allowed based on the Grazing Displacement Management Plan. The rotational and rest grazing has been implemented by stages for three years (2017-2019, refer to Section 2.2.1 for details), and the implementation of the entire region with 65,000.00 hectares was completed in September 2019. Therefore, grazing is completely prohibited in the project area from 2019, and grazing activities were allowed in the area where the project has not yet been implemented in 2017-2018.

Besides these main restoration measures, the project also alleviates soil desertification and restore grassland vegetation to improve soil carbon storage and local biodiversity through grassland management measures, such as daily management measures from other protect projects like rodent and pest control and grassland fire prevention to ensure the long-term sustainable management of the project area.

The implementation of the project will generate GHG emission removals by increasing soil organics, mitigate the impact of climate change on the local ecological environment, such as slow down the melting of snow-capped mountains, enhance the capabilities of local communities and residents by providing them with relevant technical skills and training, and increase local biodiversity.

From 04-September-2021 to 30-September-2021, the project proponent has conducted a field monitoring for the climate and community impacts of the project actually achieved during the first monitoring period (from 26-June-2017 to 31-December-2021¹⁷). According to the patrol records, during the monitoring period, there was no events that may impact the GHG emission reductions or removals occurred.

According to the PD, leakage from displacement of grazing activities to outside the project boundary should be calculated, and the relevant parameters were monitored on the basis of Leakage from Displacement of Grazing Activities (VMD0040, Version 1.0). For non-permanence risk factors, the project has been evaluated against the all the three categories of risk factors during this monitoring period by regular records of the relevant events and comprehensive analysis, the results of the monitoring and evaluation was summarized in the relevant non-permanence risk report.

To monitor the biodiversity impact, the project proponent has conducted two filed surveys in winter season (09-November-2020 to 30-November-2020) and summer season (01-June-2021 to 25-June-2021) respectively. Please refer to Section 5.3 and 5.4 for details.

¹⁷ According to the methodology, the monitoring of SOC stock should be at the end of growing season in the year measured, therefore the field monitoring activities for this monitoring period has been conducted in September of 2021.

In conclusion, during this monitoring period, the project has generated GHG emission removals of 752,472 tCO₂e¹⁸, with an average annual net GHG emission removals of 150,494 tCO₂e and improved local environment through grass seeding and fence building on the degraded grassland, increased income of local residents by offering job opportunities from the project and improve tourism income, enhanced the capabilities of local communities and residents by providing their relevant technical skills training, promote cultural communication by attracting tourists and increased local biodiversity due to the restoration of grassland ecosystem.

2.1.2 Project Category and Activity Type

According to Appendix of 1 Eligible AFOLU Project Categories of the VCS Standard (version 4.3), eligible Agricultural Land Management (ALM) activities are those that reduce net GHG emissions on croplands and grasslands by increasing carbon stocks in soils and woody biomass and/or decreasing CO₂, N₂O and/or CH₄ emissions from soils, which include Improved Cropland Management (ICM), Improved Grassland Management (IGM) and Cropland and Grassland Land-use Conversions (CGLC).

The project restores degraded grassland by planting grass, building fences and forbidding grazing in the first five years, thus increasing soil carbon stocks. So, the project is developed under VCS scope 14 "Agriculture, Forestry and Other Land Use (AFOLU)" with a project category of Agricultural Land Management (ALM), and belongs to the category of Improved Grassland Management (IGM) that demonstrably reduce net GHG emissions of grassland ecosystems by increasing soil carbon stocks. The project is not a grouped project.

2.1.3 Project Proponent(s)

Organization name	Burqin Jinhua Urban Construction and Investment Co., Ltd.
Contact person	Xue Ruxue
Title	Manager
Address	3F, No.5, Building of Hydropower Company, Shenxianwan Road, Burqin County, Altai Region, Xinjiang Uygur Autonomous Region, China
Telephone	+86 21 23019950
Email	3542346576@qq.com

The project proponent Burqin Jinhua Urban Construction and Investment Co., Ltd. is responsible for the management and operation of the project and has established a project working group (covering aspects of carbon sink, ecology, grassland, community, geographic information, etc.).

¹⁸ During this monitoring period, 65,000.00 ha of degraded grassland were managed by rotational and rest grazing with grass seeding and fence building, which has been implemented by stages for three years (2017-2019), and the implementation of the entire region with 65,000.00 hectares was completed in September 2019. Therefore, grazing is completely prohibited in the project area from 2019, and grazing activities were allowed in the area where the project has not yet been implemented in 2017-2018. So, the project emissions of grazing livestock included in this monitoring period, please refer to Section 3.2 for more details.

2.1.4 Other Entities Involved in the Project

Organization name	Climate Bridge (Shanghai) Ltd.
Role in the project	Consultant
Contact person	Gao Zhiwen
Title	General Manager
Address	Block B, Level 24, Jiangong Mansion, 33 Fushan Road, Pudong New Area, Shanghai, China
Telephone	+86 21 6246 2036
Email	projects@climatebridge.com

Climate Bridge (Shanghai) Ltd., who has tremendous experience in development of carbon sink related VCS+CCB projects, is responsible for the development of the project and purchasing the carbon credit of the project.

Organization name	National Forestry and Grassland Administration Northwest Investigation and Planning Institute
Roles/Responsibility	Consultant
Contact person	Yao Xin
Title	Project Manager
Address	No. 156, Jinhua South Road, Beilin District, Xi'an City, Shaanxi Province, China
Telephone	-
Email	3542346576@qq.com

National Forestry and Grassland Administration Northwest Investigation and Planning Institute is a subordinate organization of The National Forestry and Grassland Administration, who has rich experience in forest management in Northwest of China, including artificial afforestation, forest protection and management, forest damage control and technical training.

2.1.5 Project Start Date (G1.9)

According to VCS standard (v4.3), the project start date is the date on which activities that lead to the generation of GHG emission reductions or removals are implemented, for this project, the project start date is 26-June-2017 when fence building started.

2.1.6 Project Crediting Period (G1.9)

The project crediting period is from 26-June-2017 to 25-June-2057 with a lifetime of 40 years which is the same as the CCB benefits assessment period.

2.1.7 Project Location

The project is located in Burqin County, Altai City, Xinjiang Uygur Autonomous Region, China. The geographical coordinates of the project are between 86°25' and 88°06' east longitude and between 47°22' and 49°11' north latitude. The total land area of Burqin County is 1,079,666 ha, and the gross natural grassland area is 676,733 ha, accounting for 62.67% of the total land area of the county.

The location of the project activity in Burqin County is illustrated in Figure 2-1. According to CCB standard, the Burqin County is defined as the project zone, and the implementation area is defined as project area, and the project activities in the project area will generate net climate benefits. The boundaries of project area and project zone is shown in Figure 2-2, and the KML file has also been submitted¹⁹.

The location of communities (identified in Section 2.1.9) is also show in Figure 2-2, there are no high conservation value (HCV) areas, and no offsite climate and biodiversity impacts areas. There are no negative well-being impacts on other stakeholders.

As described in section 3.2.3, grazing was forbidden in the first five years, and then controlled grazing will be allowed depending on the growth situation of the forage, and the Burqin Forestry and Grassland Bureau measures the grass yield of the surrounding grasslands in the project area, and guides herders to graze in a reasonable area. So, there is leakage in the project zone due to grazing displacement activities. And the offsite climate impacts areas are defined as the project zone which is outside of the project area, as shown in Figure 2-2.

¹⁹ <https://registry.terra.org/app/projectDetail/VCS/2852>



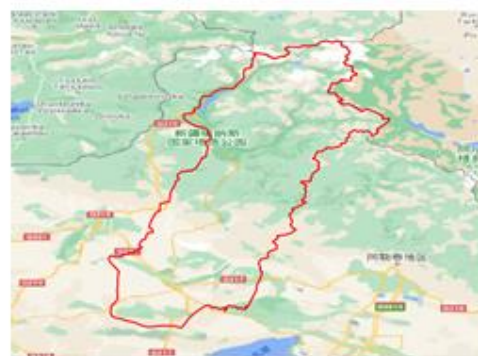
(a) The map of China



(b) The map of Xinjiang Uygur Autonomous Region



(c) The map of Altai



(d) The map of Burqin

Figure 2-1 The project location

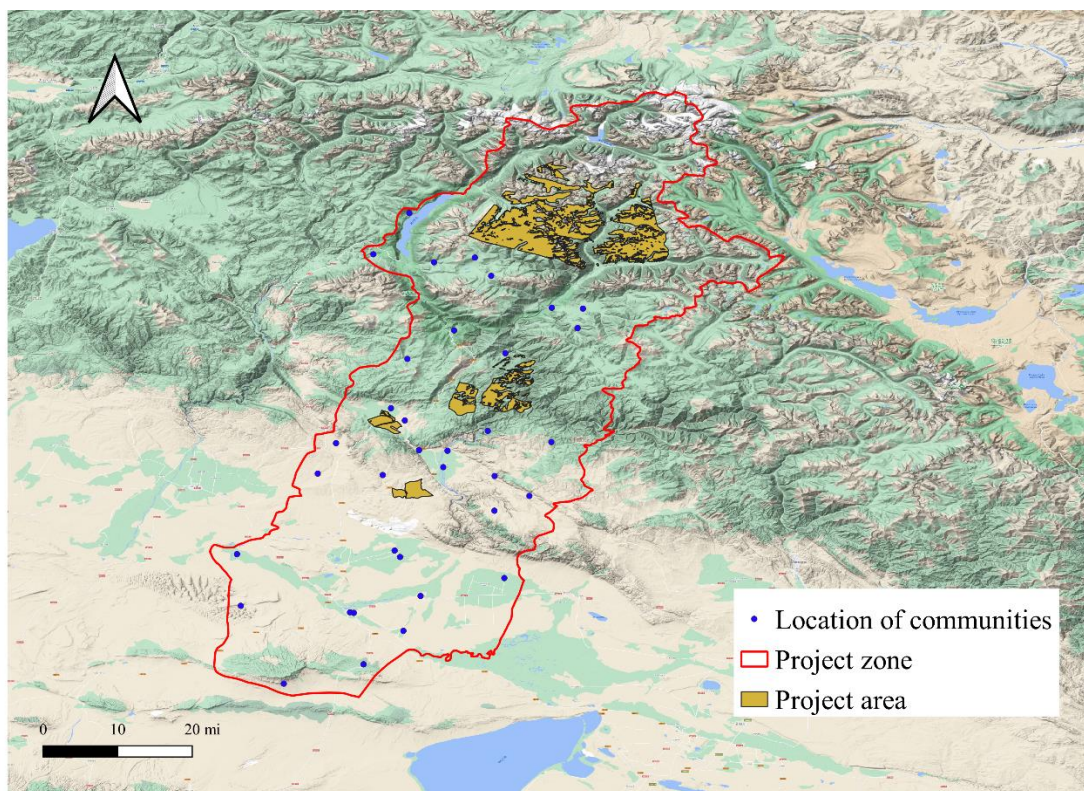


Figure 2-2 The project zone and project area

2.1.8 Title and Reference of Methodology

VM0026/Version 1.1 “Sustainable Grassland Management”.

Reference: [VM0026 Methodology for Sustainable Grassland Management \(SGM\), v1.1 - Verra](#)

The following methodological tools, to which the selected methodology refers to, are used:

Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities (version 3.0)²⁰

Guidelines for sampling and surveys for CDM project activities and programmes of activities, (version 4.0)²¹

Tool for Identification of Degraded or Degrading Lands for Consideration in Implementing CDM AR Project Activities (version 1.0)²²

Estimation of emissions from market leakage (VMD0033, version1.0)²³

²⁰ <https://verra.org/methodology/vt0001-tool-for-the-demonstration-and-assessment-of-additionality-in-vcs-agriculture-forestry-and-other-land-use-afolu-project-activities-v3-0/>

²¹ <https://cdm.unfccc.int/Reference/tools/index.html>

²² <https://cdm.unfccc.int/Reference/tools/index.html>

²³ <https://verra.org/methodology/vmd0033-estimation-of-emissions-from-market-leakage-v1-0/>

Leakage from displacement of grazing activities (VMD0040, version 1.0)²⁴.

2.1.9 Other Programs (G5.9)

The project does not reduce GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading.

The project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period.

The project is not seeking registration under any other GHG programs.

2.1.10 Sustainable Development

The project provided many benefits that will help to achieving China's Sustainable Development Goals as following:



The project provided job opportunities for local residents, all residents have been given an equal opportunity to participate in the project if they meet the job requirements. Women and vulnerable people who come from the poorest local households were not only provided with equal opportunities but also consciously ensured that they can be part of the project. All the employees that were involved in grass seeding and fence building were paid 80 RMB (11.43 USD)/day. Grassland guardians were paid around 22,800 RMB (3,579.60 USD) / year.



The project proponent has referenced Labor Law of the People's Republic of China and adapted them to meet the local conditions to ensure workers' health and safety. The workers' health and safety policy, including items covering the health insurance scheme for workplace accidents and evacuation plans is made available for workers and implemented by Burqin Forestry and Grassland Bureau.



During the project implementation, about 4,875 local herders participated in the project, of which 1,950 are women. This will contribute to empower women and build community capacity in gender and sustainable grassland management. By being trained with the sustainable grassland management skills and participating the community activities together with other employees, women may gain more happiness compares to doing housework only, thus positive welfare outcomes for local households are more likely to be expected.

²⁴ <https://verra.org/methodology/vmd0040-leakage-from-displacement-of-grazing-activities-v1-0/>



The purpose of the project is to restore the degraded grassland ecosystem by seeding grass and building fences to managed grazing which will generate GHG emission removals by increasing soil organics or avoiding soil degradation, mitigate the impact of climate change on the local ecological environment.



The project can improve the quality and quantity of the grassland vegetation and provide more habitat for wild animals to enhance biodiversity conservation by seeding grass or scientific grazing.

For monitoring and reporting, all the achievements have been recorded with related evidence, and the certain contributions on climate, community and biodiversity have been calculated and evaluated as per the related standard and methodologies.

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G1.9)

Table 2-1 Timeline of the project

Date	Milestone(s) in the project's development and implementation
30-September-2016	The Participatory Rural Appraisal (PRA) Report was completed
19-October-2016	The baseline biodiversity survey report was completed
December-2016	The Project Design Report was completed
05-March-2017	The Project Design was approved by Burqin Agriculture and Animal Husbandry Bureau ²⁵
26-June-2017	Started fence building (start date of project activity and crediting period)
26-June-2017 to 04-September-2017	Rest and rotational grazing were implemented in 49,333.33 ha of degraded alpine meadow grassland and fence building
05-June-2018 to 10-September-2018	Rest and rotational grazing were implemented in 10,666.67 ha of degraded mountain meadow grassland and fence building
25-May-2019 to 25-June-2019	Grass seeding was implemented in 5,000.00 ha severely degraded grasslands

²⁵ Since the Burqin Agriculture and Animal Husbandry Department has been dismissed in 2019 due to the reform of government function, and some functional departments related to grassland management have been transferred to Burqin Forestry and Grassland Bureau.

15-June-2019 to 05-September-2019	Repaired the fences
09-November-2020 to 30-November-2020 and 01-June-2021 to 25-June-2021	Biodiversity monitoring in winter and summer season respectively
04-September-2021 to 30-September-2021 ²⁶	Filed monitoring and survey for the first monitoring period, including climate and community
30-December-2021	Draft MR and MR summary finished
24-February-2022 to 26-March-2022	Public comment period for draft PD and MR
20-June-2022 to 24-June-2022	VVB site visit

2.2.2 Methodology Deviations

Not applicable.

2.2.3 Minor Changes to Project Description (Rules 3.5.6)

Not applicable.

2.2.4 Project Description Deviations (Rules 3.5.7 – 3.5.10)

Not applicable.

2.2.5 Grouped Projects

Not applicable.

2.2.6 Risks to the Project (G1.10)

The Grass Management Manual have been distributed to each household in the local villages, and the technical manuals have involved the description and the relevant actions needed and mitigation measures of the potential risk such as fire, pest and disease outbreak, and extreme weather. Hence, all communities and stakeholders have sufficient time to made aware of all the risks associated prior to make decision they may be asked to make with respect to participation in the project. Additionally, local Forestry and Grassland Bureau and project proponent also adopt positively mitigations to deal with the potential natural risks, involved providing technical and awareness training and strengthening patrolling and monitoring, establishing and improving a Grass Management Manual, holding in-person meetings. During this monitoring period, no natural disaster threats occurred, please refer to Non-Permanence Risk Report of the project for more detailed analysis of project risk.

²⁶ According to the methodology, the monitoring of SOC stock should be at the end of growing season in the year measured, therefore the field monitoring activities for this monitoring period has been conducted in September of 2021.

Table 2-2 The Project Risks Table

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk	The actual risk during this monitoring period
Fire	The planting area is degraded grassland with low coverage, thus the risk of fire is quite low in the early phase of the project. With the increase of grassland coverage, the risk of fire may increase, and the project owner will adopt the necessary measures for fire preventing.	This can be alleviated through technical and awareness training to local herders/communities, strengthening patrolling and monitoring. According to the Chinese Grassland Law, the local government should carry out the construction of grassland fire prevention facilities, and once a fire disaster occurs, the local government should be responsible for relevant rescuing immediately. And the project proponent is experienced in local natural risk control and has established a Grassland Management Manual for the project which includes specific instruction in fire prevention.	During this monitoring period, no fire disaster occurred.
Rodents and pests	There could be rodents and pests that may damage the grassland, but the rodents and pests will be prevented by routine overseeing.	The biological methods are used to control rodents, such as building eagle's nest. The chemical pesticides are allowed to be used only if there is a serious pest problem erupted in the project area, and the pesticides will be used in accordance with the National Pesticides Policy. The project proponent is also experienced in local natural risk control and has established a Grassland Management Manual for the project which includes specific instruction in rodents and pests prevention and control.	During this monitoring period, no rodents and pests disaster occurred.
Frost	The project area is located in Burqin County, where the temperature is low, but the frost disaster has	Grass species planted in the project are native species, which can adapt to the local climate. In case of frost disaster, grass can grow smoothly in the second year.	During this monitoring period, frost disaster has no significant

	little impact on the grassland.		impact on grassland.
Human-induced risk (Overgrazing)	Overgrazing is the main factor leading to grassland degradation. The local government guide herders to carry out sustainable grazing, which can slow down the degradation of grassland.	Local herders are employed as grassland guardians, they protect and manage the grassland under the guidance of the project proponent and the local forestry and grassland bureau. Also, local forestry and grassland bureau vigorously promotes grassland protection, provides relevant training for herders, and raises herders' awareness of grassland protection.	During this monitoring period, no overgrazing occurred in the project area.

2.2.7 Benefit Permanence (G1.11)

To maintain and enhance the climate, community and biodiversity benefits, the forage suitable for alpine region (e.g. Elymus nutans, Agropyron cristatum, Festuca rubra and Artemisia sphaerocephala) were selected to be planted in the project, and built eagle's nest in the project area to control rodents, which could guarantee the long-term benefits through and beyond the project lifetime. Also, grazing was strictly forbidden in the first five years, and then controlled grazing will be allowed depending on the growth situation of the forage, and the fences were built around the project area.

According to Grassland Law of People's Republic of China, the ownership of grassland belongs to the village collectives, to make sure the successful development of the relevant carbon credits of the project, all project lands owners agreed to authorize Burqin Agriculture and Animal Husbandry Bureau the rights of lands and grassland management within the project boundary during the project crediting period. After the implementation of the project, the Burqin Agriculture and Animal Husbandry Bureau has been dismissed in 2019 due to the reform of government function, and some functional departments related to grassland management have been transferred to Burqin Forestry and Grassland Bureau. Then, Grassland Station of local Forestry and Grassland Bureau has cooperated with Burqin Jinhua Urban Construction and Investment Co., Ltd. to help with the sustainable grassland management. In order to develop carbon credits of the project, with support of Burqin Forestry and Grassland Bureau, all project lands owners agreed to authorize Burqin Jinhua Urban Construction and Investment Co., Ltd. the rights of lands and grassland management within the project boundary during the project crediting period, and the authorization has also been confirmed by local government.

So, Burqin Jinhua Urban Construction and Investment Co., Ltd. have the rights to control and operate the project as Project Proponent during the whole project crediting period. The carbon revenue will be used to pay the salaries of the grassland guardians, which is conducive to the sustainable development of the project.

The technicians from local forestry and grassland bureau will measure the grass yield regularly in the project area and guide the herders to graze reasonably. In addition, approximately 467 local

herders were employed as grassland guardians to manage and protect the grassland under the guidance of the project proponent and the local forestry and grassland bureau through and beyond the project lifetime.

The improvement of the living standard for local herders would accelerate their transition of traditional overgrazing to sustainable grazing which could benefit for the maintenance and conservation of the local grassland ecosystem, and the healthy grassland ecosystem is an attractive landscape which could significantly benefit local touristic resources and promote the local economy, therefore enhance the long-term benefit beyond the project lifetime.

All of these could guarantee the long-term climate, community, and biodiversity benefits.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

The full project documentations have been published on VCS and CCB website for public comments from 24-February-2022 to 26-March-2022, as well as the project summary in Chinese version, and the local communities and other stakeholders can easily download from the website²⁷. The project owner noticed local stakeholders through the routine villager assembly regarding every milestone of the project development, including monitoring and listing.

Before starting the monitoring of this monitoring period, the project owner published the monitoring plan and monitoring manual on the local bulletin boards for the villages around the project area from 01-August-2021 to 30-August-2021 and invited local stakeholders to discuss them and give their advises.

After the monitoring activity completed, the draft monitoring results was also be published in the CCB and VCS website as part of the monitoring report which could be download by anyone who is interested, and any public comments received will be seriously considered during the following verification process.

2.3.2 Dissemination of Summary Project Documents (G3.1)

After the monitoring activities finished, the project proponent prepared a draft monitoring report along with a short version of MR summary in Chinese. During the VVB site visit, the project proponent arranged a stakeholder meeting in Burqin Forestry and Grassland Bureau on 20-June-2022, several representatives of local communities and stakeholders have been invited to attend the meeting. The monitoring results of this monitoring period was distributed to local stakeholder representatives during the meeting.

After the stakeholder meeting, the summary of monitoring results was disseminated to local communities by local forestry and grassland bureau and stakeholder representatives during 21-June-2022 to 28-June-2022, and the contact information of monitoring staff from project proponent has also been provided in case the local communities have any questions regarding the monitoring procedures and results.

²⁷ <https://registry.verra.org/app/projectDetail/VCS/2852>

2.3.3 Informational Meetings with Stakeholders (G3.1)

To ensure the continued effectiveness of the participation mechanisms, investigation team conducted a Participatory Rural Appraisal (PRA) in Burqin County where project located prior to project initiation (from 05-July-2016 to 27-September-2016), in order to obtain basic information, data and information of socio-economic situation on the project area and the surrounding, understand the major socio-economic and environmental issues from the stakeholders, collect their willingness to participate and take advantage of the demands of the proposed project activity and analysis the potential socio-economic and environmental impacts of the proposed project activity.

During the PRA survey, the project owner also held a stakeholder meeting in August 2016 to collect the direct feedback and suggestions. During the meeting, questionnaires were distributed to attendees to collect their feedback.

During this monitoring period, the project proponent Jinhua Urban Construction and Investment Co. Ltd. held a physical stakeholder meeting in the meeting room o Burqin Forestry and Grass Bureau on 12-September-2021 to inform relevant stakeholders of progress of carbon sequestration project and PRA process. The meeting notice was publicized on the village collective bulletin board. Local herders, local residents around project area, local Kazakh, local women, grassland guardians outside the project area directly impacted by the project were invited through their most convenient way: the routine villager assembly. The representatives of grassland guardians, village collectives, Burqin Forestry and Grassland Bureau, Local government were invited to attend the meeting by telephone/Email. In addition, the contents of the meeting were publicized on the village collective bulletin board.

Secondly, the survey team went to the villages where the project located and took the household interviews with local residents to collect the basic information of the villagers and characteristics of local communities from 04-September-2021 to 30-September-2021. Please refer to Section 2.3.7 for the detailed information regarding the results of questionnaires.

