United Nations Educational, Scientific and Cultural Organization
Land Restoration Training Programme Under the auspices of UNESCO

GRÓ Land Restoration Training Programme
Árleynir 22, 112 Reykjavik, Iceland

Final Project 2022

LAND-USE AND CLIMATE CHANGE POLICY CHALLENGES IN MONGOLIA: ANALYSIS OF THE POLICY AND LEGAL FRAMEWORK FOR THE IMPLEMENTATION OF NATIONALLY DETERMINED CONTRIBUTIONS

Bayartulga Altankhuyag
Institute of Geography and Geoecology, Mongolian Academy of Sciences
Baruun selbe 15, 4th khoroo, Chingeltei, Ulaanbaatar-15170, Mongolia
bayartulga@mas.ac.mn

Supervisor
Dr Jón Geir Pétursson
University of Iceland
jgp@hi.is

ABSTRACT

Enabling policies and legal frameworks are essential for implementing the climate change action plan outlined in Nationally Determined Contributions (NDCs) under the Paris Agreement. This study analyses Mongolian national legal and strategic documents as Mongolia needs to cut greenhouse gas emission to reach its NDC targets. The study also comprises interviews with local stakeholders to examine NDC implementation and address implementation challenges. Policy analysis should consider how factors or causes are defined as the root or cause of an issue (characterisation), and the policy issue conceptualised in the policy statement (problematisation). This ensuing question therefore guided the policy issue interrogation: are the drivers of greenhouse gas emissions, which NDCs are anticipated to tackle, recognised in the policies and characterised? The interviews addressed opportunities and constraints in implementing the NDC: what are the enabling and disabling factors? How do the policy and legal frameworks support NDC implementation? From the analysis, Mongolia's policy and regulatory environment are satisfactory mainly for addressing the causes of greenhouse gas emissions, but there is a lack of addressing barriers to climate change adaptation and mitigation measures. It can be concluded that Mongolia has a suitable policy to reduce greenhouse gas emissions to tackle climate change but does not have a suitable legal environment for mitigating climate change. Also, a failure to consult the people affected by or implementing the policies leads to constraints on NDC implementation. The local administration's lack of attention to local herders is noticed during the study.

Key words: Nationally determined contribution, climate policy, policy analysis, climate change, Mongolia

This paper should be cited as:

Altankhuyag B (2022) Land-use and climate change policy challenges in Mongolia: Analysis of the policy and legal framework for the implementation of nationally determined contributions. GRÓ Land Restoration Training Programme [Final project] https://www.grocentre.is/static/gro/publication/843/document/altankhuyag2022.pdf

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ABBREVIATIONS

CC	Climate change
GHG	Greenhouse gas
GHGE	Greenhouse gas emission
IPCC	International Panel on Climate Change
M	Mitigation
NAPCC	National Action Programme on Climate Change
NDC	Nationally determined contribution
NGO	Non-Government Organisation
PF	Provided for
NPF	Not provided for
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WWF	World Wildlife Fund

1. INTRODUCTION

Mongolia has seen considerable climate change, with a warming of over 2°C, two times more than the mean global temperature increase since 1940 (World Bank Group & Asian Development Bank 2021). One of the apparent features and changes is a sudden increase in consecutive hot days and a decrease in snowy and cold days (Ministry of Environment and Tourism of Mongolia 2018). In addition, surface water shortages, melting of permafrost and glaciers, and soil and pasture deterioration have been cited as significant difficulties Mongolia faces because of climate change (Ministry of Environment and Green Development of Mongolia 2014). Due to a high degree of sensitivity to climate change, adaptation is especially critical for Mongolia (Government of Mongolia 2019).

As other signatories of the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement, Mongolia has been developing its Nationally Determined Contribution (NDC) strategies and identifying policy priorities and actions for mitigation and adaptation to climate change. Mongolia has increased its mitigation efforts in its NDC by implementing policies and actions to be achieved by 2030 in essential natural resource management and economic sectors (Government of Mongolia 2019). It is noted that the mitigation objective of Mongolia's NDC is a reduction of total national greenhouse gas (GHG) emissions by 22.7% by 2030. In particular, measures to reduce GHG emissions by carbon sequestration are identified, establishing a total GHG emission reduction goal for Mongolia of 44.9% by 2030. It also includes qualitative adaptation goals for Forestry and Other Land Use and other sectors (Government of Mongolia 2019). To achieve the NDC targets, Mongolian national strategic, legal, and policy documents developed and approved by the State Great Khural (the unicameral parliament of Mongolia) are the underlying support.

Early lessons are emerging on multiple challenges of NDC implementation worldwide. For example, the Oxford Policy Management's governance agenda for climate change explains how achieving the NDC requires action on various governance levels (Cooke et al. 2018). Finding and exploiting entry points for mainstreaming the NDC commitments and objectives into current development plans, policies, and strategies is required to make the NDC 'implementation ready'. It also notes that delivering successful reform involves far more than excellent technical professionals, and it is necessary to create 'room' for changes in policy reform.

One of the advantages of the NDC of Mongolia is that the principal targets reflected in the NDC are consistent with Mongolia's policy and legal environment (Government of Mongolia 2019). Nevertheless, it is not backed up with evidence of systematic analysis, and it is uncertain if a suitable policy and legal framework exist to allow for its effective implementation.

Considering the above, this study aimed to examine and understand Mongolia's challenges in implementing the land-based climate change commitments in its NDC. The study focused on analysing Mongolia's policies and legislation and examining whether the policy and legal frameworks and objectives enable the implementation of the NDC activities. The approach in which a policy or regulation is problematised determines the issues that will be handled throughout implementation (Bacchi 2009). The study analysed the types of land use strategies advocated and the relevant laws and regulations on climate change, pasture, land, and forest use and identified policy issues and characteristics of constraints and opportunities for implementing the land based NDCs in Mongolia. The study is closely related to SDG (Sustainable Development Goal) 13: Climate Action, which calls for immediate action to combat climate change and its impacts. It is inextricably tied to all 16 of the 2030 agenda for

sustainable development goals. Therefore, the study may also be valuable in directing future legal and policy reforms to ensure that Mongolia's NDC initiatives are fully realised.

Based on the overall aim of the study, the research questions were formulated as follows:

- What are the policy objectives of the Mongolian NDCs and its land-use strategies for climate change adaptation and mitigation?
- How do the policy and legal documents regarding climate change and land use guide the NDCs´ implementation, design, development, and strategies?
- What are the key challenges and constraints in implementing the NDCs of Mongolia?

Additionally, the study aimed to provide policy recommendations for the development and revision of the Mongolian NDCs.

1.1 Nationally Determined Contributions (NDCs)

Each nation-state is obligated to develop an action plan under the Paris Climate Agreement to cut its GHG emissions and mitigate and adapt to the effects of the climate crisis (UNFCCC 2022). These commitments, known as NDCs, are vital to the Paris Agreement and the achievement of its long-term goals.

The Paris Agreement (United Nations 2015), Article 4, paragraph 2 mandates that each party (nation state, signatory to the agreement) develop, disclose, and maintain its consecutive NDCs. The Paris Agreement also acknowledges that the long-term objectives outlined in Articles 2 and 4.1 will be attained over time. Consequently, it is dependent upon a rise in collective and individual ambition throughout time. NDCs serve as the foundation for achieving the goals of the Paris Agreement. They include information on goals, strategies, and measures for lowering national