During the VVB site visit, the project proponent arranged a stakeholder meeting in Burqin Forestry and Grassland Bureau on 20-June-2022, several representatives of local communities and stakeholders have been invited to attend the meeting. At this meeting, the project proponent reported the accomplished monitoring activities and draft monitoring results during this monitoring period, some of the representatives thought it was too complicated to calculate the emission removals which was time consuming and costly. The project owner explained the general concept of VCS and CCB standard regarding the requirement for monitoring and calculation in a simple and straightforward way, so that the representatives finally understood the importance of all the necessary procedures to guarantee the real and measurable benefits of the project.

2.3.4 Community Costs, Risks, and Benefits (G3.2)

During the PRA survey from 05-July-2016 to 27-September-2016, Burqin Forestry and Grassland Bureau sorted out Chinese version summary of the potential costs, risks and benefits identified by interview and questionnaires for local residents. A week before the start of the stakeholder meeting in August 2016, the project owner has entrusted representatives of township grass station with delivering Chinese version summary to relevant communities and stakeholders, in order to make

them have sufficient time prior to decision they may be asked to make with respect to participation in the project.

In the stakeholder meeting, local Forestry and Grassland Bureau is responsible to explain further the potential costs, risks and benefits to relevant communities and stakeholders, then invited them to give their feedback. The analysis based on following table is quite clear and understandable. According to the analysis, the community benefits of the project include income improvement, job creation, training opportunities and capability establishment, and all the relevant communities are aware of the design concept of the project and have willingness to participate in the project.

Benefits	Costs and Risks	Mitigations
Income improvement, Increase job and training opportunities, Establish community capability	Grazing is strictly forbidden in the first five years.	The local government issued subsidies to the herders in the project area who implemented the prohibition of grazing. Burqin Forestry and Grassland Bureau measures the grass yield of the surrounding grasslands in the project area, and guides herders to graze in a reasonable area. Also, the project provides job opportunities for local herders, which will increase their income in long term.

During this monitoring period, to mitigate the impact of project implementation, the project proponent and Burqin Forestry and Grassland Bureau measures the grass yield of the surrounding grasslands in the project area in July and August every year, calculates the reasonable grazing quantity according to the carrying capacity standard of Xinjiang Uygur Autonomous Region, and guides herders to graze within the acceptable area to make sure their grazing productivity could be maintained. So, the project will not reduce the grazing time and quantity, instead of which, the sustainable grazing could improve the grazing productivity in a long term.

The community impacts have been monitored through interviews and questionnaires from 04-September-2021 to 30-September-2021, and the monitoring results showed there were net community benefits achieved from the implementation of the project just as anticipated.

Through meeting interviews and questionnaire surveys, all stakeholders know the impact of the project and they thought that the implementation of the project can restore degraded grasslands and increase grazing areas in long term. And the project provides job opportunities for local herders, which will increase their income. During the project implementation, about 4,875 local herders (1,950 are women) participated in grass seeding and fences building, of which 467 local herders (192 are women) were employed as guardians. All the employees were provided related skill training periodically. Local residents who involved in grass planting were compensated 80 RMB (12.55 USD)/day. Grassland Guardian were paid around 22,800 RMB (3,579.60 USD) /year, higher than the per capita disposable income of farmers and herdsmen in Burqin County (10,736 RMB (1,685.55 USD) /year).

2.3.5 Information to Stakeholder on Verification Process (G3.3)

The villager assembly is held once a year, all community group leaders participate in the village assembly, and the contents of the assembly will be conveyed to all community members by the

leaders. Therefore, the villager assembly is considered as the most appropriate means for sharing information with local communities. A contact person with phone numbers was published through villager assembly in case any stakeholders wish to participate in any activities related to the project.

The status and process of the project for CCB and VCS validation and verification were published through routine villager assembly and posted on local bulletin boards, also the mobile phone number of contact person of the project was provided to all the stakeholders so they can directly make a call in case they have any problem about the project.

2.3.6 Site Visit Information and Opportunities to Communicate with Auditor (G3.3)

The local stakeholders have been informed timely regarding the project process, especially when the auditor would take the site visit. And a week prior to the visit, the project staff has informed relevant stakeholders in advance about the details of the audit process and arranged a half day for the auditor's interview with stakeholders so that the stakeholders have sufficient time to communicate with the auditor.

During the VVB site visit, the project proponent arranged a stakeholder meeting in Burqin Forestry and Grassland Bureau on 20-June-2022. The project proponent and the local forestry and grassland bureau notified the stakeholders of the meeting time one week in advance, and several representatives of local communities and stakeholders have been invited to attend the meeting. At the meeting, the VVB introduced the purpose and procedures of the on-site audit, the project proponent and Burqin Forestry and Grassland Bureau introduced the project, and all representatives thought that the project had restored the degraded grassland and improved the ecological environment. And from 14-June-2022 to 17-June-2022, the VVB visited the project area and interviewed herders around the project area, and all herders thought that the project improved their living conditions.

2.3.7 Stakeholder Consultation (G3.4)

During the PRA survey and stakeholder meeting prior to start of the project, the local stakeholders were asked to raise their opinions of the project design and their willingness to participate the following implementation, and all the stakeholders agreed with the project design and willing to participate the implementation and follow-up management of the project activity, there was no stakeholder input for any change of the project design.

During this monitoring period, the project owner collects the comments and feedback regarding the following implementation of the project. The project communicated with the community groups and other stakeholders through in-person meetings and made a questionnaire survey from 04-September-2021 to 30-September-2021 to directly collect relevant feedback.

There are totally 4,875 households involved in the project, a randomly sampling method was applied to distribute the survey questionnaires. According to Guideline of Sampling and Surveys for CDM project Activities and Programmes of Activities (Ver 04.0), the total sampling size was calculated as 48 (see the following equations for details), and the final number has been adjusted into 60 to make sure the household interview could represent the different community group, such as local Kazak nationality, herders and grassland guardians.

$$n \geq \frac{1.645^2 N \times P(1-P)}{(N-1) \times 0.1^2 \times P^2 + 1.645^2 P(1-P)}$$

Where:

n	=	Sample size
N	=	Total number of households
P	=	Expected proportion, which is defined as 0.85 based on the empirical value provided by Burqin Jinhua Urban Construction and Investment Co., Ltd.
1.645	=	Represents the 90% confidence required
0.1	=	Represents the 10% relative precision

As N is 4,875 as determined of total number of households, P is determined as 85% based on the empirical value provided by Burqin Jinhua Urban Construction and Investment Co., Ltd., and taking 90% level of confidence, n is therefore calculated as $1.645^2 \times 4,875 \times 0.85 \times (1-0.85) / ((4,875-1) \times 0.1^2 \times 0.85^2 + 1.645^2 \times 0.85 \times (1-0.85)) = 48$.

A total of 60 questionnaires were distributed to the representatives of the local stakeholders from local government and surrounding villages, and all 60 copies were collected with valid answers. As described in the PD, the “community stakeholders” that was made within the project has been divided into seven groups: “Local residents around project area”, “Village collectives”, “Burqin Forestry and Grassland Bureau” and “Local government”. The representatives participated in the questionnaire include these seven different community groups, at least 3 representatives in each community group and the representatives covered different ages, different occupations and different education levels.

The quality of monitoring results is determined by the quality of data collection and processing. In order to ensure true and effective monitoring results, the project owner arranges for data collection and analysis supervisors to constantly check the data collection and processing throughout the PRA monitoring process to ensure that the questionnaires are completed, the survey records are reviewed and the data processing form is filled in clearly and accurately.

The quantitative data can be analyzed by direct calculation methods, such as summation, average, proportion, etc. By comparing and analyzing the values, it can discuss the similarity and differences between monitoring objects, or summarize the relationship between values. Quantitative data can be directly statistically analyzed manually, or with the help of computers and statistical software such as Excel, SPSS, etc.

The summary of qualitative data is complex. The following are the basic steps of qualitative data analysis:

- 1) Briefly summarize the main points of each person's answer to the question.
- 2) Check these answers carefully. Make a note of the most important points. Then review all the responses and count the total number of respondents with the same major opinion.

Alternatively, count the number of people who hold or disagree with a particular opinion and rank their opinions. If the number and proportion of opinion-holders cannot be calculated accurately, then at least some trend must be pointed out, that is, whether “All”, “The vast majority”, or “Minority” of respondents had a point of view.

- 3) Ask others to check these conclusions to ensure that the answers are accurately interpreted.

After data analysis and processing, the results of this monitoring period were summarized as follows.

Table 2-3 The representatives' information

	number	60
Gender	Male	47%
	female	53%
Age	20--30	11%
	30--50	62%
	above 50	27%
Education	Junior high school and below	45%
	senior middle school	38%
	junior college education and above	17%

Table 2-4 The survey results

1. Whether to participate in this project activity?	Yes	82%
	No	18%
2. How does the project affect family income?	Increase income	80%
	No effect	20%
3. Does the project have an impact on local women's living standards and skills?	Improve living standards and skills	75%
	No effect	25%
4. Does the project activity affect your lifestyle?	Improved the knowledge and skills of sustainable grazing	90%
	No	10%
5. Has the project improved your relevant skills?	Yes	90%
	No	10%
6. What are your suggestions for this project?	Expand the project area	23%
	No suggestion	77%

The questionnaire survey results show that:

- Most stakeholders understand the benefits of the project, which can restore degraded grassland ecosystems. They also feel strongly that the project has improved the level of social activities.
- Local stakeholders think the project can 1) create employment opportunities; 2) increase biodiversity; 3) improve local environment.
- Most of the stakeholders have participated the implementation and follow-up management of the project activity, and they felt they have benefit from the project economically.

Along with the questionnaire survey, the stakeholders were informed that they would be invited to attend the stakeholder meeting during the site visit of the VVB for the verification, and the confirmed meeting date was notified to them about one week prior to the meeting.

During the VVB site visit, the project proponent arranged a stakeholder meeting in Burqin Forestry and Grassland Bureau on 20-June-2022. Some representatives of local communities and stakeholders have been invited to attend the meeting. Some of the representatives thought it was too complicated to calculate the emission removals which was time consuming and costly. The project owner explained the general concept of VCS and CCB standard regarding the requirement for monitoring and calculation in a simple and straightforward way, so that the representatives finally understood the importance of all the necessary procedures to guarantee the real and measurable benefits of the project. And all representatives thought that the project had restored the degraded grassland and improved their living standards. Hence, project design has not been affected by stakeholder input.

2.3.8 Continued Consultation and Adaptive Management (G3.4)

The Project Design was completed by the professional institute, Xinjiang Agriculture and Animal Husbandry Engineering Consultation Center, the stakeholders have been consulted before the implementation of the project and they all agreed and supported the project. Through the consultation, most of the stakeholder were willing to participate the project in fences building, grass seeding, grassland sustainable management and fire prevention, therefore the project provided all the job opportunities to local communities, including temporary job (fences building, grass seeding) and permanent job (grassland guardian).

Throughout the lifetime of the project, the project owner will visit village collectives, local forestry and grassland bureau and local government regularly. This will establish a commitment to communication and consultation to keep stakeholders informed of project activities including restoration, maintenance, monitoring and the CCB validation and verification process. In addition, the project staff in the field will maintain communications with local residents around project area including local women, local herders and grassland guardians through in-person talking. And the project will actively listen to recommendations made by any identified community members, or other stakeholder groups, and adapt and improve methods as necessary.

The project has an adaptive management plan to effectively evolve as the project progresses, and systematically develop existing practices through project monitoring and evaluation. The project will periodically review plans, methods, goals and objectives, to incorporate new lessons learned, available technology, and scientific knowledge. These strategies will be in accordance with project's Standard Operating Procedures (SOPs) and monitoring plans.

In addition, to maximize the involvement of local residents, besides the job opportunities offered during project implementation, the local residents are also invited to conduct the field work in collecting soil samples and the questionnaire among local communities, local involvement in monitoring can empower communities by helping instill a greater sense of ownership of and responsibility for the community and biodiversity objectives of the project.

2.3.9 Stakeholder Consultation Channels (G3.5)

Local villagers directly impacted by the project were invited through their most convenient way: the routine villager assembly, in addition, a contact person with phone numbers was published through villager assembly in case any stakeholders wish to participate in any activities related to the project. Local policy makers and grassland experts were also invited by phone calls.

As mentioned before, the project staff from local forestry and grassland bureau would maintain communications with the community groups and other stakeholders through in-person meetings and made a questionnaire survey from 04-September-2021 to 30-September-2021 to directly collect relevant feedback during this monitoring period.

In addition, the stakeholder representatives have been invited to attend the stakeholder meeting, which was held on 20-June-2022 during VVB site visit, and the project proponent reported the project status regarding the implementation and the process of VCS &CCB validation and verification in the meeting, also reported the accomplished monitoring activities and draft monitoring results during this monitoring period.

All of these measures provide justification that adequate levels of information sharing have occurred.

2.3.10 Stakeholder Participation in Decision-Making and Implementation (G3.6)

In the project planning phase, stakeholders were fully involved in the land selection, planting pattern selection, etc., through villagers meeting and PRA methods. As mentioned above in Section 2.3.7, during this monitoring period, questionnaires have been collected from the representatives of the local stakeholders of local government and surrounding villages. Stakeholders from different age, gender and culture background has been prudently taken into account during the distribution of the questionnaires, and the feedbacks reflected in the interview and questionnaire has been seriously addressed immediately. Based on stakeholder consultation, all of the representatives of the stakeholders support the implementation of the project.

To enable the effective participation of all communities in a culturally appropriate and gender sensitive manner, the project proponent particularly encouraged the participation of women by maintaining the regular communications with Sorority Director of local towns. During the project implementation, about 4,875 local herders (1,950 are women) participated in grass seeding and fences building, of which 467 local herders (192 are women) were employed as guardians.

And the project proponent plays as coordinator who is in-charge of the overall management. All the critical information regarding decision-making should be published to local stakeholders, and the decision should be revised according to further discussion in case there is any feedback from stakeholders.

When started the first monitoring activities, the project proponent invited some of the local residents to help conduct the field work with payment, such as soil sample collection and questionnaire survey collection. And a contact person with phone numbers was published through villager assembly in case any stakeholders wish to participate in the following monitoring or other activities related to the project.

According to the feedback received during this monitoring period, all of the representatives of stakeholders represented their satisfaction regarding the implementation of the project.

2.3.11 Anti-Discrimination Assurance (G3.7)

According to Labor Law of the People's Republic of China, it is illegal to discriminate on grounds of race, nation, sex or religion. The project owner will obey the Labor Law of the People's Republic of China and have established the anti-discrimination rules in the implementation of the project, including:

- Managers must treat all employees equally and without any discrimination in the recruitment or implement process.
- Women and men receive equal pay for equal work. Women who meet the recruitment requirements enjoy equal employment rights.
- Employees shall not be discriminated against or restricted in employment, compensation, training and promotion on the basis of their race, sex, pregnancy, age, religion, belief, disability, nationality, etc.
- Under no circumstances should managers be allowed to engage in coercive, threatening, abusive, exploitative or psychologically abusive or sexually harassing acts against their staff, including postures, language and physical contact.
- In case of discrimination, the employee may report the complaint according to the “Feedback and Grievance Redress Procedure” of this project. Any person has the right to report it directly or anonymously.
- The project owner shall not interfere with the religious, sexual orientation, appearance, political, personal interests and other rights of all employees.

All the rules have been emphasized during staff training sessions. And there is a grievance and redress procedure which has been described in section 2.3.12 and 2.3.13 of the MR, in case of any discrimination occurred, anyone could report to the project proponent follow the relevant procedure.

During the project implementation, about 4,875 local herders (1,950 are women) participated in grass seeding and fences building, of which 467 local herders (192 are women) were employed as guardians. Besides, most of them coming from the poorest households.

No discrimination complaint received during this monitoring period.

2.3.12 Grievances (G3.8)

The project proponent has nominated a specific staff in charge of recording and collecting conflicts and grievances of local communities and individual residents. Grassland guardians in each project site will play an important role dealing with conflicts and grievances. All of the grassland guardians are coming from local communities whose name and contact number were published through villager assembly. In case of any conflicts and grievances, the stakeholders will contact the grassland guardian in the certain project site, and the grassland guardian will collect all the necessary information and then report to the specific staff. Also, the contact number of local forestry

and grassland bureau has been publicized at the village assembly, all other stakeholders can easily give their feedback in case of any grievance.

Once a grievance case reported to the specific staff, the staff will contact the relevant stakeholders directly and discuss with them for an acceptable solution within one week; if the stakeholder's demand cannot be satisfied in a short time, the specific staff will contact with the head of the village where the stakeholders come from, who will play as a mediation to discuss with both sides together and seek for a further solution, which should be no more than 30 days; for more complicated case which cannot be settled by mediation, the project proponent shall report to local government, and follow the relevant legal procedure of arbitration or courts.

The feedback and grievance redress procedure has been decided and published and made accessible to communities and other stakeholders. The grievance mechanism has also been explained to local communities orally through the workshop and engagement sessions. Local communities are aware that if they have any complaints, they are able to raise concerns and/or complaints with the field collaborator or field facilitators via phone call or email. All grievances that are raised during the project lifetime will be recorded and made publicly available. Project owner will also be updated on the outcomes of grievances, in person, through community meetings. To ensure accessibility to grievance mechanism, the project has established the following:

- Telephone access
- Email
- Suggestion boxes

All the feedback and grievance received, and the relevant solution shall be recorded and summarized in the project monitoring report in the next verification, and all the project documents has been published on Verra website and the website address to download all the summary project documents has been provided to communities through the public notice boards in each village.

No grievances received during this monitoring period.

2.3.13 Worker Training (G3.9)

There is a working manual provided for each employee which includes technical advice for their work, and all the workers were offered the technical training immediately once they were hired. Such skills and knowledge include are useful for grassland management, such as fire prevention, fences building and grassland management. These technical manuals will be distributed to each household in the local villages, including the villagers who haven't participated in the planting project. The members of local communities will be trained equally as long as they lived around the project area and willing to participate the training process, so that the local capacity won't be lost through staff turnover.

Besides the training on technical skills of seeding grass and grassland management, local workers will also be trained on relevant skills for their future livelihood, such as reasonable grazing. These skills will benefit the long-term development of the local communities who participate in the project. There were routine training courses arranged in September 2017, July 2019 and July 2021

respectively during the implementation of the project by providing rodent control and seeding skills and experience for workers.

In September 2017, Burqin Agriculture and Animal Husbandry Bureau organized the training session for local residents who participated in the project on the responsibilities and scope of authority of grassland guardians, grassland grazing prohibition and grassland distribution map "software technology".

In July 2019, Burqin Forestry and Grassland Bureau arranged the training session for grassland guardians regarding the relevant grassland law enforcement and the specific protection measures to be implemented, including investigation, prevention and control technology for grassland fire, rodent and insect damage, etc

In July 2021, National Forestry and Grassland Administration Northwest Investigation and Planning Institute organized systematic and detailed lectures on the field investigation and application system of grassland monitoring and evaluation, grassland patch zoning method, grassland plant identification technology, application method of grassland monitoring and evaluation App and detailed rules of grassland monitoring and evaluation technology.

2.3.14 Community Employment Opportunities (G3.10)

The project mobilized the whole community, including women, minority groups and least privileged group. All people from the communities have been given an equal opportunity to fill in the work positions if they meet the job requirements. Women and vulnerable people who come from the poorest local households will not only be provided with equal opportunities but also consciously ensure that they can be part of the project.

During the project implementation, about 4,875 local herders (1,950 are women) participated in grass seeding and fences building, of which 467 local herders (192 are women) were employed as guardians. Besides, most of them coming from the poorest households. Local residents who involved in grass planting were compensated 80 RMB (12.55 USD)/day. Grassland Guardian were paid around 22,800 RMB (3,579.60 USD) /year, higher than the per capita disposable income of farmers and herdsman in Burqin County (10,736 RMB (1,685.55 USD) /year).

2.3.15 Relevant Laws and Regulations Related to Worker's Rights (G3.11)

The local people were under the protection of Labor Law of the People's Republic of China²⁸ and no forced labor is allowed, and they are free to establish and join any labor organizations as they wish. There was regular training provided to workers before they start the job, which will clearly indicate their rights and mechanism for grievance appeal, and the worker's rights are guaranteed in the labor contracts for each worker. The new employee training was in accordance with the Labor Law of People's Republic of China which guarantees the protection of employee's rights and benefits.

²⁸ http://www.mohrss.gov.cn/SYrlzyhshbzb/zcfg/flfg/fl/201605/t20160509_239643.html

2.3.16 Occupational Safety Assessment (G3.12)

The project owner has referenced Labor Law of the People's Republic of China and adapted them to meet the local conditions to ensure workers' health and safety. The workers' health and safety policy, including items covering the health insurance scheme for workplace accidents and evacuation plans is made available for workers and implemented by the village committee.

The potential risks of the project mainly include risks such as fire, driving, and unexpected situations in the wild.

To minimize the potential risk, all the workers have been provided new staff training before they start to work. The training includes all necessary risk control measures during the work, as well as the health and safety policy mentioned before.

In 2019 and 2021, Burqin Forestry and Grassland Bureau provided skill training for local herders, including fire emergency drills, field emergency rescue, and safe driving training to further ensure the safety of workers.

After these training, the grassland guardians master relevant skills and patrol the management and protection area regularly, once every 15 days, record and report the grassland fire to Burqin Forestry and Grassland Bureau in daily duties. Then special personnel of Forestry and Grassland Bureau will be organized to conduct grassland fire prevention supervision to avoid fire on the grassland according to the report records of grass guardians.

2.4 Management Capacity

2.4.1 Required Technical Skills (G4.2)

The project requires technical skills of community engagement, biodiversity assessment and carbon measurement and monitoring in order to implement the project activities. Table below outlines the skills required per project activity.

Table 2-5 Key skills required to implement the project activities

Project Activity	Sub-project Activity	Key Skills Required
Grass seeding grass and fence building	Project community division, grass seed and sowing method selection, fence design	Construction capacity, Supplementary sowing techniques, GIS for site selection
Carbon stock measurements and monitoring	Soil carbon monitoring, land cover mapping, grazing monitoring, fertilization monitoring, climate monitoring, biodiversity monitoring, community monitoring, and fire monitoring.	Soil organic carbon and bulk density test, GIS/ remote sensing, fertilization record, grazing record, diesel and gasoline consumption records, fences building and fire management.
Community engagement and development	Stakeholder consultation, livelihood development, and education program.	Community organizing, conflict resolution, business management, adult education,

		livelihoods and social science surveys.
Biodiversity assessment and monitoring	Sustainable grassland management, biodiversity monitoring, endangered animals monitoring.	Sustainable grazing, biodiversity monitoring, and endangered animals monitoring.

2.4.2 Management Team Experience (G4.2)

The project proponent Burqin Jinhua Urban Construction and Investment Co., Ltd. is a legally registered company, who is in rich experience in sustainable grassland management, including grassland protection and management, technical training, carbon measurement and monitoring and biodiversity assessment.

Burqin Forestry and Grassland Bureau is a local government agency who is in rich experience in community engagement, including holding stakeholders' meeting, mediation with local communities and provide guidance for local herders in related to rational grazing. Burqin Forestry and Grassland Bureau is also good at sustainable grassland management, including grass planting, fence building and technical training.

National Forestry and Grassland Administration Northwest Investigation and Planning Institute is a public welfare institution directly under the State Forestry and Grassland Administration. It is an important technical team set up by the State Forestry and Grassland Administration. It mainly undertakes the monitoring and assessment of forest resources, desertification and grassland, wetland and wildlife, carbon sequestration and biodiversity in important nature reserves in northwest China.

Climate Bridge (Shanghai) Ltd. is one of the largest developers of Afforestation VCS+CCB projects in China and has a reputation for producing quality credits under both CDM, VCS, GS and the CCER (Chinese Certified Emission Reduction) program. In addition, as the largest developer and dealer of VER projects in China, Climate Bridge is experienced in carbon measurement and monitoring. These experiences will help project proponent to ramp up the capability of project implementing and management. Climate Bridge (shanghai) Ltd. brings about tremendous experience in development of AFOLU related VCS+CCB projects. They shared such experience with the local Forestry and Grassland Bureau in ensuring the smooth operations of the project implementation during the lifetime of the project.

2.4.3 Project Management Partnerships/Team Development (G4.2)

As mentioned above, the management team of the project is experience in grassland management and carbon project development.

The project proponent, Burqin Jinhua Urban Construction and Investment Co., Ltd. is experienced in carbon measurement and monitoring and biodiversity assessment. The management team of the project includes experts from Burqin Forestry and Grassland Bureau, National Forestry and Grassland Administration Northwest Investigation and Planning Institute and Climate Bridge

(Shanghai) Ltd. who is experienced in development of carbon projects at the similar scale of this project and sustainable grassland management, community engagement.

Therefore, the project management team has sufficient experience and skills required by the project.

2.4.4 Financial Health of Implementing Organization(s) (G4.3)

Burqin Forestry and Grassland Bureau and Burqin Finance Bureau are government agencies, National Forestry and Grassland Administration Northwest Investigation and Planning Institute is a subordinate organization of The National Forestry and Grassland Administration, they are financially supported by local government, which could guarantee the financial health over the project lifetime. In addition, Burqin Jinhua Urban Construction and Investment Co., Ltd. and Climate Bridge (Shanghai) Ltd. are legally registered companies in China, and according to the public information listed in National Enterprise Credit Information Publicity System²⁹, doesn't involved in nor complicit in any form of corruption such as bribery, embezzlement, fraud, favouritism, cronyism, nepotism, extortion, and collusion.

As the largest developer and dealer of VER projects in China with more than 7 million tonnes issued to date, Climate Bridge (Shanghai) Ltd. is experienced in project development and carbon market, which will help project proponent to receive adequate financial support from carbon credit to operate the project throughout the whole life cycle.

2.4.5 Avoidance of Corruption and Other Unethical Behavior (G4.3)

As legally registered companies, the project proponent and other involved entities have the obligation to comply with relevant regulations, including anti-corruption law. The annual audit by the government makes sure that it operates with full compliance with China law and regulations. According to the "National enterprise credit information publicity system", none of them were involved in nor complicit in any form of corruption such as bribery, embezzlement, fraud, favoritism, cronyism, nepotism, extortion, and collusion.

2.4.6 Commercially Sensitive Information (Rules 3.5.13 – 3.5.14)

None of the project documents will be considered as commercially sensitive information, and all of the documentations are available to any stakeholders.

2.5 Legal Status and Property Rights

2.5.1 Recognition of Property Rights (G5.1)

Prior to the project initiation, the project area is collectively owned by each village. Considering the widely dispersed distribution of the project land, it is difficult for any of the lands owner to raise enough fund and effectively maintain the implementation of the project during such a long period. Therefore, after seriously considered the carbon revenue and thought the revenue could help to mitigate the investment barrier, under the approval of Burqin County government, Burqin Agriculture and Animal Husbandry Bureau has organized and managed the project implementation

²⁹<http://www.gsxt.gov.cn/index.html>

during the early phase, including conducting baseline survey, signing consultant agreement with Northwest Investigation Institute of National Forestry and Grassland Administration for development of carbon credits and raising initial fund from Burqin Finance Department for seeding and maintenance expenses for the first three years.

After the implementation of the project, the Burqin Agriculture and Animal Husbandry Bureau has been dismissed in 2019 due to the reform of government function, and some functional departments related to grassland management have been transferred to Burqin Forestry and Grassland Bureau. Then, Grassland Station of local Forestry and Grassland Bureau has cooperated with Burqin Jinhua Urban Construction and Investment Co., Ltd. to help with the sustainable grassland management. In order to develop carbon credits of the project, with support of Burqin Forestry and Grassland Bureau, all project land owners agreed to authorize Burqin Jinhua Urban Construction and Investment Co., Ltd. the rights of lands and grassland management within the project boundary during the project crediting period, and the authorization has also been confirmed by local government.

So, Burqin Jinhua Urban Construction and Investment Co., Ltd. have the rights to control and operate the project as Project Proponent during the whole project crediting period. In addition, the Project Proponent will also be responsible for development of the carbon credits and the carbon revenue will be used for sustainable development and management of the project activities.

Therefore, all property rights involved in the project are recognized, respected, and supported.

2.5.2 Free, Prior and Informed Consent (G5.2)

As described above, Burqin Jinhua Urban Construction and Investment Co., Ltd. has been authorized the rights of grassland management within the project boundary during the project crediting period, so the project will not encroach uninvited on private property, community property or government property.

To make sure all the stakeholders to be aware of the potential impact of the project on their life, an investigation team of the Grassland Station has conducted a Participatory Rural Appraisal (PRA) in the counties where project located 05-July-2016 to 27-September-2016, in order to obtain basic information, data and information of socio-economic situation on the surrounding area, understand the major socio-economic and environmental issues from the stakeholders, collect their willingness to participate and take advantage of the demands of the proposed project activity and analysis the potential socio-economic and environmental impacts of the proposed project activity.

Also, a stakeholder meeting was held during the PRA survey and questionnaires were distributed to attendees to collect their feedback. During the meeting, the project owner publicized the draft Project Design Report and informed stakeholders of the project's impact.

The project will not change the ownership of the project land, but some herders are affect by the project, due to grazing was strictly forbidden in the first five years, and then controlled grazing will be allowed depending on the growth situation of the forage. To mitigate the impact of project implementation, the project proponent and Burqin Forestry and Grassland Bureau will measure the grass yield of the surrounding grasslands in the project area in July and August every year, calculate the reasonable grazing quantity according to the carrying capacity standard of Xinjiang

Uygur Autonomous Region, and guide herders to graze within the acceptable area to make sure their grazing productivity could be maintained. So, the project will not reduce the grazing time and quantity, instead of which, the sustainable grazing could improve the grazing productivity in a long term. And the leakage emissions due to grazing displacement are calculated in section 3.2.3.

Through meeting interviews and questionnaire surveys, all stakeholders know the impact of the project and they thought that the implementation of the project can restore degraded grasslands and increase grazing areas in long term. And the project provides job opportunities for local herders, which will increase their income. In addition, according to the Implementation Plan of The Subsidy and Incentive Policy for Farmers and Herders issued by Burqin Government, due to the prohibition of grazing, herders in the project area can receive corresponding subsidies. The subsidy standards for grazing prohibition vary from 4.1 RMB/Mu to 10.4 RMB/Mu. Every year, the project proponent and the Burqin Forestry and Grassland Bureau will visit all project participants to investigate the completion of the grazing prohibition and report it to the financial department, which will issue subsidy funds. All of the stakeholders are satisfied with this subsidy policy and agree to the implementation of the project. During this monitoring period, all herders participating in the project were grazing under the guidance of the County Forestry and Grassland Bureau. According to the payment records, totally 4,875 herders received the subsidies during this monitoring period and they were all satisfied with the subsidy policy.

Therefore, all of the stakeholders including the herders impacted by the prohibited grazing are satisfied with this subsidy policy and think that the project can improve the local ecological environment and increase household income, and all of them agree the implementation of the project.

In conclusion, the project has received free, prior, and informed consent from relevant property rights holders prior to commencing with project activities.

2.5.3 Property Right Protection (G5.3)

Prior to the project implementation, the project area is mostly degraded grassland with no residents, and Burqin Forestry and Grassland Bureau has confirmed the right of grassland management to the project proponent during the project crediting period. The project will not change the ownership of the project land, but some herders are affected by the project, due to grazing was strictly forbidden in the first five years, and then controlled grazing will be allowed depending on the growth situation of the forage. Burqin Forestry and Grassland Bureau measures the grass yield of the surrounding grasslands in the project area, and guides herders to graze in a reasonable area. Also, the project provides job opportunities for local herders, which will increase their income in long term. In addition, due to the prohibition of grazing, herders in the project area can receive corresponding subsidies.

Therefore, the project will not change the ownership of the project land, lead to involuntary removal or relocation of property rights holders from their lands or territories and does no force rights holder to relocate activities important to their culture or livelihood.

2.5.4 Identification of Illegal Activity (G5.4)

Currently all project lands are defined as grassland by local government. According to Chinese grassland law³⁰, activities that destroy the grassland like mining and construction without pre-approval by local authority are strictly prohibited. Prior to the implementation of the project, the project area was degraded due to long-term overgrazing but no mining or construction or other destroying activities exist on the grassland, thus no illegal activities occurred around the project area. Although a series of laws and administrative regulations in China prohibit destruction of grassland, none of them mandate the restoration of degraded grassland like the project activities.

Therefore, the project's climate, community and biodiversity impacts will not be affected by the illegal activities.

2.5.5 Ongoing Disputes (G5.5)

Prior to the project initiation, the project land are collective-owned by each village, there is no unresolved conflicts or disputes over rights to lands, territories and resources and also any disputes that were resolved during the last twenty years. At the project start, the local residents lived by grazing, and there were not much other job opportunities offered, and most of the local women has no income.

The project will not change the ownership of the project land, but some herders are affected by the project, due to grazing was strictly forbidden in the first five years after seeding, and then controlled grazing will be allowed depending on the growth situation of the forage. Burqin Forestry and Grassland Bureau will measure the grass yield of the surrounding grasslands in the project area, and guide herders to graze in a reasonable area. Also, the project provides job opportunities for local herders, which will increase their income in long term. In addition, due to the prohibition of grazing, herders in the project area can receive corresponding subsidies.

The healthy grassland ecosystem is an attractive landscape which could significantly benefit local touristic resources and promote the local economy. After the implementation of the project, local residents have more opportunities to work together, which will give them the motivation to organize more social activities and hence increase the interaction within the community. So, there is no ongoing or unresolved conflicts or disputes over rights to lands, territories and resources exist.

2.5.6 National and Local Laws (G5.6)

The project conforms to all kinds of regulations in the grassland field, as listed below:

PRC Constitution, PRC Grassland Law, PRC Wildlife Protection Law, Grassland Fire Prevention Regulations, Insect Control Regulation, PRC Production Safety Law, PRC Labour Law;

GB19377-2003 Parameters for Degradation, Sandification and Salification of Rangelands³¹;

NY/T 1176-2006 Technical Guidelines for Seasonal Grazing banning and Long-term Grazing;

³⁰ <http://www.forestry.gov.cn/main/3949/20180918/114120127762082.html>

³¹ <http://openstd.samr.gov.cn/bzgk/gb/newGbInfo?hcno=5F1960D0692A36C09136E04E6DE60B4E>

NY/T 1342-2007 Technical Rules for Establishing Cultivated Grassland;

According to Article 51 of the PRC Grassland Law, the planting of forage grass or fodder crops on grasslands shall comply with the plans for the protection, construction and utilization of grasslands; The grass seeding and fencing construction of the project in strict accordance with the requirements of GB/T 27514-2011 Technical Regulation of Reseeding on Sandy Grassland³² and NY/T 1237-2006 Technical Rule for Fences Construction of Rangeland;

According to Article 53 of the PRC Grassland Law and the Grassland Fire Prevention Regulations, a responsibility system for grassland fire prevention should be established, the grassland fire prevention period should be stipulated, the grassland fire prevention and suppression plan should be formulated, and the prevention and suppression of grassland fires should be effectively done.

The project proponent is experienced in local natural risk control and has established a Grassland Management Manual for the project which includes specific instruction in fire prevention.

As described in section 2.3.17, negative well-being impacts on community groups including fires, emergencies, and dangerous driving, this can be alleviated through technical and awareness training to local herders/communities, strengthening patrolling and monitoring. Also, the project proponent and Burqin Forestry and Grassland Bureau provided relevant skill training for local herders, to strengthen the safety awareness of herders. Also, local herders the local forestry and grassland bureau was equipped with fire protection facilities, such as fire protection clothing, fire trucks, and fire water guns, etc., in addition, the local herders conducted daily patrols on the grasslands, which could prevent grassland fires. Furthermore, there is a first aid kit on the grassland patrol vehicle to prevent emergencies.

According to the Inspection and Acceptance Report of the project, the project has complied with the above regulations and laws during construction period and will be under regular inspection by local government during the implementation period to ensure the continuous compliance.

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation

Data / Parameter	GWP_{N_2O}
Data unit	t CO ₂ e/t N ₂ O
Description	Global-warming potential for N ₂ O
Source of data	VCS Standard (Version 4.3)
Value applied	265

³² <http://std.samr.gov.cn/gb/search/gbDetailed?id=71F772D7DFEED3A7E05397BE0A0AB82A>

Justification of choice of data or description of measurement methods and procedures applied	Default value
Purpose of data	Calculation of baseline emissions Calculation of project emissions
Comments	N/A

Data / Parameter	$EF_{4,MD}$
Data unit	kg N ₂ O-N/(kg NH ₃ -N + NO _x -N volatilized)
Description	N ₂ O emission factor for atmospheric deposition of urine and manure N on soils and water surfaces
Source of data	2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	0.005
Justification of choice of data or description of measurement methods and procedures applied	The default value recommended by the 2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Table 11.3, Chapter 11, Volume 4) of IPCC good practice guidance for AFOLU have been followed. Since the project area belongs to cool temperate, dry of IPCC climate zones, the default factor is 0.005.
Purpose of data	Calculation of baseline emissions Calculation of project emissions Calculation of leakage emissions
Comments	N/A

Data / Parameter	GWP_{CH_4}
Data unit	t CO ₂ e/t CH ₄
Description	Global-warming potential for CH ₄
Source of data	VCS Standard (Version 4.3)
Value applied	28
Justification of choice of data or description of measurement methods and procedures applied	Default value
Purpose of data	Calculation of baseline emissions Calculation of project emissions

Comments	N/A
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Data / Parameter	$P_{l,b}$
Data unit	Head
Description	Population of grazing livestock type l, in baseline year b
Source of data	PRA Report
Value applied	Cattle: 13,837 Sheep: 55,231
Justification of choice of data or description of measurement methods and procedures applied	The animal population were obtained based on a full census grazing survey of the animal population grazing in the project area year prior to the project start date during the baseline period.
Purpose of data	Calculation of baseline emissions Calculation of project emissions
Comments	N/A

Data / Parameter	EF_l
Data unit	kg CH ₄ / (head * year)
Description	Enteric CH ₄ emission factor per head of livestock type l per year
Source of data	2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	Cattle: 56 Sheep: 5
Justification of choice of data or description of measurement methods and procedures applied	Due to detailed data are unavailable. the default value recommended by the 2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Table 10.10 or 10.11, Chapter 10, Volume 4). According to the Project Design Report, local productivity system is low productivity system which based on animal feeding systems where locally produced roughage (e.g. crop residues) or low quality rangelands represent the major source of feed utilized. So the default factor of sheep is 5. The cattle in the project area not dairy cattle, so the default value is 56.
Purpose of data	Calculation of baseline emissions Calculation of project emissions Calculation of leakage emissions
Comments	N/A

Data / Parameter	$EF_{3,PRP,CPP}$
Data unit	kg N ₂ O-N/kg N input
Description	N ₂ O emission factor for cattle (dairy, non-dairy and buffalo), poultry and pigs manure and urine deposited on of applied to grassland
Source of data	2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	0.002
Justification of choice of data or description of measurement methods and procedures applied	Due to detailed data are unavailable. the default value recommended by the 2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Table 11.1, Chapter 11, Volume 4). Since the project area belongs to cool temperate, dry of IPCC climate zones, the default factor is 0.002.
Purpose of data	Calculation of baseline emissions Calculation of project emissions
Comments	N/A

Data / Parameter	$EF_{3,PRP,SO}$
Data unit	kg N ₂ O-N/kg N input
Description	N ₂ O emission factor for sheep and other animals manure and urine deposited on of applied to grassland
Source of data	2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	0.003
Justification of choice of data or description of measurement methods and procedures applied	Due to detailed data are unavailable. the default value recommended by the 2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Table 11.1, Chapter 11, Volume 4).
Purpose of data	Calculation of baseline emissions Calculation of project emissions
Comments	N/A

Data / Parameter	N_{exI}
Data unit	kg N deposited/(t livestock mass * day)
Description	Nitrogen excretion of livestock type I

Source of data	2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	Cattle: 0.38 Sheep: 0.32
Justification of choice of data or description of measurement methods and procedures applied	Due to detailed data are unavailable. the default value recommended by the 2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (Table 10.19, Chapter 10, Volume 4)
Purpose of data	Calculation of baseline emissions Calculation of project emissions Calculation of leakage emissions
Comments	N/A

Data / Parameter	$W_{l,b}$
Data unit	kg
Description	Average weight of livestock l, in baseline year b
Source of data	Local expert judgment.
Value applied	Cattle: 300 Sheep: 45
Justification of choice of data or description of measurement methods and procedures applied	PRA Report, data from local expert judgement that are specific to the project area.
Purpose of data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$W_{l,p}$
Data unit	kg
Description	Average weight of livestock under project
Source of data	Local expert judgment.
Value applied	Cattle: 300 Sheep: 45

Justification of choice of data or description of measurement methods and procedures applied	PRA Report, data from local expert judgement that are specific to the project area.
Purpose of data	Calculation of project emissions
Comments	N/A

Data / Parameter	$Days_{l,b}$
Data unit	Days
Description	Grazing days for livestock type l in baseline year b
Source of data	Grazing Displacement Management Plan
Value applied	120
Justification of choice of data or description of measurement methods and procedures applied	Grazing days were obtained from grazing survey of livestock grazing in the project area covering the one year prior to the project start date. From 5-July-2015 to 27-September-2016, a full census grazing survey was conducted by Burqin Forestry and Grassland Bureau and the survey results have been recorded in the Grazing Displacement Management Plan.
Purpose of data	Calculation of baseline emissions
Comments	N/A

Data / Parameter	$H_{l,b}$
Data unit	Hours
Description	Average grazing hours for livestock type l per day during the grazing season in baseline year b
Source of data	Grazing Displacement Management Plan
Value applied	10
Justification of choice of data or description of measurement methods and procedures applied	Grazing hours were obtained from grazing survey of livestock grazing in the project area covering the one year prior to the project start date. From 5-July-2015 to 27-September-2016, a full census grazing survey was conducted by Burqin Forestry and Grassland Bureau and the survey results have been recorded in the Grazing Displacement Management Plan.
Purpose of data	Calculation of baseline emissions

Comments	N/A
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Data / Parameter	$Frac_{GAS,MD}$
Data unit	kg N volatilized/kg of N deposited
Description	Fraction of volatilization from manure and urine deposited by grazing animals as NH_3 and NO_x
Source of data	2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	0.212
Justification of choice of data or description of measurement methods and procedures applied	Due to detailed data are unavailable, the default value recommended by the 2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. According to the methodology, the project activities cannot involve the manure management system, so Table 8A.1, Chapter 11, Volume 4 are finally adopted.
Purpose of data	Calculation of baseline emissions Calculation of project emissions Calculation of leakage emissions
Comments	N/A

Data / Parameter	$EF_{l,M}$
Data unit	kg CH_4 /(head * year)
Description	CH_4 emission factor from manure of livestock type I
Source of data	2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
Value applied	0.6
Justification of choice of data or description of measurement methods and procedures applied	Due to detailed data are unavailable, the default value recommended by the 2019 IPCC Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. According to the methodology, the project activities involve the Pasture Range and Paddock management system, so Table 10.14, Chapter 10, Volume 4 are finally adopted.
Purpose of data	Calculation of baseline emissions Calculation of project emissions Calculation of leakage emissions
Comments	N/A

Data / Parameter	$EF_{CO_2,k}$
Data unit	t CO ₂ /GJ
Description	CO ₂ emission factor by fuel type k
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	Diesel: 0.0741
Justification of choice of data or description of measurement methods and procedures applied	Default value
Purpose of data	Calculation of baseline emissions Calculation of project emissions
Comments	N/A

Data / Parameter	NCV_k
Data unit	GJ/t fuel
Description	Thermal value of fuel type k
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	Diesel: 43.0
Justification of choice of data or description of measurement methods and procedures applied	Default value
Purpose of data	Calculation of baseline emissions Calculation of project emissions
Comments	N/A

Data / Parameter	$SOC_{s,Baseline}$
Data unit	t C/ha
Description	Baseline SOC stock in the top 30 cm of soil layer (or greater depth if required) in stratum s
Source of data	Laboratory test data
Value applied	Please refer ER calculation sheets for details.

Justification of choice of data or description of measurement methods and procedures applied	Option 2 was applied to estimate project removals due to changes in SOC, and the procedures of Section 8.2.8 in VM0026 were followed. The $SOC_{s,Baseline}$ was tested in 2016, which was less than two years prior to the project start time. From September 14 to September 30, 2016, the organic carbon, bulk density and sand-gravel ratio (percentage of rocks larger than 2mm, roots, and other dead residues with a diameter in the top 30 cm of soil) of 31 soil samples were measured by Shandong Huasheng Tiantong Standard Technical Service Co., Ltd., which was registered in Jinan City, Shandong Province in 27-August-2015. Soil sampling followed General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities. The nationally approved standard Method for Determination of Soil Organic Matter (NY/T 1121.6-2006) was used to measure SOC of the soil samples.
Purpose of data	Calculation of project emissions
Comments	N/A

Data / Parameter	$DMI_{day,l}$
Data unit	kg dm/(head*day)
Description	Daily dry matter intake requirement of each type of livestock l
Source of data	National standards The notice on standardizing and unifying the statistics of grassland carrying capacity data
Value applied	Sheep: 1.8 Cattle: 8.1
Justification of choice of data or description of measurement methods and procedures applied	Default value
Purpose of data	Calculation of leakage emissions
Comments	N/A

Data / Parameter	$ANPP_{GUI,REF}$
Data unit	t dm/ha

Description	Aboveground net primary productivity in the reference region that is the likely location of unidentified grasslands to which livestock are relocated
Source of data	Peer-reviewed studies Wang jie.(2017) The Relationship between Biodiversity and Aboveground Biomass with Soil Properties in North Slope of Qilian Mountains Meadow Steppe
Value applied	1.38
Justification of choice of data or description of measurement methods and procedures applied	Values come from published studies in the project region.
Purpose of data	Calculation of leakage emissions
Comments	N/A

Data / Parameter	$H_{GUI,l,t}$
Data unit	Hours
Description	Average grazing hours per day during grazing season for livestock of each type / displaced to unidentified grassland in year t
Source of data	Grazing Displacement Management Plan
Value applied	10
Justification of choice of data or description of measurement methods and procedures applied	Grazing hours were obtained from grazing survey of livestock grazing in the project area covering the one year prior to the project start date. From 5-July-2015 to 27-September-2016, a full census grazing survey was conducted by Burqin Forestry and Grassland Bureau and the survey results have been recorded in the Grazing Displacement Management Plan.
Purpose of data	Calculation of leakage emissions
Comments	N/A

3.1.2 Data and Parameters Monitored

Data / Parameter	$P_{l,t}$
Data unit	Head
Description	Population of livestock type l under project in year t

Source of data	Project grazing records					
Description of measurement methods and procedures to be applied	The project proponent and the Burqin Forestry and Grassland Bureau visited all the project participants every year to conduct the Survey of Grazing Displacement (2017-2021) and investigate the situation of the project. Then the population of livestock of herders under the project are summarized in Project grazing records.					
Frequency of monitoring/recording	Annually					
Value applied	Livestock type	2017	2018	2019	2020	2021
	Cattle	3,396	1,147	0	0	0
	Sheep	13,529	4,091	0	0	0
	Please refer ER calculation sheets for details.					
Monitoring equipment	N/A					
QA/QC procedures to be applied	Guidance provided in IPCC 2000 chapter 8 is applied. In this monitoring period: • The records of population of the livestock were cross-checked by original data records and the results showed that the data are accurately recorded. • There is no significant difference between the population of the livestock of the project and previous estimates. Therefore, the monitoring results are reasonable. •					
Purpose of data	Calculation of project emissions					
Calculation method	N/A					
Comments	N/A					

Data / Parameter	$H_{l,t}$
Data unit	Hours
Description	Average grazing hours per day of livestock type I during grazing season in year t

Source of data	Project grazing records
Description of measurement methods and procedures to be applied	The project proponent and the Burqin Forestry and Grassland Bureau visited all the project participants every year to conduct the Survey of Grazing Displacement (2017-2021) and investigate the situation of the project. Then the average grazing hours per day of livestock during grazing season are summarized in Project grazing records.
Frequency of monitoring/recording	Annually
Value applied	10
Monitoring equipment	N/A
QA/QC procedures to be applied	Guidance provided in IPCC 2000 chapter 8 is applied. In this monitoring period: - The records of population of the livestock were cross-checked by original data records and the results showed that the data are accurately recorded. - There is no significant difference between the population of the livestock of the project and previous estimates. Therefore, the monitoring results are reasonable.
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	$Days_{l,t}$
Data unit	Days
Description	Grazing days of lives tock l in year t under project
Source of data	Project grazing records
Description of measurement methods and procedures to be applied	The project proponent and the Burqin Forestry and Grassland Bureau visited all the project participants every year to conduct the Survey of Grazing Displacement (2017-2021) and investigate the situation of the project. Then the grazing days of livestock under the project are summarized in Project grazing records.

Frequency of monitoring/recording	Annually
Value applied	80
Monitoring equipment	N/A
QA/QC procedures to be applied	Guidance provided in IPCC, 2000 chapter 8 is applied. In this monitoring period: - The records of population of the livestock were cross-checked by original data records and the results showed that the data are accurately recorded. - There is no significant difference between the population of the livestock of the project and previous estimates. Therefore, the monitoring results are reasonable.
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	$FC_{p,j,k,t}$
Data unit	Kg fuel
Description	Fuel consumption by type k, machine type j, parcel grassland p, in year t under project
Source of data	Diesel statistics
Description of measurement methods and procedures to be applied	Trucks and tractors were used in the project, which consumed diesel oil, and the drivers recorded the fuel consumption each day which were summarized by Burqin Forestry and Grassland Bureau.
Frequency of monitoring/recording	Every day during construction of grass seeding and fence building
Value applied	Please refer ER calculation sheets for details
Monitoring equipment	N/A
QA/QC procedures to be applied	Guidance provided in IPCC, 2000 chapter 8 is applied. In this monitoring period:

	The records of fuel consumption parameters were cross-checked by original data records. And the results showed that the data are accurately recorded. Therefore, the monitoring results are reasonable.
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	Fuel consumption only occurred in 2017-2019 for construction of grass seeding and fence building

Data / Parameter	$PA_{mG,s,i,t}$
Ha	ha
Description	Project areas of grassland with management practice mG in stratum s in year t
Source of data	Project grassland management records
Description of measurement methods and procedures to be applied	The Burqin Forestry and Grassland Bureau recorded the area of grassland with management practice mG in stratum s.
Frequency of monitoring/recording	Record the area and management practice just after the management practice has taken place and report annually
Value applied	Please refer ER calculation sheets for details.
Monitoring equipment	GPS and GIS software were applied
QA/QC procedures to be applied	Guidance provided in IPCC, 2000 chapter 8 is applied In this monitoring period: - Standard operating procedures (SOPs) from published handbooks, or from the IPCC GPG LULUCF 2003, has been applied. - The satellite image cross-check shows that the project area is grassland. - There is no significant difference between the implementation area of the project area and previous estimates. Therefore, the monitoring results are reasonable.
Purpose of data	Calculation of project emissions

Calculation method	N/A
Comments	N/A

Data / Parameter	$SOC_{mG,s,i,t}$
Ha	g C/kg soil
Description	SOC stock in the top 30 cm of soil (or greater depth if required) for management practice mG , stratum s (or greater depth if desired), sampling site i
Source of data	Soil sampling test report
Description of measurement methods and procedures to be applied	Soil samples were collected by soil drill, collected 3-4 soil samples in s shape at each sampling site, and finally mixed into one sample, which is put into a ziplock bag and mailed to the laboratory for measuring. The nationally-approved standard Method for Determination of Soil Organic Matter (NY/T 1121.6-2006) was used to measure SOC of the soil samples.
Frequency of monitoring/recording	At least once every five years, at the end of growing season in the year measured, until the end of the project crediting period During this monitoring period, the soil samples were collected from 04-September-2021 to 30-September-2021, and the $SOC_{mG,s,i,t}$ were measured by Shandong Huasheng Tiantong Standard Technical Service Co., Ltd., from 10-October-2021 to 06-November-2021, and the test report was issued on 21-November-2021. So, the soil sampling time was at the end of growing season, and the monitoring frequency meets the requirements of methodology.
Value applied	Please refer ER calculation sheets for details.
Monitoring equipment	Soil drill, electric furnace, test tube, oil bath pot, wire cage and dropper.
QA/QC procedures to be applied	The collection of soil samples for measuring SOC were carried by suitably trained staff. Soil sampling was based on the nationally-approved standard Soil Quality Guidelines for Soil Sampling Techniques (GB/T 36197-2018). The $SOC_{mG,s,i,t}$ were measured by Shandong Huasheng Tiantong Standard Technical Service Co., Ltd., which was registered in Jinan

	City, Shandong Province in 27-August-2015. The laboratory complied with the principles of good laboratory practice outlined in the OECD (1998). The SOC measurement based on the nationally-approved standard Method for Determination of Soil Organic Matter (NY/T 1121.6-2006). All soil samples need to be backed up. If there is a problem with the testing equipment or the data is abnormal, retest the corresponding soil sample.
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	$BD_{mG,s,i,t}$
Ha	g soil/cm ³
Description	Soil bulk density in the top 30 cm of soil (or greater depth if required) for management practice mG , stratum s (or greater depth if desired), sampling site i
Source of data	Soil sampling test report
Description of measurement methods and procedures to be applied	As described in Section 8.2.8 of the methodology VM0026, handling, storage, processing, measurement, and quality control of soil samples must follow scientifically established procedures such as the procedures described in Carter and Gregoroch, 2006, OECD, 1998, or nationally approved standards. For the project, the nationally-approved standard Soil Quality Guidelines for Soil Sampling Techniques (GB/T 36197-2018) was used for soil sampling and Method for determination of soil bulk density (NY/T 1121.4-2006) was used to measure $BD_{mG,s,i,t}$ of the soil samples.
Frequency of monitoring/recording	At least once every five years, at the end of growing season in the year measured, until the end of the project crediting period. The soil samples were collected from 04-September-2021 to 30-September-2021, and the $BD_{mG,s,i,t}$ were measured by Shandong Huasheng Tiantong Standard Technical Service Co., Ltd. from 10-October-2021 to 06-November-2021, and the test report was issued on 21-November-2021. So, the soil sampling time was at the end of growing season, and the monitoring frequency meets the requirements of methodology.

Value applied	Please refer ER calculation sheets for details.
Monitoring equipment	Ring knife, aluminium box, electronic scale, rubber hammer, drying box.
QA/QC procedures to be applied	Collect one soil samples with rubber hammers and ring knives in each sample site and placed in aluminum box, and mailed to the laboratory for measuring. The collection of soil samples for measuring soil bulk density were carried by suitably trained staff. The $BD_{mG,s,i,t}$ were measured by Shandong Huasheng Tiantong Standard Technical Service Co., Ltd., which was registered in Jinan City, Shandong Province in 27-August-2015. The laboratory complied with the principles of good laboratory practice outlined in the OECD (1998). All soil samples need to be backed up. If there is a problem with the testing equipment or the data is abnormal, retest the corresponding soil sample.
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	$FC_{mG,s,i,t}$
Ha	percent
Description	Percentage of rocks with a diameter larger than 2mm, roots, and other dead residues in the top 30 cm of soil (or greater depth if desired), for management practice mG , stratum s , sampling site i
Source of data	Soil sampling test report
Description of measurement methods and procedures to be applied	As described in Section 8.2.8 of the methodology VM0026, handling, storage, processing, measurement, and quality control of soil samples must follow scientifically established procedures such as the procedures described in Carter and Gregoroch, 2006, OECD, 1998, or nationally approved standards. For the project, there is no nationally recognized standard for measuring soil $FC_{mG,s,i,t}$, so the following public research standard are used: Xie yingge, Li xia. Research progress on determination methods of gravel content in soil[J]. Soils, 2012,44(1):17-22.

Frequency of monitoring/recording	At least once every five years, at the end of growing season in the year measured, until the end of the project crediting period. The soil samples were collected from 04-September-2021 to 30-September-2021, and the $FC_{mG,s,i,t}$ were measured by Shandong Huasheng Tiantong Standard Technical Service Co., Ltd. from 10-October-2021 to 06-November-2021, and the test report was issued on 21-November-2021. So, the soil sampling time was at the end of growing season, and the monitoring frequency meets the requirements of methodology. All soil samples need to be backed up. If there is a problem with the testing equipment or the data is abnormal, retest the corresponding soil sample.
Value applied	Please refer ER calculation sheets for details.
Monitoring equipment	Ring knife, electronic scale and sieve, rubber hammers, aluminum box.
QA/QC procedures to be applied	Collect one soil samples with rubber hammers and ring knives in each sample site and placed in aluminum box, and mailed to the laboratory for measuring. The collection of soil samples for measuring $FC_{mG,s,i,t}$ were carried by suitably trained staff. The $FC_{mG,s,i,t}$ were measured by Shandong Huasheng Tiantong Standard Technical Service Co., Ltd., which was registered in Jinan City, Shandong Province in 27-August-2015. The laboratory complied with the principles of good laboratory practice outlined in the OECD (1998).
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	<i>Depth</i>
Ha	cm
Description	Total soil depth, for calculating grassland SOC stock in the top 30 cm of soil (or greater depth if required)
Source of data	Soil sampling test report

Description of measurement methods and procedures to be applied	Collect soil samples with soil drill with 30cm scale.
Frequency of monitoring/recording	Recorded with each measurement taken
Value applied	30
Monitoring equipment	Soil drill with scale. Insert the soil drill into the soil to a scale of 30cm, and then lift it up and transfer the soil to the ziplock bag.
QA/QC procedures to be applied	Take a graduated soil drill to ensure that the soil taken is 30 cm deep
Purpose of data	Calculation of project emissions
Calculation method	N/A
Comments	N/A

Data / Parameter	$P_{GUI,t}$		
Data unit	Head		
Description	Total population of livestock of each type relocated to unidentified grasslands in year t		
Source of data	Project grazing record		
Description of measurement methods and procedures to be applied	The project proponent and the Burqin County Forestry and Grassland Bureau visit all the project participants every year to conduct the Survey of Grazing Displacement (2017-2021) and investigate the grazing situation of the project. Then the population of livestock of herders under the project are summarized in Project grazing records.		
Frequency of monitoring/recording	Annually		
Value applied	2017	Cattle	10,441
		Sheep	41,702
	2018	Cattle	12,690
		Sheep	51,140

	2019	Cattle	13,837
		Sheep	55,231
	2020	Cattle	13,837
		Sheep	55,231
	2021	Cattle	13,837
		Sheep	55,231
Please refer ER calculation sheets for details.			
Monitoring equipment	N/A		
QA/QC procedures to be applied	Guidance provided in IPCC, 2000 chapter 8 is applied. In this monitoring period: • The records of population of the livestock in leakage area were cross-checked by original data records and the results showed that the data are accurately recorded. • There is no significant difference between the population of the livestock of the project and previous estimates. Therefore, the monitoring results are reasonable.		
Purpose of data	Calculation of project leakage		
Calculation method	N/A		
Comments	N/A		

Data / Parameter	$Days_{GUI,l,t}$
Data unit	days
Description	Days that the population of each type of relocated livestock of type l graze in unidentified grassland in year t
Source of data	Project grazing records
Description of measurement methods and procedures to be applied	The project proponent and the County Forestry and Grassland Bureau visit all the project participants every year to conduct the Survey of Grazing Displacement (2017-2021) and investigate the grazing situation of the project. Then the days that the population of each type of relocated livestock are summarized in Project grazing records.
Frequency of monitoring/recording	Annually

Value applied	80
Monitoring equipment	N/A
QA/QC procedures to be applied	Guidance provided in IPCC, 2000 chapter 8 is applied. In this monitoring period: - The records of grazing hours in leakage area were cross-checked by original data records and the results showed that the data are accurately recorded. - There is no significant difference between the grazing hours of the livestock of the project and previous estimates. Therefore, the monitoring results are reasonable.
Purpose of data	Calculation of project leakage
Calculation method	N/A
Comments	N/A

3.1.3 Monitoring Plan

1. Operation and management structure

The project proponent hired local herders and communities (monitoring staff and auditing staff) for daily supervision and data management during the project implementation while office manager oversee the whole working group. A monitoring group has been established by Burqin Jinhua Urban Construction and Investment Co., Ltd. to carry out the monitoring work. The structure of the monitoring group is as follows:

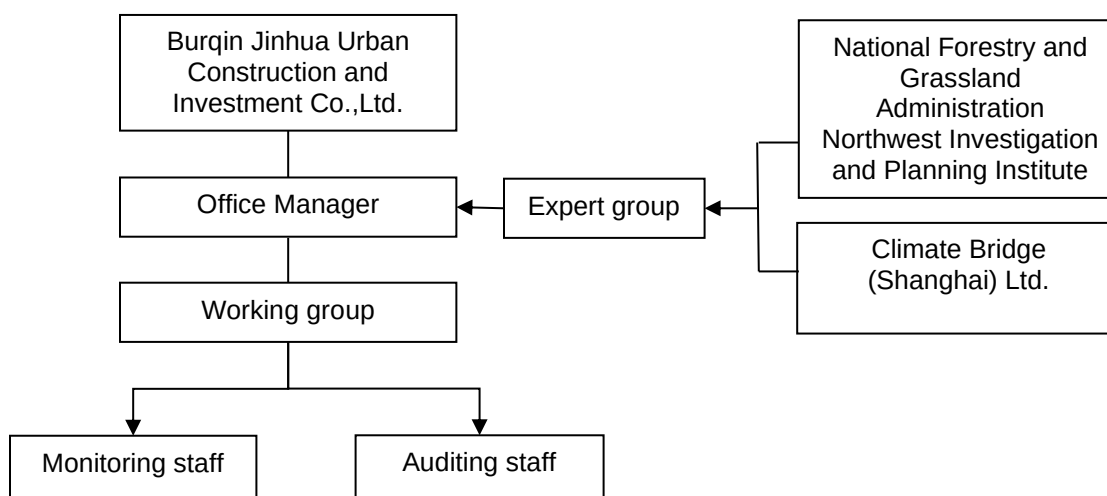


Figure 3-1 Organization structure of the monitoring team

The responsibilities of each role in the team structure are:

- Office manager has the overall management responsibility, especially supervising the implementation of the monitoring plan, and assigning each member of the monitoring team their individual responsibility during the monitoring;
- Expert group provides professional technique related to monitoring activities to make sure all the monitoring activities meet the requirement of VCS and CCB standards;
- Monitoring staff conducts the following monitoring process, measures the required parameters of the project as listed in the above Section 3.3.1 particularly, and collects all the original evidences and data and make relevant records;
- Auditing staff performs internal verification of the measurement, reviews all the monitoring records and documents, crosschecks evidence and calculates emission removals during each verification period.

A Monitoring Manual was provided to each member of the monitoring team with a specific explanation to make sure they fully understand all the monitoring process and issues concerned.

For this monitoring period, the monitoring task was assigned on 01-September-2021, and the monitoring team started the field work from 04-September-2021 to 30-September-2021.

2. Monitoring process

1) Monitor the applicability conditions listed in methodology

The methodology VM0026/Version 1.1 “Sustainable Grassland Management” is applicable under the following conditions:

- The project area is grassland at the start of the project. The project area is land that is degraded at the start of the project and degradation will continue in the baseline scenario on the basis that degradation drivers or pressures are still present in the baseline scenario. The procedures outlined the latest version of the CDM Tool for Identification of Degraded or Degrading Lands for Consideration in Implementing CDM A/R Project Activities must be used to determine both that the land is degraded at the start of the project and that in the baseline scenario the land will continue to degrade.
- The project area is subject to livestock grazing, burning, and/or nitrogen fertilization in the baseline scenario.
- In the baseline scenario, more than 95 percent of animal dung from grazing animals deposited on grassland is allowed to lie as is, and is not managed, and in the project scenario no more than 5 percent of the animal dung from grazing animals within the project area is managed with alternative manure management systems.

According to the Project Description, all the conditions are applicable at the start of the project activity due to the baseline survey. During the following verification, the project proponent should monitor the possible change of the project boundary, if there is a change to the project boundary, the applicability conditions should be re-assessed for the changed project area.

Step 1: Monitoring of boundary

The coordinate of the project boundary was measured and managed strictly in accordance with regulations, and saved in GIS files. Boundary information such as original records, needs to store in both electronic and printed archive in the project owner, and participants should keep a backup. Files need to be saved at least two years after the end of the crediting period.

In order to obtain valid and reliable boundary information, monitoring team used the GPS or other verifiable methods to determine the actual boundaries of the project. If the actual boundary is larger than the boundary in the project design, the excess section is not included in project boundary; instead, if the actual border boundary is smaller than the boundary in the project design, project boundary should be based on the actual boundary. Any change in the boundary must be located by GPS or appropriate spatial data (eg satellite imagery).

During this monitoring time, two different management practices for project implementation and cover the project area measured as followed:

No.	Management practice	Description	Area(ha)
1	Rotational and rest grazing	Grazing is suspended for 90 days when the grass returns to green every year and then the grazing time is halved by rotating grazing between spring pasture and summer pasture every yea	60,000
2	Grass seeding	Reseeding the grasses under the condition of fencing enclosure for 2 years. After that, under the premise of not affecting the normal growth of the improved grassland, the grassland should be used reasonably and sustainably according to the local approved livestock carrying capacity	5,000

Step 2: monitor the applicability conditions

- Collect documented evidence to prove that the project area is grassland at the start of the project, which has been classified as “degraded”, such as local, regional, national or international land classification system or peer-review study, participatory rural appraisal, satellite imagery and/or photographic evidence in the last 10 years.
- Through documented evidence collection, questionnaire surveys and interviews proved that the project area is subject to livestock grazing, burning, and/or nitrogen fertilization in the baseline scenario.
- Through questionnaire surveys and interviews confirmed that animal manure treatment both in baseline scenario and project scenario.

Step 3: Go through applicability checklist

If there is any change in the boundary happened, the monitoring team will go through a specific checklist of the applicability conditions, records all relevant results for each monitoring period.

In case any non-conformance of the applicability conditions, the expert group should evaluate the situation and submit the deviation or change to the methodology to Verra for approval.

During this monitoring period, there is no change of the project boundary nor any non-conformance of the applicability conditions occurred.

2) Monitoring of Project Implementation

A record of the grazing agents (eg, herder households) involved the project.

- The project proponent and Burqin Forestry and Grassland Bureau recorded each household involved in the sustainable grassland management project.
- Each household was given a unique ID. Their name, location of their land, and date of entering into the agreement and leaving the agreement was recorded.

A record of the geographic location of the project area for all areas of grassland;

- The geodetic coordinates of the project area (and any stratification inside the area) were established, recorded and archived. This was achieved by field survey (eg, using GPS) and by using geo-referenced spatial data (eg, maps, GIS datasets).

A record of grassland management

- The grassland management plan, together with a record of the plan as actually implemented during the project crediting period were available for validation and verification.

During this monitoring period, 65,000.00 ha of degraded grassland have been managed sustainably by rotational and rest grazing through fence building and grass seeding of local high-quality forage, and grazing is forbidden in the first five years after the implementation of the project, and then controlled grazing will be allowed depending on the growth situation of the forage. In addition, 467 local herders (192 are women) were employed as guardians to patrol the project area to prevent fires, rodents and insects.

3) Recording of Data and Parameters Monitored

According to PD, no chemical fertilizer is used in the project area during this monitoring period.

For the estimate of annual CH₄ emissions from enteric fermentation, population of livestock type I ($P_{l,t}$) and grazing days of livestock type I ($Days_{l,t}$) were recorded annually during the monitoring period.

For the estimate of annual CH₄ and N₂O emissions from manure deposition during grazing, grazing days of livestock of type I ($Days_{l,t}$) and average grazing hours per day of livestock type I ($H_{l,t}$) during the grazing season were recorded in every grazing season, in each year during the monitoring period.

For the estimate of annual CO₂ emissions due to the use of fossil fuels for SGM, Fuel consumption by type k, machine type j, parcel grassland p, in year t under project ($FC_{p,j,k,t}$) must be recorded at each time a management practice using machines is adopted and reported annually during the monitoring period:

- To estimate project removals due to changes in SOC, the following parameters were monitored during the monitoring period. The soil sampling, handling and storage, processing and measurement, and quality control procedures implemented in soil organic carbon analysis that follow a scientific peer-reviewed approved standard.
- SOC content ($SOC_{mG,s,i,t}$); Soil bulk density ($BD_{mG,s,i,t}$); Percentage of rocks with a diameter larger than 2mm, roots and other dead residues ($FC_{mG,s,i,t}$);

As mentioned in Section 3.2.2, the project uses direct measurement approach (Option 2) to determine the project removals due to changes in SOC, and the sampling procedures were designed such that the statistical significance of soil carbon stock changes between the baseline carbon stock and the carbon stock in time t can be determined with a 95 percent confidence interval. The Guidelines for sampling and surveys for CDM project activities and programmes of activities was followed to determine the sampling procedure and sample size.

For the estimate of leakage emissions, the monitoring parameters required in the VCS modules VMD0040 Estimation of Leakage Emissions from Displacement of Grazing Activity due to Implementation of Sustainable Grassland Management Activities must be recorded annually during the project crediting period. The following parameters were monitored and recorded:

- Total population of livestock of each type relocated to unidentified grasslands in year t ($P_{GUL,t}$);
- 4) Days that the population of each type of relocated livestock of type l graze in unidentified grassland in year t ($Days_{GUL,t}$);** **Sampling Design and Stratification**

According to PD, the project removals due to changes in SOC will be determined by direct measurement approach (Option 2) by using soil sampling procedures according to nationally approved standard (HJ/T 166-2004).

Due to the heterogeneity of soil carbon, stratification of the project area into relatively homogeneous units can either increase the measuring precision without increasing the cost unduly or reduce the cost without reducing measuring precision because of the lower variance within each homogeneous unit.

According to the methodology (VM0026/Version 1.1), four main requirements was met before the stratified sampling is chosen:

- Population must be stratified in advance of the sampling.

The project area was stratified before sampling.

- Classes must be exhaustive and mutually exclusive (ie, all elements of the population must fall into exactly one class).

For the project, classes were determined by two different soil texture within project boundary and the different management (see Table 3-2 for details), which are exhaustive and mutually exclusive and all elements of the population fell into exactly one class.

- Classes must differ in the attribute or property under study, otherwise there is no gain in precision over simple random sampling.

The grazing situation in the project area of each county is basically the same, but the climate of each county is different, which has a certain impact on the accumulation of soil carbon. Also, different soil textures have a significant impact on soil carbon accumulation, such as, sandy soil has poor water and fertility retention, clay soil has strong water and fertility retention, and loam has moderate water and fertility retention. For the project, based on the county and soil texture, the project ex ante strata are listed in the following table.

- Selection of items to represent each class (ie, the sample drawn from each class) must be random.

The location of sample sites were set by systematic sampling with a random start. For each strata, using GIS to set a random start plots, and then set the constraint boundary for the rest plots (within the range of the certain strata and the horizontal and vertical distances from the boundary should be no less than 30m).

The ex-post stratification must be updated due to the following reasons:

- Unexpected disturbances occurring during the project crediting period (eg, due to fire, pests or disease outbreaks), affecting differently various parts of an originally homogeneous stratum;
- Grassland management activities (planting) may be implemented in a way that affects the existing stratification.

During this monitoring period, there is no change of grassland management activities and unexpected disturbances, the carbon stratification of the project does not need to update.

Table 3-2 Post-stratification during this monitoring period

Strata	Area (ha)	Grassland type	Management practice	Soil texture	Project activities start date
1	5,000.00	Desertification Grassland	Grass seeding grass	sandy loam	25-May-2019
2	10,666.67	Mountain meadow	Rotational and rest grazing with fence building	loam	5-Jun-2018
3	49,333.33	Alpine meadow	Rotational and rest grazing with fence building	loam	26-Jun-2017

Sampling framework

According to the methodology, Guidelines for sampling and surveys for CDM project activities and programmes of activities (version 4.0) should be followed to determine the sampling procedure and sample size.

According to the Guidelines for sampling and surveys for CDM project activities and programmes of activities (version 4.0), the project proponents may use the sample size calculator available in the CDM website³³. See Sample Size Calculator Table for detail.

The mean SOC with the project boundary and the standard deviation of SOC in each strata were estimated from a preliminary sample, the project monitoring team has selected 3 preliminary sample sites for each strata and calculated the mean value and standard deviation of the biomass stock in each strata which were used to calculate the final number of sample sites based on the Sample Size Calculator Table as mentioned above.

The calculated sample size was 9 originally by using a precision of 15 percent at the 95 percent confidence level, considering the large area of the project boundary, the actual sample size has been increased into 31, by tripling the individual sample size of each strata with a minimum number of 8. Please refer to Sample Size Calculator Table for details.

Table 3-3 Number of the sample plots

Stratum number	Expected mean, m	Expected standard deviation, s	Calculation sample size	Actual sample size
1	18.27	7.71	3	8
2	77.50	11.26	3	10
3	120.89	5.60	3	13
Total	/	/	9	31

Table 3-4 Location of the sample sites

NO.	Sample site	Longitude	Latitude	Soil texture
1	S1-1	87.031898	48.068930	sandy loam
2	S1-2	87.041990	48.046211	sandy loam
3	S1-3	86.997082	48.039710	sandy loam
4	S1-4	87.058163	48.072175	sandy loam
5	S1-5	87.059636	48.065790	sandy loam
6	S1-6	87.064284	48.051687	sandy loam
7	S1-7	86.985649	48.233338	sandy loam
8	S1-8	86.988625	48.249471	sandy loam
9	S2-1	87.061996	47.941704	loam
10	S2-2	87.061298	47.957055	loam
11	S2-3	86.869738	48.027749	loam
12	S2-4	87.290364	48.345924	loam
13	S2-5	87.289914	48.333039	loam

³³ <https://cdm.unfccc.int/Reference/Guidclarif/index.html>

14	S2-6	87.271824	48.313980	loam
15	S2-7	87.264908	48.318524	loam
16	S2-8	87.595134	48.715463	loam
17	S2-9	87.385957	48.215404	loam
18	S2-10	87.289914	48.333039	loam
19	S3-1	87.062931	47.977078	loam
20	S3-2	87.388036	48.231415	loam
21	S3-3	87.377936	48.233664	loam
22	S3-4	87.212050	48.291412	loam
23	S3-5	87.199150	48.287756	loam
24	S3-6	87.204982	48.276306	loam
25	S3-7	87.293664	48.345500	loam
26	S3-8	87.290364	48.345924	loam
27	S3-9	87.293160	48.339057	loam
28	S3-10	87.272613	48.312372	loam
29	S3-11	87.264908	48.318524	loam
30	S3-12	87.264007	48.323080	loam
31	S3-13	87.473550	48.770702	loam

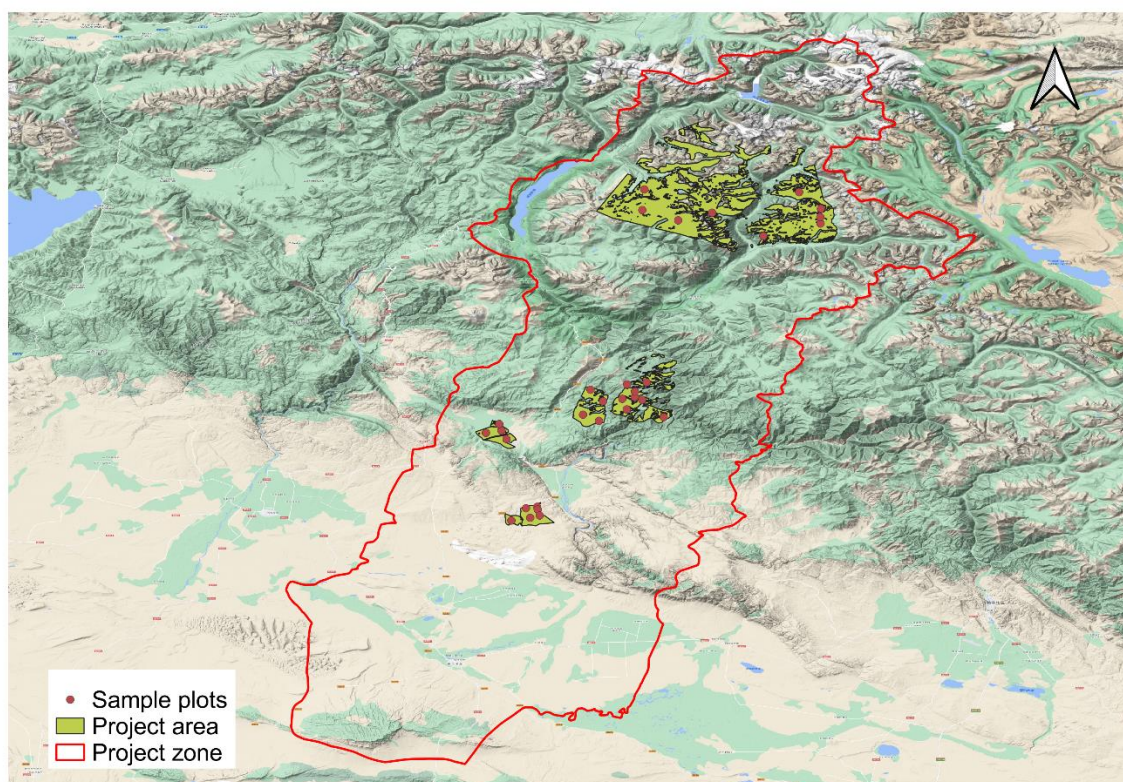


Figure 3-2 Location of the sample sites

From 04-September-2021 to 30-September-2021, two monitoring teams collected soil samples in the project area.

Soil samples were collected by soil drill, 3-4 soil samples collected in S shape at each sampling site were finally mixed into one sample and then packed into a Ziplock bag with a label before sent to lab for the measurement of soil organic carbon content ($SOC_{mG,s,i,t}$) and percentage of rocks ($FC_{mG,s,i,t}$). Another soil sample was also collected at each sampling point with a ring knife and packed into an aluminium box with plastic wrap for the measurement of the bulk density ($BD_{mG,s,i,t}$)

In this monitoring period, soil samples were collected and mailed to the laboratory for measuring, while all samples are backed up. The parameters ($SOC_{mG,s,i,t}$, $FC_{mG,s,i,t}$ and $BD_{mG,s,i,t}$) were measured by Shandong Huasheng Tiantong Standard Technical Service Co., Ltd., which has the certification of inspection and testing organization. As mentioned in section 3.1.2, the nationally approved standard Method for Determination of Soil Organic Matter (NY/T 1121.6-2006) was used to measure SOC of the soil samples.

The nationally approved standard Method for determination of soil bulk density (NY/T 1121.4-2006) was used to measure bulk density of the soil samples.

Due to there is no nationally recognized standard for measuring the percentage of rocks larger than 2mm, roots, and other dead residues, so previous research standard are used³⁴.

Finally, on 21-November-2021, the testing organization issued a soil testing report. See SOC table and laboratory test report for measuring results.

³⁴ Xie yingge, Li xia. Research progress on determination methods of gravel content in soil[J]. Soils, 2012,44(1):17-22.

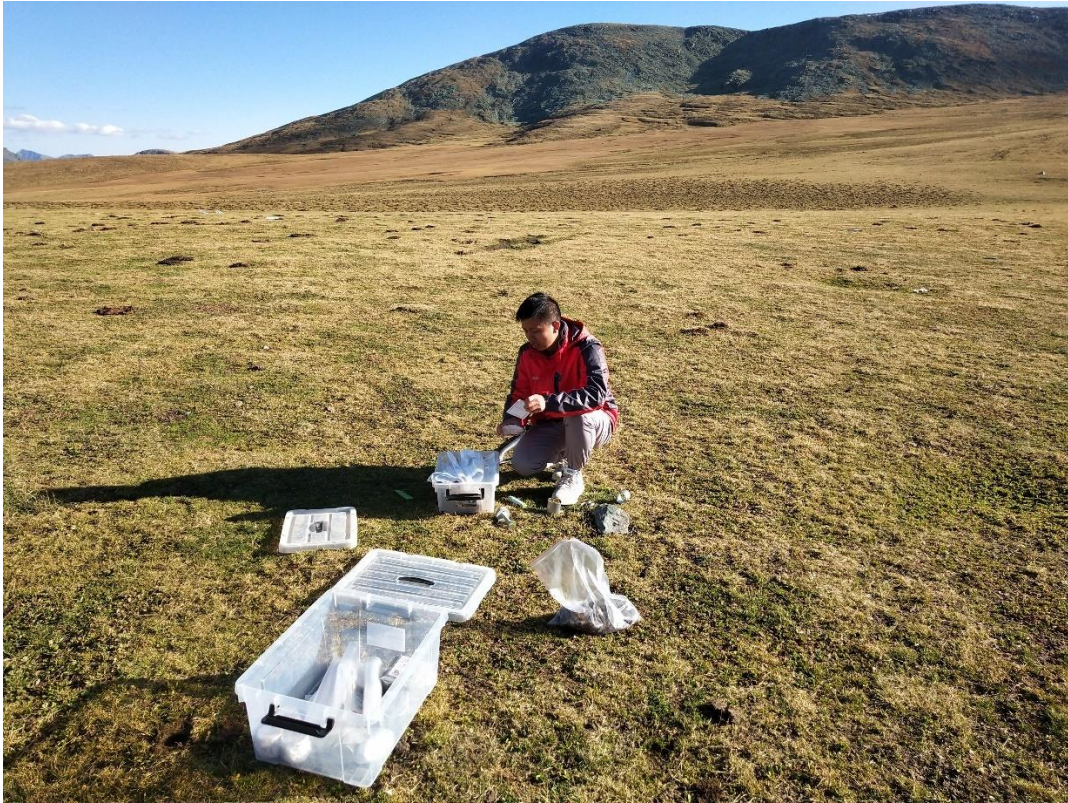


Figure 3-2 Soil sampling

5) Monitoring for leakage emission

For the estimate of leakage emissions, the monitoring parameters required in the VCS modules VMD040 Estimation of Leakage Emissions from Displacement of Grazing Activity due to Implementation of Sustainable Grassland Management Activities were recorded annually during the monitoring period.

The Burqin Forestry and Grassland Bureau has conducted the Grazing Displacement Survey from August to September each year to monitor the grazing activities from 2017-2021, the related monitoring results of the grazing days ($Days_{GUI,t}$) in the grazing area and the leakage area and the population of cattle and sheep rotating back and forth in the two areas ($P_{GUI,t}$) have been summarized in the project grazing records.

3. Monitoring frequency

The monitoring of the project implementation will take place at least every five years after the project registration in order to ensure the continuity of the benefits. Periodic verification and quantitative monitoring of the project will take place at least every five years.

4. Data management

All data collected as part of monitoring is archived electronically. All information should be stored by the technology department of the project owner and all the material has a physical copy for backup. And all data collected shall be archived for a period of at least two years after the end of the last crediting period of the project activity.

5. QA/QC procedures

The following QA/QC procedures will be adopted:

- a) Training will be provided to the staff to guarantee the implementation of the monitoring plan, all the relevant staff is obliged to take the training course before the operation starts;
- b) The monitoring team will check the monitoring equipment regularly to make sure their normal operation before each monitoring activities;
- c) If the validated monitoring plan cannot be conducted during the following monitoring process due to some reason, an updated monitoring plan should be submitted to VVB during the corresponding verification by indicating the relevant deviation of the original plan and the reason for the deviation.
- d) All soil samples need to be backed up. If there is a problem with the testing equipment or the data is abnormal, retest the corresponding soil sample.

3.1.4 Dissemination of Monitoring Plan and Results (CL4.2)

Before the beginning of this monitoring period, the project owner published the monitoring plan and monitoring manual on the local bulletin boards for the villages around the project area from 01-August-2021 to 31-August-2021, and invited local stakeholders to discuss them and give their advises.

Besides, as part of the draft PD, the monitoring plan has been published on VCS and CCB website which can be easily download by stakeholders, and after the monitoring activity completed, the

monitoring results were also published on the website as part of the draft monitoring report. Hard copies of the monitoring plan and monitoring manual have been distributed among local stakeholders by project proponent and the grassland guardians. At the same time, public notice boards in each village were used to publicize information regarding how to access to the monitoring plan and results through internet. Technical staff from project proponent also explained the monitoring plan to local herders. In addition, a contact person with phone numbers was published in case any stakeholders want to directly contact the project proponent and raise opinions.

For each verification, the monitoring team will summarize all the comments received from stakeholders and corresponding responses regarding the monitoring plan and results and published on VCS and CCB website along with the monitoring report for each monitoring period.

During this monitoring period, no comments on the monitoring plan and results received.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

According to PD, baseline emissions including CH₄ emissions due to enteric fermentation and N₂O and CH₄ emissions due to manure management.

$$BE_b = BE_{CH_4EF,b} + BE_{GHGMD,b} \quad (1)$$

1. Baseline CH₄ emissions due to enteric fermentation

Baseline CH₄ emissions from enteric fermentation are calculated using the following:

$$BE_{CH_4EF,t} = \frac{GWP_{CH_4} \times \sum_{l=1}^L P_{l,b} \times EF_l \times Days_{l,b}}{1000 \times 365} \quad (2)$$

Where:

$BE_{CH_4EF,b}$	=	Baseline CH ₄ emissions from enteric fermentation
GWP_{CH_4}	=	Global-warming potential for CH ₄ (t CO ₂ e/t CH ₄)
$P_{l,b}$	=	Population of grazing livestock type l, in baseline year b (head)
l	=	Index of livestock type
EF_l	=	Enteric CH ₄ emission factor per head of livestock type l per year (kg CH ₄ head*year)
$Days_{l,b}$	=	Grazing days inside the project area for each livestock type l in baseline year b (days)
1000	=	Conversion factor for t CH ₄ to kg CH ₄
365	=	Conversion factor for years to days

2. Baseline N₂O and CH₄ emissions due to manure management

Baseline emissions from manure management include N₂O and CH₄ emissions from manure and urine deposited on grassland soil during the grazing season.

$$BE_{GHG_{MD},b} = BE_{N_2O_{MD},b} + BE_{CH_4_{MD},b} \quad (3)$$

Where:

$BE_{GHG_{MD},b}$ = Baseline N₂O and CH₄ emissions due to manure management

$BE_{N_2O_{MD},t}$ = Baseline N₂O emissions from manure and urine deposited on grassland soil in baseline year b (t CO₂e)

$BE_{CH_4_{MD},t}$ = Baseline CH₄ emissions from manure and urine deposited on grassland soil in baseline year b (t CO₂e)

1) Baseline N₂O emissions from manure management are calculated using the following:

$$BE_{N_2O_{MD},b} = GWP_{N_2O} \times (BE_{D,N_2O_{MD},b} + BE_{ID,N_2O_{MD},b}) \quad (4)$$

Where:

GWP_{N_2O} = Global warming potential for N₂O (t CO₂e/t N₂O)

$BE_{D,N_2O_{MD},t}$ = Direct N₂O emissions from manure and urine deposited on grassland soil during the grazing season in baseline year b (t N₂O)

$BE_{ID,N_2O_{MD},t}$ = Indirect N₂O emissions from manure and urine deposited on grassland soil during the grazing season in baseline year b (t N₂O)

2) Baseline direct N₂O emissions from manure and urine deposited on grassland soil are calculated using the following:

$$BE_{D,N_2O_{MD},b} = \sum_{l1=1}^{L1} F_{MD,l1,b} \times EF_{3,PRP,PPP} \times 44/28 \quad (5)$$

And/or

$$BE_{D,N_2O_{MD},b} = \sum_{l2=1}^{L2} F_{MD,l2,b} \times EF_{3,PRP,SO} \times 44/28 \quad (6)$$

$F_{MD,l1,b}$ and $F_{MD,l2,b}$ must be calculated using the following equation for livestock type l.

$$F_{MD,l1,b} = \frac{P_{l,b} \times W_{l,b} \times N_{exl} \times H_{l,b} \times Days_{l,b} \times (1 - Frac_{GAS,MD})}{1000_a \times 24 \times 1000_b} \quad (7)$$

Where:

$F_{MD,l1,b}$	=	Annual amount of nitrogen in cattle, poultry and pigs manure and urine deposited on grassland soil during the grazing season in baseline year b, adjusted for volatilization as NH_3 and NO_x (t N)
$F_{MD,l2,b}$	=	Annual amount of nitrogen in sheep and other animals manure and urine deposited on grassland soil during the grazing season in baseline year b, adjusted for volatilization as NH_3 and NO_x (t N)
$EF_{3,PRP,CPP}$	=	N_2O emission factor for cattle, poultry and pigs manure and urine deposited on grassland soil during the grazing season (kg N_2O -N/kg N input)
$EF_{3,PRP,SO}$	=	N_2O emission factor for sheep and other animals manure and urine deposited on grassland soil during the grazing season (kg N_2O -N/kg N input)
$l1$	=	Index of livestock cattle, poultry and pigs
$l2$	=	Index of livestock sheep and other animals
$P_{l,b}$	=	Population of livestock type l in baseline year b (head)
$W_{l,b}$	=	Average weight of livestock type l in baseline year b (kg livestock mass/head)
Nex_l	=	Nitrogen excretion of livestock type l (kg N deposited /(t livestock mass*day))
1000_a	=	Conversion factor for t livestock mass to kg livestock mass
$H_{l,b}$	=	Average grazing hours per day for livestock type l in baseline year b (hour)
24	=	Conversion factor for days to hours
$Days_{l,b}$	=	Grazing days for livestock type l inside the project area in baseline year b (days)
1000_b	=	Conversion factor for t N to kg N
$Frac_{GAS,MD}$	=	Fraction of volatilization from manure and urine deposited by grazing animals as NH_3 and NO_x (kg N volatilized/kg of N deposited)
l	=	Index of grazing livestock types

3) Baseline indirect N_2O emissions from urine and manure N deposited on grassland soils

According to the methodology (VM0026/Version 1.1) and baseline survey report, the annual precipitation of the project area is less than annual potential evapotranspiration, so, indirect N_2O emissions from leaching and runoff can be excluded.

The indirect N₂O emissions from the atmospheric deposition of N volatilized as NH₃ and NO_x after urine and manure N is deposited on grassland soils in baseline year b, are calculated using the following:

$$BE_{ID,N_2O_{MD},b} = \sum_{l=1}^L F_{MD,l,b} \times \text{Frac}_{GAS,MD} \times EF_{4,MD} \times 44/28 \quad (8)$$

Where:

$BE_{ID,N_2O_{MD},b}$ = Indirect N₂O emissions from manure and urine deposited on grassland soil during the grazing season in baseline year b (t N₂O)

$F_{MD,l,b}$ = Annual amount of manure and urine deposited on grassland soil from livestock type l during the grazing season in baseline year b, adjusted for volatilization as NH₃ and NO_x (t N)

$\text{Frac}_{GAS,MD}$ = Fraction of volatilization from manure and urine deposited by grazing animals as NH₃ and NO_x (kg N volatilized/kg of N deposited)

$EF_{4,MD}$ = N₂O emission factor for atmospheric deposition of urine and manure N on soils and water surfaces, (kg N₂O-N/(kg NH₃-N + NO_x-N volatilized))

L = Index of grazing livestock types

4) Baseline CH₄ emissions from manure management are calculated using the following:

$$BE_{CH_4MD,b} = \frac{GWP_{CH_4} \times \sum_{l=1}^L EF_{lM} \times P_{l,b} \times H_{l,b} \times Days_{l,b}}{1000 \times 365 \times 24} \quad (9)$$

Where:

$P_{l,b}$ = Population of grazing livestock type l, in baseline year b, head

EF_{lM} = CH₄ emission factor from manure of livestock type l (kg CH₄/(head*year))

$H_{l,b}$ = Average grazing hours per day for livestock type l in baseline year b (hour)

$Days_{l,b}$ = Grazing days for livestock type l inside the project area in baseline year b (days)

1000 = Conversion factor for t CH₄ to kg CH₄

365 = Conversion factor for years to days

24 = Conversion factor for days to hours

According to PD, for the project:

$$\begin{aligned} BE_b &= BE_{CH_4EF,b} + BE_{GHGMD,b} \\ &= BE_{CH_4EF,b} + BE_{N_2O_{MD},b} + BE_{CH_4MD,b} \end{aligned}$$

$$= \frac{GWP_{CH_4} \times \sum_{l=1}^L P_{l,b} \times EF_l \times Days_{l,b}}{1000 \times 365} + GWP_{N_2O} \times \left(\frac{\frac{P_{l,b} \times W_{l,b} \times Nex_l \times H_{l,b} \times Days_{l,b} \times (1 - Frac_{GAS,MD})}{1000_a \times 24 \times 1000_b} \times EF_{3,PRP,CP} \times \frac{44}{28}}{+ \frac{P_{l,b} \times W_{l,b} \times Nex_l \times H_{l,b} \times Days_{l,b} \times (1 - Frac_{GAS,MD})}{1000_a \times 24 \times 1000_b} \times EF_{3,PRP,SO} \times \frac{44}{28} + \sum_{l=1}^L F_{MD,l,b} \times Frac_{GAS,MD} \times EF_{4,MD} \times \frac{44}{28}} \right) + \frac{GWP_{CH_4} \times \sum_{l=1}^L EF_{LM} \times P_{l,b} \times H_{l,b} \times Days_{l,b}}{1000 \times 365 \times 24} \quad (10)$$

According to PD, the annual baseline emission is calculated as 9,966 tCO₂e, for this monitoring period from 26-June-2017 to 31-December-2021 (1,650 days), the total baseline emissions is 45,052 tCO₂e. Please refer to ER calculation sheets for details.

Table 3-6 The estimation of baseline emission during the monitoring period

Monitoring period	$BE_{CH_4EF,b}$	$BE_{N_2O_{MD},b}$	$BE_{CH_4MD,b}$	BE_b
	tCO ₂ e	tCO ₂ e	tCO ₂ e	tCO ₂ e
	A	B	C	D=A+B+C
26-June-2017-31-December-2017	5,010	68	82	5,160
01-January-2018-31-December-2018	9,675	132	159	9,966
01-January-2019-31-December-2019	9,675	132	159	9,966
01-January-2020-31-December-2020	9,702	133	159	9,994
01-January-2021-31-December-2021	9,675	132	159	9,966
Total	43,737	597	718	45,052

3.2.2 Project Emissions

1. Project N₂O emissions due to fertilizer use

According to the Project Design Report of the project, no nitrogen fertilizer was applied in project scenario of the project area.

2. Project CH₄ emissions due to enteric fermentation

Project CH₄ emissions from enteric fermentation are calculated using the following:

$$PE_{CH_4EF,t} = \frac{GWP_{CH_4} \times \sum_{l=1}^L P_{l,t} \times EF_l \times Days_{l,t}}{1000 \times 365} \quad (11)$$

Where:

GWP_{CH_4} = Global-warming potential for CH₄ (t CO₂e/t CH₄)

$P_{l,t}$ = Population of grazing livestock type l in year t under project (head)

L = Index of livestock type

EF_l = Enteric CH₄ emission factor per head of livestock type l per year (kg CH₄ head*year)

$Days_{l,t}$ = Grazing days inside the project area for each livestock type l in the project year t (days)

1000 = Conversion factor for t CH₄ to kg CH₄

365 = Conversion factor for years to days

3. Project N₂O and CH₄ emissions due to manure management

The project emissions from manure management include N₂O and CH₄ emissions from manure and urine deposited on grassland soil during the grazing season.

$$PE_{GHG_{MD},t} = PE_{N_2O_{MD},t} + PE_{CH_4_{MD},t} \quad (12)$$

Where:

$PE_{GHG_{MD},t}$ = Project GHG emissions from manure management in year t (t CO₂e)

$PE_{N_2O_{MD},t}$ = Project N₂O emissions from manure and urine deposited on grassland soil in year t (t CO₂e)

$PE_{CH_4_{MD},t}$ = Project CH₄ emissions from manure and urine deposited on grassland soil in year t (t CO₂e)

1) Project N₂O emissions from manure management

$$PE_{N_2O_{MD},t} = GWP_{N_2O} \times (PE_{D,N_2O_{MD},t} + PE_{ID,N_2O_{MD},t}) \quad (13)$$

Where:

GWP_{N_2O} = Global warming potential for N₂O (t CO₂e/t N₂O)

$PE_{D,N_2O_{MD},t}$ = Project direct N₂O emissions from manure and urine deposited on grassland soil during the grazing season in year t (t N₂O)

$PE_{ID,N_2O_{MD},t}$ = Project indirect N₂O emissions from manure and urine deposited on grassland soil during the grazing season in year t (t N₂O)

2) Project direct N₂O emissions from manure and urine deposited on grassland soil

$$PE_{D,N_2O_{MD},t} = \sum_{l1=1}^{L1} F_{MD,l1,t} \times EF_{3,PRP,CP} \times 44/28 \quad (14)$$

And/or

$$PE_{D,N_2O_{MD},t} = \sum_{l2=1}^{L2} F_{MD,l2,t} \times EF_{3,PRP,SO} \times 44/28 \quad (15)$$

$F_{MD,l1,t}$ and $F_{MD,l2,t}$ must be calculated using the following equation for livestock type I.

$$F_{MD,l1,t} = \frac{P_{l,t} \times W_{l,p} \times Nex_l \times H_{l,t} \times Days_{l,t} \times (1 - FraC_{GAS,MD})}{1000_a \times 24 \times 1000_b} \quad (16)$$

Where:

$F_{MD,l1,t}$	=	Annual amount of nitrogen in cattle, poultry and pigs manure and urine deposited on grassland soil during the grazing season in year t, adjusted for volatilization as NH ₃ and NO _x (t N)
$F_{MD,l2,t}$	=	Annual amount of nitrogen in sheep and other animals manure and urine deposited on grassland soil during the grazing season in year t, adjusted for volatilization as NH ₃ and NO _x (t N)
$EF_{3,PRP,CPP}$	=	N ₂ O emission factor for cattle, poultry and pigs manure and urine deposited on grassland soil during the grazing season (kg N ₂ O-N/kg N input)
$EF_{3,PRP,SO}$	=	N ₂ O emission factor for sheep and other animals manure and urine deposited on grassland soil during the grazing season (kg N ₂ O-N/kg N input)
$l1$	=	Index of livestock cattle, poultry and pigs
$l2$	=	Index of livestock sheep and other animals
$P_{l,t}$	=	Population of grazing livestock type I in year t (head)
$W_{l,p}$	=	Average weight of livestock I under project (kg livestock mass/head)
Nex_l	=	Nitrogen excretion of livestock type I (kg N deposited /(t livestock mass*day))
1000_a	=	Conversion factor for t livestock mass to kg livestock mass
$H_{l,t}$	=	Average grazing hours per day during grazing season in year t (hours)
24	=	Conversion factor for days to hours
$Days_{l,t}$	=	Grazing days for livestock type I inside the project area in year t (days)
1000_b	=	Conversion factor for t N to kg N
$FraC_{GAS,MD}$	=	Fraction of volatilization from manure and urine deposited by grazing animals as NH ₃ and NO _x (kg N volatilized/kg of N deposited)
I	=	Index of grazing livestock types

3) Project indirect N₂O emissions from urine and manure N deposited on grassland soils

According to the methodology (VM0026/Version 1.1) and previous research, the annual precipitation of the project area is less than annual potential evapotranspiration, so, indirect N₂O emissions from leaching and runoff can be excluded.

Indirect N₂O emissions from the atmospheric deposition of N volatilized as NH₃ and NO_x after urine and manure N is deposited on grassland soils under the project, are calculated using the following:

$$PE_{ID,N_2O_{MD},t} = \sum_{l=1}^L F_{MD,l,t} \times Frac_{GAS,MD} \times EF_{4,MD} \times 44/28 \quad (17)$$

Where:

- $PE_{ID,N_2O_{MD},t}$ = Project indirect N₂O emissions from manure and urine deposited on grassland soil during the grazing season in year t (t N₂O)
- $F_{MD,l,t}$ = Annual amount of manure and urine deposited on grassland soil from livestock type l during the grazing season in year t, adjusted for volatilization as NH₃ and NO_x (t N)
- $Frac_{GAS,MD}$ = Fraction of volatilization from manure and urine deposited by grazing animals as NH₃ and NO_x (kg N volatilized/kg of N deposited)
- $EF_{4,MD}$ = N₂O emission factor for atmospheric deposition of urine and manure N on soils and water surfaces, (kg N₂O-N/(kg NH₃-N + NO_x-N volatilized))

CH₄ emissions from manure management are calculated using the following:

$$PE_{CH_4MD,t} = \frac{GWP_{CH_4} \times \sum_{l=1}^L EF_{lM} \times P_{l,t} \times H_{l,t} \times Days_{l,t}}{1000 \times 365 \times 24} \quad (18)$$

Where:

- $P_{l,t}$ = Population of livestock type l in year t (head)
- EF_{lM} = CH₄ emission factor from manure of livestock type l (kg CH₄/(head*year))
- $H_{l,t}$ = Average grazing hours per day during grazing season in year t (hours)
- $Days_{l,t}$ = Grazing days for livestock type l inside the project area in year t (days)
- 1000 = Conversion factor for t CH₄ to kg CH₄
- 365 = Conversion factor for years to days
- 24 = Conversion factor for days to hours

4. Project CO₂ emissions due to the use of fossil fuels

Project CO₂ emissions due to the use of fossil fuels are calculated using the following:

$$PE_{FC,t} = \frac{\sum_{p=1}^P \sum_{j=1}^J \sum_{k=1}^K FC_{p,j,k,t} \times EF_{CO_2,k} \times NCV_k}{1000} \quad (19)$$

Where:

$FC_{p,j,k,t}$	=	Fuel consumption by fuel type k, by machine type j, on grassland parcel p, in year t (kg fuel/year)
$EF_{CO_2,k}$	=	CO ₂ emission factor by fuel type k (t CO ₂ /GJ).
NCV_k	=	Thermal value of fuel type k (GJ/t fuel)
1000	=	Conversion factor for tonnes fuel to kg fuel
K	=	Index of fuel type
J	=	Index of machine type
P	=	Index of grassland parcel

5. Project removals due to changes in soil organic carbon

Estimate of project removals due to changes in SOC using a measurement approach.

The SOC stock in stratum s, sampling site i, under project in year t are calculated using the following:

$$P_{SOC_{mG,s,i,t}} = SOC_{mG,s,i,t} \times BD_{mG,s,i,t} \times Depth \times (1 - FC_{mG,s,i,t}) \times 0.1 \quad (20)$$

Where:

$P_{SOC_{mG,s,i,t}}$	=	SOC stock in the top 30 cm (or greater depth if required) of soil for management practice mG, stratum s, sampling site i under project in year t (t C/ha)
$SOC_{mG,s,i,t}$	=	SOC content in the top 30 cm of soil (or greater depth if required) for management practice mG, stratum s, sampling site i, under project in year t (g C/kg soil)
$BD_{mG,s,i,t}$	=	Soil bulk density in the top 30 cm of soil (or greater depth if required) for management practice mG, stratum s, sampling site i, under project in year t (g soil/cm ³)
$Depth$	=	Top soil depth, for calculating grassland SOC stock in the top 30 cm of soil (or greater depth if required) (cm)
$FC_{mG,s,i,t}$	=	Percentage of rocks larger than 2mm, roots, and other dead residues with a diameter in the top 30 cm of soil (or greater depth if required), for

management practice mG , stratum s , sampling site i under project in year t (percent)

0.1 = Conversion factor for SOC to t C/ha

mG = Index of management practice

S = Index of stratum

i = Index of sampling site

Calculate average carbon stock of all monitored sites in management practice mG , stratum s , under project using the following:

$$P_{SOC_{mG,s,t}} = \frac{\sum_{i=1}^I P_{SOC_{mG,s,i,t}}}{I} \quad (21)$$

Where:

$P_{SOC_{mG,s,t}}$ = Average carbon stock in stratum s under project (t C/ha)

I = Monitored sites in stratum s , under project

The following is used to calculate the difference between the carbon stock for management practice mG under project in year t , and the carbon stock under the baseline scenario, for all strata.

$$P_{mG,t} = \sum_{s=1}^S (P_{SOC_{mG,s,t}} - SOC_{s,Baseline}) \times PA_{mG,s,t} \quad (22)$$

Where:

$P_{mG,t}$ = Difference in the carbon stock between the project in year t and the baseline scenario (t C)

$PA_{mG,s,t}$ = Project areas with management practice mG in stratum s in year t (ha)

$P_{SOC_{mG,s,t}}$ = Average carbon stock in stratum s under project in year t (t C / ha)

$SOC_{s,Baseline}$ = Baseline SOC stock of stratum s , in the top 30 cm soil layer (or greater depth if required) (t C / ha)

S = Strata under project

s = Index of stratum

The following is applied to calculate average carbon stock of all management practice, under project in year t .

$$P_t = \sum_{mG=1}^M P_{mG,t} \quad (23)$$

Where:

P_t = Carbon stock under project in year t (t C)

M = Number of management practice

For the first monitoring of SOC stock, the annual project removals due to changes in SOC stock in year t must be calculated using the following:

$$PR_t = \frac{(P_t)}{n} \times \frac{44}{12} \quad (24)$$

Where:

PR_t = Project removals due to changes in SOC in year t (t CO₂e)

n = Number of years from the project start date to year t (years)

All parameters are selected according to section 9.1 and 9.2 of the methodology (VM0026, Version 1.1), and soil organic matter data are obtained by laboratory tests. So the parameters are conservative, and the uncertainty is considered to be 0.

6. Uncertainty analysis

All parameters are selected according to section 9.1 and 9.2 of the methodology (VM0026, Version 1.1), and soil organic carbon data are obtained by laboratory tests. For the project, the project proponent conducted a survey of all grazing agents whose livestock grazed in the project area prior to the project start date. This survey covered a full census of project participants and project non-participants whose livestock graze in the project area during the baseline period (covering the one year prior to the project start date) covered by the survey, and collected grazing data in the project area under the baseline scenario, such as the number and days of grazing, etc. Also, the project proponent and the Burqin Forestry and Grassland Bureau recorded all the diesel oil consumed by the project. So the parameters about grazing and diesel oil consumption are conservative, and the uncertainty is considered to be 0.

As mentioned before, the project use Option 2 (measurement approach) to estimate project removals due to changes in SOC. For the ex-post calculation during this monitoring period, the SOC changes in project scenario is based on the sample measurement undertaken within the project area, and the sample size is 31, larger than 30, therefore a conservative estimate of carbon sequestration by carbon pools in the project scenario should be given by adopting a value that represents the lower bound of the 95 percent confidence interval (sample mean - 1.96 × standard error). Please refer to ER spreadsheet for detailed calculation.

Project net GHG emissions by sources and removals by sinks

According to the PD, project net GHG emissions by sources and removals by sinks are calculated as follows:

$$PE_t = PE_{N_2O_{SN,t}} + PE_{CH_4EF,t} + PE_{GHG_{MD,t}} + PE_{FC,t} - PR_t \quad (25)$$

Where:

PE_t = Project net GHG emissions by sources and removals by sinks in year t (t CO₂e)

$PE_{N_2O_{SN},t}$ = Project N₂O emissions due to fertilizer use in year t (t CO₂e)

$PE_{CH_4EF,t}$ = Project CH₄ emissions from enteric fermentation in year t (t CO₂e)

$PE_{GHGMD,t}$ = Project GHG emissions from manure management in year t (t CO₂e)

$PE_{FC,t}$ = Project CO₂ emissions from farming machine fossil fuel consumption in year t (t CO₂)

PR_t = Project removals due to changes in SOC in year t (t CO₂e)

During this monitoring period, 65,000.00 ha of degraded grassland were managed by rotational and rest grazing with grass seeding and fence building, which could increase the soil carbon stocks. Also, tractors and trucks were used in the project, which consumes diesel oil. So, project CO₂ emissions due to the use of fossil fuels and project removals due to changes in soil organic carbon should be calculated.

Grazing is forbidden for the first five years after the implementation of the project for relevant project area, and then controlled grazing will be allowed depending on the growth situation of the forage. Although the grazing days are strictly managed, reasonable grazing is still allowed based on the Grazing Displacement Management Plan. The rotational and rest grazing has been implemented by stages for three years (2017-2019), and the implementation of the entire region with 65,000.00 hectares was completed in September 2019. Therefore, grazing is completely prohibited in the project area from 2019, and grazing activities were allowed in the area where the project has not yet been implemented in 2017-2018. So, project CH₄ emissions from enteric fermentation and project GHG emissions from manure management ($PE_{CH_4EF,t}$ and $PE_{GHGMD,t}$) are considered during this monitoring period.

Therefore, $PE_t = PE_{CH_4EF,t} + PE_{N_2O_{MD},t} + PE_{CH_4MD,t} + PE_{FC,t} - PR_t$ (30)

Project net GHG emissions during the crediting period is summarized in the following table, please refer to ER spreadsheet for detailed calculation.

Table 3-7 The estimation of project net GHG emissions during the monitoring period

Crediting period	$PE_{FC,t}$	$PE_{CH_4EF,t}$	$PE_{N_2O_{MD},t}$	$PE_{CH_4MD,t}$	PR_t	PE_t
Year	t CO ₂ e	t CO ₂ e	t CO ₂ e	t CO ₂ e	tCO ₂ e	tCO ₂ e
	A	B	C	D	E	A+B+C+D-E
26-June-2017-31-December-2017	1,582	22	26	920	49,178	-46,628
01-January-2018-31-December-2018	520	7	8	165	122,724	-122,024

01-January-2019-31-December-2019	0	0	0	77	175,681	-175,604
01-January-2020-31-December-2020	0	0	0	0	197,380	-197,380
01-January-2021-31-December-2021	0	0	0	0	196,840	-196,840
Total	2,102	29	34	1,162	741,803	-738,476

3.2.3 Leakage

According to the PD, leakage from displacement of grazing activities to outside the project boundary ($LE_{GD,t}$) should be calculated.

During this monitoring period, grazing was strictly forbidden, and then controlled grazing were allowed depending on the growth situation of the forage, and the Burqin Forestry and Grassland Bureau measured the grass yield of the surrounding grasslands in the project area, and guides herders to graze in a reasonable area.

So, leakage from displacement of grazing activities should be calculated. According to the Project Description, the project did not lead to a decrease in cattle and sheep, the production did not reduced, therefore, the market leakage is considered to be 0 tCO₂e.

Leakage from Displacement of Grazing Activities (VMD0040, Version 1.0) is used to calculate the leakage emissions due to grazing displacement, and is applicable under the following conditions:

- The project area is subject to livestock grazing in the baseline scenario.

According to the PRA Report and Project Design Report, local herders graze in the project area under the baseline scenario. Therefore, Leakage from Displacement of Grazing Activities (VMD0040, Version 1.0) is applicable for the proposed project.

1) Assess whether Grazing Displacement Takes Place

According to the PRA Report and Project Design Report, local herders graze in the project area under the baseline scenario, but grazing was forbidden during this monitoring period. So, there is likely to be displacement of grazing activity, then proceed to the next step.

2) Survey of Grazing Displacement and Relocation Plans

According to (VMD0040, Version 1.0), a survey must be conducted of all grazing agents whose livestock graze in the project area prior to the project start date. The period covered by this survey must be consistent with the baseline period used to quantify baseline emissions within the project area (ie, covering the five years period prior to the project start date, or if management records for this period are unavailable, at a minimum covering the one year prior to the project start date). This survey must cover a full census or representative sample of project participants and project non-participants whose livestock graze in the project area during the baseline period covered by the survey. Where sample surveys are used, sampling approaches must enable estimation of the sample mean within a 95 percent confidence interval to a precision of 15 percent. For both types

of grazing agent, the survey must quantify the number and type of livestock and the duration of each year that these livestock graze in the project area. The survey must additionally collect data on the number and type of livestock, and duration, that livestock under the control of project participants graze outside the project area during the period covered by the survey. For both types of grazing agent, the survey must also collect information on intended location of grazing after implementation of the project.

For the project, the project proponent conducted a survey of all grazing agents whose livestock grazed in the project area prior to the project start date (05-July-2015 to 27-September-2016). This survey covered a full census of project participants and project non-participants whose livestock graze in the project area during the baseline period (covering the one year prior to the project start date) covered by the survey. In addition, the survey collected data on the number and type of livestock, and duration, that livestock under the control of project participants graze outside the project area during the period covered by the survey.

According to the survey, under the baseline scenario, the project participants stocked 13,837 cattle and 55,231 sheep in the project area, grazing for about 120 days every year and 10 hours every day. And project non-participants would not graze in the project area both under the baseline scenario and the project scenario.

In 2016, the Burqin Forestry and Grassland Bureau measured the grass yield of the grassland around the project area, and calculated the reasonable grazing quantity, designated a grazing area of 270,693 hectares. And the project participants grazed in the designated area under the guidance of the Burqin Forestry and Grassland Bureau and grassland guardians. But the specific land parcels available for use by project participants may change from year to year, based on the actual situation of grassland, such as grass yield.

3) Prepare a Grazing Displacement Management Plan

A grazing displacement management plan was prepared on the basis of the survey of grazing displacement and relocation plans. The grazing displacement management plan recorded planned grazing activities for all livestock that are to be relocated to lands outside the project area and that are under the control of project participants. According to the survey, project non-participants would not graze in the project area both under the baseline scenario and the project scenario. The grazing displacement management plan recorded for the years after the project start date, the following data:

- The identity of each grazing agent;
- The number and type of livestock to be relocated;
- The number of days each year which they will graze outside the project area (measured in days, or the whole year if appropriate);
- The location and area in hectares of each land parcel to which grazing will be relocated;
- A unique identifier code (where applicable) for each land parcel to which grazing will be relocated;

- The type of land (grassland, forest land, cropland) of each parcel to which grazing will be relocated, and where appropriate note the status (eg, degradation level) of the lands to which grazing will be relocated; and
- Any planned actions to avoid loss of above- or belowground carbon pools on the land parcels to which grazing will be relocated.

Since grazing plans for project non-participants are not available, the future location of grazing was listed as unidentified grassland. Therefore, the location and area in hectares of each land parcel to which grazing will be relocated and the unique identifier code (where applicable) for each land parcel to which grazing will be relocated has not been recorded.

In July and August each year, the Burqin Forestry and Grassland Bureau measured the grass yield of the grassland around the project area, then calculated the reasonable grazing quantity. And the project participants grazed in the designated area under the guidance of the Burqin Forestry and Grassland Bureau and grassland guardians. But the specific land parcels available for use by project participants may change from year to year, based on the actual situation of grassland. And the grazing displacement management plan record the number and type of livestock to be relocated and the type of land (grassland, forest land, cropland) to which grazing is planned to be displaced. In this case, the type of land to which grazing may be displaced must be categorized as unidentified grassland.

According to the grazing displacement survey conducted in 2017-2021, all grazing agents were interviewed, and collected the information of the number and type of livestock to be relocated. As mentioned in Section 2.5 of PD, due to the prohibition of grazing, project participants would receive subsidies. Therefore, the project proponent and the Burqin Forestry and Grassland Bureau will visit all project participants to investigate the project situation and issue subsidies based on this.

4) Determine whether Lands to which Livestock are Displaced are Identified or Unidentified

The grazing displacement management plan did not record the geographic location to which livestock under the control of project participants were relocated. Besides, the process of identifying the specific land areas to which livestock was relocated would be not feasible at reasonable cost (because project non-participants are scattered over wide distances and not contactable at reasonable cost). So, the land to which livestock grazing activity is displaced should be categorized as unidentified.

For unidentified land, assessment procedures mandate the use of conservative assumptions that do not underestimate the effects of grazing displacement on carbon stocks in unidentified lands, and in the case of land that remains unidentified after monitoring begins, conservative assumptions that do not underestimate leakage emissions caused by grazing displacement must also be used.

5) Define the Type of Land to which Grazing will be Relocated

The total land area of Burqin County is 16.195 million mu³⁵, and the gross natural grassland area is 10.151 million mu, accounting for 62.67% of the total land area of the county. In 2016, Burqin Forestry and Grassland Bureau designated a grazing area of 270,693 hectares, all of the specific land parcels are grassland. And the project participants grazed in the designated area under the guidance of Burqin Forestry and Grassland Bureau and grassland guardians. But the specific land parcels available for use by project participants may change from year to year, based on the actual situation of grassland, such as grass yield. So, the unidentified lands should be categorized as unidentified grassland.

Step 1: Estimate the area of grassland needed to sustain the population of livestock relocated to unidentified grasslands

The total area of unidentified grassland required to sustain the population of livestock relocated to unidentified grassland is to be calculated as:

$$Area_{GUI,t} = \frac{DMI_{GUI,t}}{ANPP_{GUI,REF}} \quad (31)$$

$$DMI_{GUI,t} = \sum_{l=1}^L \left(\frac{DMI_{day,l} \times P_{GUI,l,t}}{1000} \right) \times Days_{GUI,l,t} \quad (32)$$

Where:

$Area_{GUI,t}$	=	Area required to sustain the population of livestock displaced to unidentified grasslands in year t (ha)
$DMI_{GUI,t}$	=	Dry matter intake required to sustain the total number of livestock of all types l relocated to unidentified grasslands in year t (t dm)
$ANPP_{GUI,REF}$	=	Aboveground net primary productivity in the reference region that is the likely location of unidentified grasslands to which livestock are relocated (t dm/ha)
$DMI_{day,l}$	=	Daily dry matter intake requirement of each type of livestock l (kg dm/(head*day))
$P_{GUI,l,t}$	=	Population of livestock of each type relocated to unidentified grasslands in year t (head)
$Days_{GUI,l,t}$	=	Days that the population of each type of relocated livestock of type l graze in unidentified grassland in year t (days)

Step 2: Assess the risk of soil carbon loss due to overgrazing in unidentified grasslands

The calculation result of step 1 shows that, the area of unidentified grassland required to sustain the population of livestock relocated to unidentified grassland from 2017 to 2021 is 6,184, 7,550, 8,193, 8,193 and 8,193 ha respectively (See ER sheet for detail). So, the total area of unidentified

³⁵ 1 ha=15 mu

grassland required to sustain the population of livestock relocated to unidentified grassland is at least 8,193 ha. And according to the PRA Report, the available grassland area is 676,733 ha in Burqin County, which is much higher than the displacement area.

Due to the available grassland area is 82 times of the relocated unidentified grasslands area, so, the grazing displacement will not lead to consumption exceeding 50 percent of available biomass, and leakage due to soil carbon loss does not need to be accounted for.

Step 3: Estimate emissions from livestock displacement to unidentified grasslands

Step 3a: Estimate methane emissions from enteric fermentation by livestock displaced to unidentified grasslands

Calculate the leakage emissions due to enteric fermentation by livestock displaced to all unidentified grasslands outside the project area using:

$$LE_{GUI,CH_4EF,t} = \frac{\sum_{l=1}^L P_{GUI,l,t} \times EF_l \times Days_{GUI,l,t} \times GWP_{CH_4}}{1000 \times 365} \quad (33)$$

Where:

$LE_{GUI,CH_4EF,t}$	=	Leakage emissions in year t from enteric fermentation by livestock displaced to unidentified grasslands (t CO ₂ e)
$P_{GUI,l,t}$	=	Population of grazing livestock type l in year t displaced outside the project area to unidentified grasslands (head)
$Days_{GUI,l,t}$	=	Days in year t that livestock of each type l grazes on unidentified grassland (days)
GWP_{CH_4}	=	Global-warming potential of CH ₄ (t CO ₂ e/t CH ₄)
EF_l	=	Enteric CH ₄ emission factor per head of livestock type l per year (kg CH ₄ /(ha*year))
l	=	Index of grazing livestock types

Step 3b: Estimate GHG emissions from manure management

Calculate the N₂O and CH₄ leakage emissions due to manure deposition on grassland caused by relocating the livestock to unidentified grasslands outside the project area using:

$$LE_{GUI,MD,t} = LE_{GUI,N_2O,MD,t} + LE_{GUI,CH_4,MD,t} \quad (34)$$

Where:

$LE_{GUI,MD,t}$	=	Leakage emissions from manure and urine deposited on unidentified grassland in year t (t CO ₂ e)
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$LE_{GUI,N_2O_{MD},t}$ = Leakage N₂O emissions from manure and urine deposited on unidentified grasslands in year t (t CO₂e)

$LE_{GUI,CH_4_{MD},t}$ = Leakage CH₄ emissions from manure and urine deposited on unidentified grasslands in year t (t CO₂e)

$LE_{GUI,N_2O_{MD},t}$ is calculated as the sum of direct N₂O emissions and indirect N₂O emissions using:

$$LE_{GUI,N_2O_{MD},t} = GWP_{N_2O} \times (LE_{GUI_D,N_2O_{MD},t} + LE_{GUI_{ID},N_2O_{MD},t}) \quad (35)$$

Where:

$LE_{GUI,N_2O_{MD},t}$ = Leakage N₂O emission from manure and urine deposited on unidentified grasslands in year t (t CO₂e)

GWP_{N_2O} = Global-warming potential of N₂O (t CO₂e/t N₂O)

$LE_{GUI_D,N_2O_{MD},t}$ = Leakage direct N₂O emissions from manure and urine deposited on unidentified grasslands in year t (t N₂O)

$LE_{GUI_{ID},N_2O_{MD},t}$ = Leakage indirect N₂O emissions from manure and urine deposited on unidentified grasslands in year t (t N₂O)

Leakage direct N₂O emission from manure and urine deposited on unidentified grasslands ($LE_{GUI_D,N_2O_{MD},t}$) is calculated using:

$$LE_{GUI_D,N_2O_{MD},t} = \sum_{l1=1}^{L1} F_{MD,GUI,t,l1} \times EF_{3,PRP,CP} \times \frac{44}{28} \quad (36)$$

And/or

$$LE_{GUI_D,N_2O_{MD},t} = \sum_{l2=1}^{L2} F_{MD,GUI,t,l2} \times EF_{3,PRP,SO} \times \frac{44}{28} \quad (37)$$

Where:

$LE_{GUI_D,N_2O_{MD},t}$ = Leakage direct N₂O emissions from manure and urine deposited on unidentified grasslands in year t (t N₂O)

$F_{MD,GUI,t,l1}$ = Annual amount of nitrogen in cattle, poultry and pig manure and urine deposited on unidentified grasslands in year t, adjusted for volatilization as NH₃ and NO_x (t N)

$F_{MD,GUI,t,l2}$ = Annual amount of nitrogen in sheep and other animal manure and urine deposited on unidentified grasslands in year t, adjusted for volatilization as NH₃ and NO_x (t N)

$EF_{3,PRP,CP}$ = N₂O emission factor for cattle (dairy, non-dairy and buffalo), poultry and pigs manure and urine deposited on grasslands (kg N₂O-N/kg N input)

$EF_{3,PRP,SO}$ = N₂O emission factor for sheep and other animals manure and urine deposited on grasslands (kg N₂O-N/kg N input)

$$F_{MD,GUI,t,l} = \frac{P_{GUI,l,t} \times W_l \times Nex_l \times H_{GUI,l,t} \times Days_{GUI,l,t} \times (1 - Frac_{GAS,MD,l})}{1000_a \times 24 \times 1000_b} \quad (38)$$

Where:

$F_{MD,GUI,t,l}$ = Annual amount of nitrogen in manure and urine deposited on unidentified grasslands by livestock type l, adjusted for volatilization as NH₃ and NO_x (t N)

$P_{GUI,l,t}$ = Population of grazing livestock type l in year t displaced outside the project area to unidentified grasslands (head)

W_l = Average weight of livestock l displaced to unidentified grasslands (kg/head)

Nex_l = Nitrogen excretion from livestock type l (kg N/(t animal mass*day))

1000_a = Conversion factor for nitrogen excretion (kg/t livestock mass) to nitrogen excretion (kg/kg livestock mass)

$H_{GUI,l,t}$ = Average grazing hours per day during grazing season for livestock of each type l displaced to unidentified grassland in year t (hours)

24 = Conversion day to hour

$Days_{GUI,l,t}$ = Grazing days in year t for livestock type l displaced to unidentified grasslands (days)

1000_b = Conversion factor for kg to t

$Frac_{GAS,MD,l}$ = Fraction of volatilization from manure and urine deposited by grazing animals as NH₃ and NO_x (kg N volatilized/kg of N deposited)

t = Year

l = Index of grazing livestock types

CH₄ emission from manure management due to displacement of livestock to unidentified grasslands is calculated using:

$$LE_{GUI,CH_4MD,t} = \frac{GWP_{CH_4} \times \sum_{l=1}^L EF_{l,m} \times P_{GUI,l,t} \times H_{GUI,l,t} \times Days_{GUI,l,t}}{24 \times 365 \times 1000} \quad (39)$$

Where:

$LE_{GUI,CH_4MD,t}$	=	Leakage CH ₄ emissions from manure and urine deposited on unidentified grasslands in year t (t CO ₂ e)
GWP_{CH_4}	=	Global-warming potential of CH ₄ (t CO ₂ e/t CH ₄)
$EF_{l,m}$	=	CH ₄ emission factor per head of livestock type l in manure management system m (kg CH ₄ /(head*yr))
$P_{GUI,l,t}$	=	Population of livestock type l in year t displaced to unidentified grasslands (head)
$H_{GUI,l,t}$	=	Average grazing hours per day during grazing season for livestock of each type l displaced to unidentified grassland in year t (hours)
$Days_{GUI,l,t}$	=	Grazing days in year t for livestock type l displaced to unidentified grasslands (days)
1000	=	Conversion factor for kg to t

Step 4: Calculate total leakage emissions from relocation of grazing to unidentified grasslands

Total leakage emissions from relocation of grazing to unidentified grasslands must be calculated as:

$$LE_{GUI,t} = LE_{GUI,CH_4EF,t} + LE_{GUIMD,t} \quad (40)$$

Where:

$LE_{GUI,t}$	=	Leakage due to displacement of livestock to unidentified grasslands in year t (t CO ₂ e)
$LE_{GUI,CH_4EF,t}$	=	Leakage due to enteric fermentation by livestock displaced to unidentified grasslands in year t (t CO ₂ e)
$LE_{GUIMD,t}$	=	Leakage due to N ₂ O and CH ₄ emissions in manure and urine deposited on grasslands by livestock displaced to unidentified grasslands in year t (t CO ₂ e)

As described above, the grazing displacement will not lead to consumption exceeding 50 percent of available biomass, and leakage due to soil carbon loss does not need to be accounted for.

$$LE_t = LE_{GD,t} = LE_{GUI,CH_4EF,t} + LE_{GUIMD,t}$$

$$= \frac{\sum_{l=1}^L P_{GUI,l,t} \times EF_l \times Days_{GUI,l,t} \times GWP_{CH_4}}{1000 \times 365} +$$

$$GWP_{N2O} \times \left(\frac{P_{GUI,l1,t} \times W_{l1} \times Nex_{l1} \times H_{GUI,l1,t} \times Days_{GUI,l1,t} \times (1 - Frac_{GAS,MD,l1})}{1000_a \times 24 \times 1000_b} \times EF_{3,PRP,CPP} \times \frac{44}{28} \right. \\ \left. + \frac{P_{GUI,l2,t} \times W_{l2} \times Nex_{l2} \times H_{GUI,l2,t} \times Days_{GUI,l2,t} \times (1 - Frac_{GAS,MD,l2})}{1000_a \times 24 \times 1000_b} \times EF_{3,PRP,SO} \right. \\ \left. \times \frac{44}{28} \right) + \frac{GWP_{CH4} \times \sum_{l=1}^L EF_{l,m} \times P_{GUI,l,t} \times H_{GUI,l,t} \times Days_{GUI,l,t}}{24 \times 365 \times 1000}$$

During this monitoring period, the investigate parameters are summarized in the following table:

Table 3-8 The results of investigation

Parameter	2017	2018	2019	2020	2021	Unit
$P_{GUI,cattle,t}$	10,441	12,690	13,837	13,837	13837	Head
$P_{GUI,sheep,t}$	41,702	51,140	55,231	55,231	55231	Head
$Days_{GUI,cattle,t}$	80	80	80	80	80	Days
$Days_{GUI,sheep,t}$	80	80	80	80	80	Days
$H_{GUI,cattle,t}$	10	10	10	10	10	Hours
$H_{GUI,sheep,t}$	10	10	10	10	10	Hours
W_{cattle}	300	300	300	300	300	kg
W_{sheep}	45	45	45	45	45	kg

The total leakage emissions during the monitoring period are summarized in the following table, please refer to ER spreadsheet for detailed calculation.

Table 3-9 The Estimation of leakage emissions from relocation of grazing

Crediting period	$LE_{GUI,CH4_{EF,t}}$	$LE_{N2OMD,t}$	$LE_{CH4MD,t}$	$LE_{GUI,t}$
Year	tCO ₂ e	tCO ₂ e	tCO ₂ e	tCO ₂ e
	A	B	C	D=A+B+C
26-June-2017-31-December-2017	4,868	67	80	5,015
01-January-2018-31-December-2018	5,930	81	98	6,109
01-January-2019-31-December-2019	6,450	88	106	6,644
01-January-2020-31-December-2020	6,450	88	106	6,644
01-January-2021-31-December-2021	6,450	88	106	6,644
Total	30,148	412	496	31,056

3.2.4 Net GHG Emission Reductions and Removals

According to the methodology (VM0026/Version 1.1), the amount of emission reductions that can be issued as credits during the monitoring period should calculated using the follow equations:

$$ER_t = BE_b - PE_t - LE_t \quad (40)$$

$$VCU_t = ER_t - BC_t \quad (41)$$

$$BC_t = RR_t * (PRWP_t + PR_t - PRWP_b) \quad (42)$$

Where:

ER_t	=	Emission reductions in year t (t CO ₂ e)
BE_b	=	Baseline emissions and removals in year b (t CO ₂ e)
PE_t	=	Project emissions and removals in year t (t CO ₂ e)
LE_t	=	Leakage emissions in year t (t CO ₂ e)
VCU_t	=	Emission reductions eligible to be issued as VCUs in year t (t CO ₂ e)
BC_t	=	AFOLU buffer credits in year tm (t CO ₂ e)
RR_t	=	Non-permanence risk rating in year t (percent)
$PRWP_t$	=	Project average net change in carbon stocks of existing woody biomass for species j, in year t (t CO ₂ e)
PR_t	=	Project removals due to changes in SOC in year t (t CO ₂ e)
$PRWP_b$	=	Baseline removals from existing woody perennials in baseline year b (t CO ₂ e)

According to the Non-permanence Risk Report of the project, the non-permanence risk rating is determined as 10%. There is no woody biomass in this project, so the Project average net change in carbon stocks of existing woody biomass $PRWP_t$ and Baseline removals from existing woody perennials $PRWP_b$ are considered to be 0 tCO₂e.

So, during this monitoring period, BC_t is 74,181 tCO₂e, ER_t is 752,472 tCO₂e, and VCU_t is 678,291 tCO₂e. please refer to ER spreadsheet for detailed calculation.

Year	Baseline emissions (tCO ₂ e)	Project emissions ³⁶ (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Project removals (t CO ₂ e)	Net GHG emission removals (tCO ₂ e)	Buffer (tCO ₂ e)	Net VCUs (tCO ₂ e)
	A	B	C	D	E=A-B-C+D	F=D*10%	G=E-F
26-June-2017-31-December-2017	5,160	2,550	5,015	49,178	46,773	4,918	41,855
01-January-2018-31-	9,966	700	6,109	122,724	125,881	12,273	113,608

³⁶ Project activities emissions of N₂O, CH₄ and fossil-derived CO₂, excluding soil carbon sinks.

December-2018							
01-January-2019-31-December-2019	9,966	77	6,644	175,681	178,926	17,568	161,358
01-January-2020-31-December-2020	9,994	0	6,644	197,380	200,730	19,738	180,992
01-January-2021-31-December-2021	9,966	0	6,644	196,840	200,162	19,684	180,478
Total	45,052	3,327	31,056	741,803	752,472	74,181	678,291

3.3 Optional Criterion: Climate Change Adaptation Benefits

Not applicable.

3.3.1 Activities and/or processes implemented for Adaptation (GL1.3)

Not applicable.

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CM2.1)

To assess the actual changes in well-being resulting from the project activities for community groups during this monitoring period, the project owner established a monitoring team to conduct interviews for local communities affected by the project, all the affected groups as identified in the PD have been distributed with the questionnaires accordingly. Please refer to Section 4.3.1 for detailed results of the questionnaires.

The Community impacts for each group is summarized as follow:

Community Group	Local residents Grassland guardians
Impact(s)	Create 4,875 job opportunities (467 permanent jobs and 4,408 temporary jobs); Enhance capabilities of local residents and improve their household income and living level.

Type of Benefit/Cost/Risk	Predicted direct benefits
Change in Well-being	During the project implementation, about 4,875 local villagers participated in grass seeding and fences building, and about 467 local herders were employed as guardians. Over 57% of the employed local residents are Kazakhs and 40% are women. The job opportunities provided by the project have increased local household income. The local Forestry and Grassland Bureau regularly provides local residents with training on fences building, grassland fire prevention and sustainable management of grassland. 4,875 local residents participated in the training, and their abilities were also improved.

Community Group	Local women
Impact(s)	Create 4,875 job opportunities, which is equally offered to local women and men; Empower women and build community capacity in gender equity.
Type of Benefit/Cost/Risk	Predicted direct benefits
Change in Well-being	Without this project, local women mainly did housework at home and had no income. During the project implementation, 4,875 local residents participated in the project, about 40% of the employed local residents were women. This would contribute to empower women and build community capacity in gender and sustainable grassland management. By being trained with the sustainable grassland management skills and participating the community activities together with other employees, women may gain more happiness compares to doing housework only, thus positive welfare outcomes for local households are more likely to be expected.

Community Group	Local Kazakh
Impact(s)	2,870 of the local Kazakh have been offered job positions and training opportunities for sustainable and scientific grazing skills, and the potential improvement of grazing productivity after grassland restoration would help to promote their traditional livelihood.
Type of Benefit/Cost/Risk	Predicted direct benefits

Change in Well-being	The traditional livelihood of local Kazakh is herding and grazing which has been threatened by the degradation of the grassland ecosystem. The implementation of the project could restore the ecosystem of the traditional grassland for local Kazakh which is beneficial to conservation of the traditional culture. Furthermore, local Kazakh have more opportunities to work together and organize more social activities and hence increase the interaction within the community, which can indirectly promote the protection and diffusion of Kazakh culture.
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Community Group	Local herders
Impact(s)	Enhance capabilities of local herders and increase their household income; Improve grazing productivity.
Type of Benefit/Cost/Risk	Predicted direct benefits
Change in Well-being	The project would not change the ownership of the project land, but some herders were affected by the project, due to grazing was strictly forbidden in the first five years. However, herders in the project area could receive corresponding subsidies for the prohibition of grazing and according to the stakeholder consultation, all of the local herders were satisfied with this subsidy policy, and the herders could conduct grazing outside of the project area under related guidance of local Forestry and Grassland Bureau. The related leakage emission from displacement of grazing activities has also been taken into account. In addition, after the first five years, controlled grazing will be allowed depending on the growth situation of the forage, and the Burqin Forestry and Grassland Bureau measured the grass yield of the surrounding grasslands in the project area, and guides herders to graze in a reasonable area. Therefore, the project would not lead to reductions in the production of grazing, instead, the long-term production is expected to be increased significantly due to the restoration of the grassland.

Community Group	Village collectives
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Impact(s)	Restore grassland productivity of village collectives; Provides more opportunities for village collectives from Kazakh nationality to transport their traditional culture in a positive way
Type of Benefit/Cost/Risk	Predicted direct benefits
Change in Well-being	The ownership of grassland belongs to the collectives. The project restored the degraded grassland and improved the grassland productivity. The project organizes special village collectives' cultural activities and increase the connection between local Kazakh nationality herders and other members which could indirectly promote the diffusion of traditional culture

Community Group	Burqin Forestry and Grassland Bureau Local government
Impact(s)	Create local job opportunities, improve the local ecological environment.
Type of Benefit/Cost/Risk	Predicted indirect benefits
Change in Well-being	Burqin Forestry and Grassland Bureau is responsible for the supervision and management of local grassland and ecological construction, the project implementation could help them to improve local environmental situations. Restore the degraded grassland and alleviated the grassland ecological crisis. Create 4,875 job opportunities (467 permanent jobs and 4,408 temporary jobs) which solve employment issues of local government

The community impacts have been monitored through interviews and questionnaires from 04-September-2021 to 30-September-2021, and the monitoring results showed there were net community benefits achieved from the implementation of the project just as anticipated.

4.1.2 Negative Community Impact Mitigation (CM2.2)

According to the Chinese Grassland Law, the local government should carry out the construction of grassland fire prevention facilities, and once a fire disaster occurs, the local government should be responsible for relevant rescuing immediately. And the project proponent is experienced in local natural risk control and has established a Grassland Management Manual for the project which includes specific instruction in fire prevention.

As described in section 2.3.16, negative well-being impacts on community groups including fires, emergencies, and dangerous driving, this can be alleviated through technical and awareness training to local herders/communities, strengthening patrolling and monitoring. During this monitoring period, the project proponent and Burqin Forestry and Grassland Bureau provided relevant skill training for local herders, to strengthen the safety awareness of herders. Also, local

herders the local forestry and grassland bureau was equipped with fire protection facilities, such as fire protection clothing, fire trucks, and fire water guns, etc., in addition, the local herders conducted daily patrols on the grasslands, which could prevent grassland fires. Furthermore, there is a first aid kit on the grassland patrol vehicle to prevent emergencies.

During the implementation of the project, grazing was strictly forbidden in the first five years, and then controlled grazing will be allowed depending on the growth situation of the forage. Instead, Burqin Forestry and Grassland Bureau measures the grass yield of the surrounding grasslands in the project area, and guides herders to graze in a reasonable area, so the project will not reduce the grazing productivity. In addition, the local government issued subsidies to the herders in the project area who implemented the prohibition of grazing. The subsidy standards for sub vary from county to county, ranging from 4.1 RMB/Mu to 10.4 RMB/Mu. According to the Subsidy payment record, totally 4,875 herders received government subsidies during this monitoring period and they were all satisfied with the subsidy policy.

Therefore, all the negative well-being impacts have been mitigated.

4.1.3 Net Positive Community Well-Being (CM2.3, GL1.4)

As summarized in Section 4.1.1, the expected community impacts are all benefit, no potential cost or risk, therefore the net well-being impacts of the project are positive for all identified community groups compared with their anticipated well-being conditions under the without-project land use scenario.

Improve grazing methods and increase household income

The project will offer some short-term and long-term job opportunities for local herders which could increase the income of the households. Also, sustainable grazing is conducive to the protection of grassland and could increase the total production of herding and maintain a long-term benefit for local herders. In addition, after the implementation of the project, local herders have more opportunities to work together, which will give them the motivation to organize more social activities and hence increase the interaction within the community. All these will significantly improve the well-being of local communities.

Benefit to conservation of traditional Kazakh culture

The project is located in Burqin County where the local Kazakh comprise a large proportion (57.45%) of the total population. The traditional livelihood of local Kazakh is herding and grazing which has been threatened by the degradation of the grassland ecosystem. The implementation of the project will restore the ecosystem of the traditional grassland for local Kazakh which is beneficial to conservation of the traditional culture. In addition, the job and training opportunities provided by the project could bring more opportunities for local Kazakh to work together and organize more social activities and hence increase the interaction within the community.

Improve gender equity

There is evidence that when women receive income, positive welfare outcomes are more likely: gender equity can thus be key to wider poverty and equity impacts. Generally, women are more

involved in subsistence activities like planting, protecting, or caring for seedlings, as well as in home orchards and public land. The project provided them job opportunities, which is equally offered to local women and men. In fact, more than 40% of the local residents directly involved in the project are women. which makes women gain more professional identity and higher happiness.

Promote technical capability of local communities

There is a workbook provided for each employee which includes technical advice for their work, and all the workers were offered the technical training immediately once they were hired. Such skills and knowledge include are useful for grassland management, such as fire prevention and forage supplementary sowing technology. These technical manuals were distributed to each household in the local villages, including the villagers who haven't participated in the project.

Besides the training on technical skills of grass planting, local workers were trained on relevant skills for their future livelihood, such as sustainable grassland management. These skills will benefit the long-term development of the local communities who participate in the project.

4.1.4 Protection of High Conservation Values (CM2.4)

As No HCVs was identified related to community well-being in the project zone thus none of the HCVs related to community well-being will be negatively affected by the project.

4.2 Other Stakeholder Impacts

4.2.1 Mitigation of Negative Impacts on Other Stakeholders (CM3.2)

There are no negative well-being impacts on other stakeholders during this monitoring period.

4.2.2 Net Impacts on Other Stakeholders (CM3.3)

The project provides valued experience of sustainable grassland management and carbon trading to other stakeholder, which in some way could encourage more followers to engage in similar projects for sustainable development. So the project activities are not anticipated to result in net negative impacts on the well-being of other stakeholders.

4.3 Community Impact Monitoring

4.3.1 Community Monitoring Plan (CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

To in-depth track the social-economic changes resulted from the project activities in local communities and households, and understand issues raised and difficulties encountered during the project implementation, as well as their opinions and comments on the project activities, so as to adjust and improve the project activities in a timely manner, a PRA process has been conducted after initial monitoring, as described below.

Procedures:

- a) Establishing PRA team: The team sets up to conduct the PRA process, which consists of social experts, project officers, local government officials and technical staff with various background (grassland, sociology and ecology) from county forest bureau;
- b) Developing SOPs for the field PRA process;
- c) Training: A training workshop has been held for discussing and training of PRA teams in order to ensure all PRA members fully understand the purposes, contents, procedures and specific methods of the PRA field survey;
- d) Preparation: Developing detail PRA field survey plan including responsibility of each member of PRA team; and contacting with relevant project village collectives, towns/townships and local NGOs and informing them PRA plan.
- e) PRA survey: conducting PRA survey following SOPs.

Methods:

- a) Stakeholder meeting: A meeting of stakeholder representatives has held in Forestry and Grass Bureau of Burqin County on 12-September-2021. The general agenda are:
 - (i) Introducing PRA team members and the purpose, procedures, methods and time schedules of the PRA process;
 - (ii) Explaining the way of villagers' participation;
 - (iii) Collecting information regarding the project progress, social-economic and environmental benefits shared from the projects, existing problems/difficulties encountered by local communities during the project implementation, as well as comments and suggestions on improvement of the project.
- b) Semi-structured interviews: This includes representatives interview, famers/herders interview and group interview
 - (i) Interviewing of representatives: including villager leaders, distinguished villagers, elder villagers and head of ethnic minority.
 - (ii) Interviewing of household: Some farmer households have been selected for the interview. The interviewed households shall cover rich household, poor household, new inhabitant household, etc.
 - (iii) Group interview: Villagers are grouped based on gender, age classes or land use types. The group interviews were conducted together with village meeting.
- c) Questionnaire: Questionnaire forms have been developed and distributed among different stakeholders, including farmer households, village committees, herders, township governments and forestry and grassland bureau.

d) Evidence document collection: Collect evidence document from local forestry and grassland bureaus, herders and other stakeholders, such as contracts, payment certificates and training records, etc..

To assess the actual changes in well-being resulting from the project activities for community groups during this monitoring period, the project owner established a monitoring team to conduct interviews and questionnaires for local communities affected by the project.

The operation and management structure of the monitoring team has been shown in Figure 3-1 in Section 3.1.3 above, and the responsibilities of each role in the team structure are:

- Monitoring manager has the overall management responsibility, especially supervising the implementation of the monitoring plan, and assigning each member of the monitoring team their individual responsibility during the monitoring;
- Monitoring staff conducts the interview and questionnaires for communities particularly, and collects all the original evidences and data and make relevant records;
- Auditing staff performs internal verification of the measurement, reviews all the monitoring records and documents, crosschecks evidence and make summary statistics during each verification period.
- Expert group provide advises to monitoring manager to make sure the monitoring activities are in line with relevant requirement, and the expert group also review the monitoring results before each verification, in case any non-conformances founded, expert group will ask the monitoring team to take necessary compensation measures (redo some of the monitoring activities or statistics) until all the non-conformances been corrected.

A Monitoring Manual has been provided to each member of the monitoring team with a specific explanation to make sure they fully understand all the monitoring process and issues concerned.

From 04-September-2021 to 30-September-2021, the monitoring team has distributed 60 questionnaires for the representatives of local residents which is within the project zone and collect all the relevant information by simple interview with the representatives in person when distributing the questionnaires. Totally 60 of the questionnaires were collected with valid answers. The representatives covered different villages and different community groups, such as local herders, local residents, grassland guardians, and especially local women.

The following key variables has been monitored during this monitoring of the project:

Variable	Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities
Monitoring methods to be applied	Training records Questionnaire and interview
Frequency of monitoring/recording	Before every verification event

Affected community groups	Local residents, local herders, Local women, grassland guardians
Purpose of monitoring	Evaluate the technical improvement resulting from the project
Results of monitoring	During this monitoring period, the project proponent and the Burqin Forestry and Grassland Bureau provided training on fences building, fire prevention and sustainable grassland management for 4,875 local residents in 2017-2019. 90% of the representatives thought there was an improvement of their capability and technical skills
Change in well-being	Improve technical skills of grassland sustainable management

Variable	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities
Monitoring methods to be applied	Training records Questionnaire and interview
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local women
Purpose of monitoring	Evaluate the technical improvement resulting from the project
Results of monitoring	During this monitoring period, the project proponent and the Burqin Forestry and Grassland Bureau provided training on fences building, fire prevention and sustainable grassland management for 2,014 local women in 2017-2021. 90% of the representatives thought there was an improvement of their capability and technical skills
Change in well-being	Improve technical skills of grassland sustainable management

Variable	Total number of people expected to be employed in project activities, expressed as number of full-time employees
Monitoring methods to be applied	Working contracts and payment records
Frequency of monitoring/recording	Before every verification event

Affected community groups	Local women, local herders, Local residents, grassland guardians
Purpose of monitoring	Evaluate the community benefit resulting from the project
Results of monitoring	According to the payment records, the working hours of local resident was 1,526,735 hours per year during this monitoring period, and the legal working hours is 2,000 hours per year according to Labour Law of China. Therefore, total number of people employed in the project expressed as number of full-time employees is 763 ($1,526,735/2,000 = 763$).
Change in well-being	Increase living level

Variable	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees
Monitoring methods to be applied	Working contracts and payment records
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local women
Purpose of monitoring	Evaluate the community benefit resulting from the project
Results of monitoring	Total number of people employed in the project expressed as number of full-time employees is 763, and nearly 45% of them are women. Therefore, the number of women employed in the project expressed as number of full-time employees is 340.
Change in well-being	Increase living level

Variable	Total number of people expected to have improved livelihoods or income generated as a result of project activities
Monitoring methods to be applied	Working contracts and payment records Questionnaire and interview Training records
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local women, local herders, Local residents, grassland guardians

Purpose of monitoring	Evaluate the change of livelihoods due to the implementation of the project
Results of monitoring	The project provided 4,875 local residents with training and job opportunities, improved their abilities, also the project guided herders to graze reasonably, which improved grazing productivity and increased their household incomes, and improved their livelihoods.
Change in well-being	Improved their abilities and household income

Variable	Number of women expected to have improved livelihoods or income generated as a result of project activities
Monitoring methods to be applied	Working contracts and payment records Questionnaire and interview Training records
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local women
Purpose of monitoring	Evaluate the change of livelihoods due to the implementation of the project
Results of monitoring	The project provided 2,014 local women with training and job opportunities, improved their abilities, also the project guided herders to graze reasonably, which improved grazing productivity and increased their household incomes, and improved their livelihoods.
Change in well-being	Improved their abilities and household income

Variable	Total number of community members whose well-being is expected to improve as a result of project activities
Monitoring methods to be applied	Working contracts and payment records Questionnaire and interview Training records
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local women, local herders, Local residents, grassland guardians, Village collectives

Purpose of monitoring	Evaluate the change of well-being due to the implementation of the project
Results of monitoring	The project provided 4,875 local residents with training and job opportunities and improve local ecological environment.
Change in well-being	Increase job and training opportunities and improve local ecological environment

Variable	Number of women whose well-being is expected to improve as a result of project activities
Monitoring methods to be applied	Working contracts and payment records Questionnaire and interview Training records
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local women, Village collectives
Purpose of monitoring	Evaluate the change of well-being due to the implementation of the project
Results of monitoring	The project provided 2,014 local women with training and job opportunities and improve local ecological environment.
Change in well-being	Increase job and train opportunities and improve local ecological environment

Variable	Area of degraded grassland restored
Monitoring methods to be applied	Project records
Frequency of monitoring/recording	Before every verification event
Affected community groups	Burqin Forestry and Grassland Bureau Village collectives Local government
Purpose of monitoring	Evaluate the environment improvement resulting from the project
Results of monitoring	During this monitoring period, totally 65,000.00 ha of degraded grassland in Burqin County were protected by building fences and planting with native grass species, the local ecological environment was improved.

Change in well-being	Improve local ecological environment of grassland by reducing the area of degraded grassland.
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Variable	Number of Kazakh benefiting from project activities
monitoring methods to be applied	Working contracts and payment records Questionnaire and interview
Frequency of monitoring/recording	Before every verification event
Affected community groups	Local Kazakh
Purpose of monitoring	Evaluate the conservation and diffusion of Kazakh cultural resulting from the project, such as organizing special community cultural activities.
Results of monitoring	During the project implementation, about 2,780 local Kazakhs participated in grass seeding and fences building, and about 270 local herders were employed as guardians. Furthermore, the Kazakhs had more opportunities to work together and organize more social activities and hence increased the interaction within the community, which could indirectly promote the protection and diffusion of Kazakh culture.
Change in well-being	Benefit to conservation of local traditional and culture.

4.3.2 Monitoring Plan Dissemination (CM4.3)

The community monitoring plan and results have been published on VCS and CCB website which can be easily download by stakeholders. Hard copies of the community monitoring plan have been distributed among local stakeholders by project proponent and grassland guardians. At the same time, public notice boards have been used to publicize information regarding how to access to the community monitoring plan through internet. Technical staff from project proponent have also explained the monitoring plan to local herders. Also, a contact person with phone number was published in case any stakeholders want to directly contact the project proponent and raise opinions.

For each verification, the monitoring team will summarize all the comments received from stakeholders and corresponding responses regarding the community monitoring plan and results, which will be published on VCS and CCB website along with the monitoring report for each monitoring period.

During this monitoring period, no comments on the community monitoring plan and results received yet.

4.4 Optional Criterion: Exceptional Community Benefits

Not applicable.

4.4.1 Short-term and Long-term Community Benefits (GL2.2)

Not applicable.

4.4.2 Marginalized and/or Vulnerable Community Groups (GL2.4)

Not applicable.

4.4.3 Net Impacts on Women (GL2.5)

Not applicable.

4.4.4 Benefit Sharing Mechanisms (GL2.6)

Not applicable.

4.4.5 Governance and Implementation Structures (GL2.8)

Not applicable.

4.4.6 Smallholders/Community Members Capacity Development (GL2.9)

Not applicable.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (B2.1)

Change in Biodiversity	Grassland coverage of the project zone
Monitored Change	Actual direct positive change, the coverage was increased
Justification of Change	For the project zone, seeding grass on the degraded grassland has significantly increased the coverage of grassland, which could benefit the local environment in a long time by improving the condition of local micro climate.

Change in Biodiversity	Number of grass species in the project area
Monitored Change	Actual direct positive change, the species were increased
Justification of Change	Four native grass species (<i>Elymus nutans</i> , <i>Agropyron cristatum</i> , <i>Festuca rubra</i> and <i>Artemisia sphaerocephala</i>) have been planted

	in project area which will be maintained under long-term management.
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Change in Biodiversity	Threats to endangered animals
Monitored Change	Predicted indirect positive change, the threat was reduced
Justification of Change	The project prevented the continued degradation of the local grassland ecosystem and increased the natural habitats for the endangered animals, so the threats to endangered animals were reduced as a result of the project activities.

5.1.2 Mitigation Actions (B2.3)

The main measure of the project is rotational grazing and rest grazing through building grassland fences and planted grass seeds on the degraded grassland. Through scientific and sustainable management of grazing, relevant training about technical skills, scientific and effective management plan, alleviate soil desertification and restore grassland vegetation to improve soil carbon storage and local biodiversity. The management team are experienced with sustainable grassland management as mentioned in Section 2.4.2 of PD and has established an integrated management system for implementation of the project, including rodent control, fire prevention and technical training of employees, which will minimize the intensity and periodicity of required interventions. Also, the implementation of the project has improved the ecological environment of the project zone, increased the biodiversity and provided more habitats for threatened species. In addition, all grass species are native species, and no invasive species will be introduced.

Therefore, implementation of this project will not decrease biodiversity of project sites.

5.1.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)

In recent years, due to overgrazing, grassland in project zone has been degraded to varying degrees and even desertification, which has seriously damaged the growth conditions of plants and the habitat on which wild animals depend, resulting in the decline of biodiversity.

According to previous studies, long term overgrazing is the main cause of grassland degradation and desertification in project zone. Grassland overgrazing is mainly due to two reasons: one is the decline of the absolute amount of grassland suitable for grazing, resulting in a significant reduction in the area of grassland available for livestock grazing; Second, the animal husbandry population has increased, the total amount of livestock has increased, and the grazing intensity has increased. Specifically, the adverse effects of overgrazing on grassland ecosystem mainly include three aspects: first, it reduces the overall productivity of grassland by feeding a large number of plants; Second, selective feeding significantly inhibited the growth of high-quality forages, provided space for the invasion of inedible poisonous weeds and weeds, and the community tended to degenerate; Third, the high-intensity and high-density trampling of livestock leads to the increase of soil compactness, the decrease of porosity, and it is difficult to effectively retain water, which is not conducive to root growth and development. Grassland degradation and destruction lead to the loss of biological habitat and the reduction of animal population.

As mentioned before, without the project, the project area will continue degraded with much threat to local climate and biodiversity condition. And the main object of the project is to restore the degraded grassland ecosystem, by planting with mix species of native grass and building fences in order to strengthen the protection and improvement of the grassland and to prevent excessive cultivation, grazing or human destruction. Adopting sustainable grassland management methods, such as rotational grazing in different pastoral areas, limits the time and number of grazing in the project area to protect the natural grassland resources, curb the deterioration of the ecological environment of the natural grassland, so as to improve the growth ability and community structure of the grassland in the project area and provide a better habitat environment for the wildlife in the project zone, therefore the net with-project change of biodiversity is positive.

First, there are 4 native species of grass planted in this project, including *Elymus nutans*, *Agropyron cristatum*, *Festuca rubra* and *Artemisia sphaerocephala*. The mix planting of the species will have more positive impacts on biodiversity according to relevant research.

Second, through sustainable grassland management, including rodent control, grassland fire prevention and reasonable grazing guidance, the degraded grassland ecosystem is gradually restored. This will make sure the project can bring net biodiversity benefit compares to the with-out project scenario.

Third, the implementation of the project can improve grassland productivity and increase the coverage which is beneficial of water conservation, reduce drought and flood risk, promote soil nutrient cycle, improve local micro-climate and other ecological environment. Therefore, the population of animals will increase due to the restoration of the habitat.

According to the Biodiversity Baseline Survey Report, in the project zone, there are 51 animal species, belonging to 13 orders and 26 families. Among them, there are 15 species of mammals, 36 species of birds, and 3 species of national level I protected species, 11 species of national level II protected species in the project zone. Furthermore, there are 3 endangered species (*Gulo gulo*, *Cervus canadensis*, *Tetrao urogallus*) and 1 critically endangered species (*Alces alces*) are listed in the IUCN Red List.

Table 5-1 Endangered and critically endangered species in the project zone

Species	Red List of IUCN	National Protection level
(1) <i>Gulo gulo</i>	EN	I
(2) <i>Cervus canadensis</i>	EN	II
(3) <i>Alces alces</i>	CR	II
(4) <i>Tetrao urogallus</i>	EN	II

5.1.4 High Conservation Values Protected (B2.4)

No HCVs was identified related to biodiversity in the project zone.

5.1.5 Invasive Species (B2.5)

All the grass are native species and no invasive species were introduced into any area affected by the project.

5.1.6 Impacts of Non-native Species (B2.6)

No non-native species were used in the project zone.

5.1.7 GMO Exclusion (B2.7)

No GMOs were used to generate GHG emissions reductions or removals.

5.1.8 Inputs Justification (B2.8)

According to the Project Design Report, there are no chemical fertilizer applied in the project area. In order to alleviate the pressure of grassland forage, artificial feeding grassland is built around the project area, but only farm manure is applied.

Name	Chemical pesticides
Justification of Use	The chemical pesticides are allowed to be used only if there is a serious disease problem erupted in the project area, and the pesticides will be used in accordance with the National Pesticides Policy.
Adverse Effect	During this monitoring period, no serious disease disaster occurred, thus no chemical pesticides were used.

Name	Biological control agents
Justification of Use	Upon routine overseeing, the pest would be treated by biological control (building eagle's nest to Prevent Rodent) according to local Pest Control and Prevention Policy.
Adverse Effect	The biological control agents are natural enemy of pest which are native species and have no adverse effect on local environment and communities. During this monitoring period, eagle's nests were built in the project area for fences building.

5.2 Offsite Biodiversity Impacts

5.2.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Actions (B3.2)

The project activities increased the area of the habitat, and improve the habitats' quality, only positive biodiversity impacts can be identified. Therefore, there are no potential negative offsite impacts on biodiversity.

5.2.2 Net Offsite Biodiversity Benefits (B3.3)

As described above, there are no potential negative offsite impacts on biodiversity, the net effect of the project on biodiversity is positive.

5.3 Biodiversity Impact Monitoring

5.3.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)

As shown in Figure 3-1, the project owner established a monitoring team to conduct biodiversity monitoring. The responsibilities of each role in the team structure are:

- Monitoring manager has the overall management responsibility, especially supervising the implementation of the monitoring plan, and assigning each member of the monitoring team their individual responsibility during the monitoring;
- Monitoring staff conducts the following monitoring process, measures the required parameters of the project as listed in the following table particularly, and collects all the original evidences and data and make relevant records;
- Auditing staff performs internal verification of the measurement, reviews all the monitoring records and documents, crosschecks evidence and calculates emission removals during each verification period.
- Expert group provide advises to monitoring manager to make sure the monitoring activities are in line with relevant requirement, and the expert group also review the monitoring results before each verification, in case any non-conformances founded, expert group will ask the monitoring team to take necessary compensation measures (redo some of the monitoring activities or calculation) until all the non-conformances been corrected.

A Monitoring Manual has been provided to each member of the monitoring team with a specific explanation to make sure they fully understand all the monitoring process and issues concerned.

The main objective of the project is to restore the degraded grassland ecosystem, by planting *Elymus nutans*, *Agropyron cristatum*, *Festuca rubra* and *Artemisia sphaerocephala*. Also, grazing was strictly forbidden in the first five years, and then controlled grazing will be allowed depending on the growth situation of the forage. And based on the analysis in Section 2.1.18, the risks of fire, rodents, pests and overgrazing might threat the aim of the project and need to be intervened.

According to Section 5.4 of SBIA Manual-Part 3, the traditional monitoring protocols often require significant inputs of time, money, and scientific expertise, which are hard to sustain over long periods, while providing few benefits to local communities³⁷. So-called “community-based monitoring” would appear to be a good fit for many carbon projects, its focus on practical issues of sustainability, such monitoring also has the potential to interact in a positive way with the social component of carbon projects. The involvement of local residents in monitoring programs can improve methods and results by incorporating their knowledge of the region’s biodiversity into protocols and can improve data quality by allowing programs to collect data year-round rather than during occasional expert visits. Likewise, local involvement in monitoring can empower communities by helping instill a greater sense of ownership of and responsibility for the biodiversity objectives of a project. Following the guidelines of SBIA Manual, the project chose multiple

³⁷ Gardner, T. 2010. Monitoring forest biodiversity: Improving conservation through ecologically responsible management. Earthscan Ltd., London. 360 pages.

indicators and Pressure, State, and Response (PSR) indicators for the monitoring of biodiversity, while vegetation and animals were both involved to be monitored and the threaten and risk factors such as fire and disease are included, therefore the monitoring indicators should be considered as reasonable, considering the balance of high-quality data, low costs, regular measurements, and community participation.

According to SBIA-Part 3, three types of monitoring indicators will be chosen, including Pressure, State, and Response (PSR). Since natural systems are extremely complex, and even variables that are carefully chosen to reflect the health of a system will sometimes fluctuate for reasons unrelated to the project. In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit. Usually, the abundance of endangered animals can accurately reflect the status of the local ecosystem. The greater the number of endangered animals, indicating the better the ecological environment in the region. And considering the cost efficiency, the indicators that can be monitored with relative ease and reflect local conditions should be chosen. Therefore, the project chooses “reduced threats to endangered animals” and “population status of animals” as indicators to monitor the project’s impact on animals which should be appropriate for a sustainable grassland management project.

Also, the indicator of “population status of animals” and “reduced threats to endangered animals” are used to monitor the quantity and quality of grassland in the project area (a state indicator), together with other indicators (“grassland coverage” and “species of vegetation”), therefore the general population of local biodiversity could be reflected by the overall monitoring results of the multiple indicators.

All the original monitoring results will be recorded by auditing staff and assessed by the expert group to measure the net biodiversity impact and the effectiveness of the measures taken by the project activities.

During this monitoring period, the State Variables of the biodiversity have been monitored in both winter (09-November-2020 to 30-November-2020) and summer (01-June-2021 to 25-June-2021) season by expert survey teams from National Forestry and Grassland Administration Northwest Investigation and Planning Institute, and the Pressure Variables and Response Variables of the biodiversity have been monitored annually from 2017-2021 by local grassland patrols.

As described in Section 3.1.3, there are totally 31 SOC sample plots set up to monitor the SOC, therefore, the sample plots for monitoring of “grassland coverage” and “grass species” were set up nearby each SOC sample plots. Each plot has the same size which is set to be a rectangle land with 5m*5m (25m²).

In addition, monitoring lines has been set up for the monitoring of “population status of animals”. In accordance with the national standard (“Technical Regulations on Bird Biodiversity Survey and Assessment” and “Technical Regulations on Mammals Biodiversity Survey and Assessment” issued by the Ministry of Ecology and Environment of the People’s Republic of China), the monitoring lines should cover each type of the ecological habitat around the project area, and also cover different altitude range. Therefore, 12 monitoring lines for each strata and totally 36 monitoring lines were set up, and the length of each lines were 3km.

The detailed monitoring results for biodiversity are listed in the following table:

Table 5-2 Monitoring results for biodiversity during this monitoring period

Indicator type	Description	Monitoring indicator	Indicator unit	Monitoring method	Monitoring frequency	Monitoring results
State variables	The quantity and quality of grassland in the project area	Grassland coverage in the project area	ha	Sample plots of the same size are installed nearby each SOC sample plots to monitor the coverage (totally 31 sample plots were set up, please refer to Section 3.1.3 for the detailed sampling procedures). Plot size is set to be a rectangle land with 5m*5m (25m ²). Calculate grassland coverage by estimating the projected area of vegetation.	Before every verification	Through fence construction and grass seeding, the vegetation coverage of 65,000.00 ha degraded grassland has increased about 15-35%.
		Grass species in the project area	/	Sample plots have been set to monitor the species of vegetation which were the same as the sample plots set for monitoring of climate (totally 31 sample plots were set up, please refer to Section 3.1.3 for the detailed sampling procedures). Plot size is set to be a rectangle land with 5m*5m (25m ²).	Before every verification	<i>Elymus nutans</i> , <i>Agropyron cristatum</i> , <i>Festuca rubra</i> and <i>Artemisia sphaerocephala</i>
		Population status of the animals	/	A total of 36 monitoring lines would be set up, 12 monitoring lines (each of 3km) have been set in each strata to monitor endangered animals which were selected randomly from the sample plots set for monitoring of climate, and the monitoring team will walk along each monitoring line for at least one day (first monitoring was from 07:00 to 11:00 and repeated	Before every verification	Totally 317 birds 103 reptilian and 64 rodents have been observed during this monitoring period.

Indicator type	Description	Monitoring indicator	Indicator unit	Monitoring method	Monitoring frequency	Monitoring results
				monitoring from 15:00 to 18:00) during the monitoring period to observe the occurrence of animals. And the set-up of monitoring lines is in accordance with the national standard ("Technical Regulations on Bird Biodiversity Survey and Assessment" and "Technical Regulations on Mammals Biodiversity Survey and Assessment" issued by the Ministry of Ecology and Environment of the People's Republic of China ³⁸) which should be scientifically corroborated.		
		Reduced threats to endangered animals. (Reduced grazing days and wildlife theft)	/	The grassland guardians patrolled the management and protection area regularly, once every 15 days, supervise and prevent wildlife theft, record the grazing days and report the protect situation to the Burqin Forestry and Grassland Bureau.	Before every verification	Grassland patrol records showed that the main threat is overgrazing in project area and the implementation of the project manage the grazing time, supervise and prevent wildlife theft, which migrate the threat to endangered animals.
Pressure variables	The frequency or intensity of anthropogenic impacts	Number of fires occurred	/	Recorded by grassland guardians and confirmed by local Forest and Grass Bureau	Once every year	0
		Effected grassland area	ha	Recorded by grassland guardians and confirmed by local Forest and Grass Bureau	Once every year	0

³⁸ Ministry of Ecology and Environment of People's Republic of China, Publication of Technical Regulations on County Biodiversity Survey and Assessment, 28 December 2017. https://www.mee.gov.cn/gkml/hbb/bgg/201801/t20180108_429275.htm

Indicator type	Description	Monitoring indicator	Indicator unit	Monitoring method	Monitoring frequency	Monitoring results
	that are directly harmful to biodiversity in the project zone	suffered rodents and pests				
		Overgrazing	ha	Recorded by grassland guardians and confirmed by local Forest and Grass Bureau	Once every year	0
		Fertilizer and Chemical pesticides	t	Recorded by grassland guardians and confirmed by local Forest and Grass Bureau	Once every year	No fertilizer and chemical pesticides applied.
Response variables	The frequency or intensity of project interventions relevant to biodiversity	Grassland area under prevention control from fires	ha	Recorded by grassland guardians and confirmed by local Forest and Grass Bureau	Once every year	65,000.00
		Grassland area under prevention control from rodents and pests	ha	Recorded by grassland guardians and confirmed by local Forest and Grass Bureau	Once every year	65,000.00
		Project area of sustainable grassland management	ha	Recorded by grassland guardians and confirmed by local Forest and Grass Bureau	Once every year	65,000.00
		Project area for restoration of degraded grassland	ha	Recorded by grassland guardians and confirmed by local Forest and Grass Bureau	Once every year	65,000.00

5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

The biodiversity monitoring plan have been published on VCS and CCB website which can be easily download by stakeholders. Hard copies of the biodiversity monitoring plan have been distributed among local stakeholders by project proponent and the forest patrollers. At the same time, public notice boards have been used to publicize information regarding how to access to the biodiversity monitoring plan through internet. Technical staff from project proponent have also explained the biodiversity monitoring plan to local herders. Also, a contact person with phone number was published in case any stakeholders want to directly contact the project proponent and raise opinions.

For each verification, the monitoring team will summarize all the comments received from stakeholders and corresponding responses regarding the biodiversity monitoring plan and results, which will be published on VCS and CCB website along with the monitoring report for each monitoring period.

During this monitoring period, no comments on the biodiversity monitoring plan and results received yet.

5.4 Optional Criterion: Exceptional Biodiversity Benefits

Not applicable.

5.4.1 Trigger Species Population Trends (GL3.3)

Not applicable.

6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION

Not applicable.

7 ADDITIONAL PROJECT IMPACT INFORMATION

Not applicable.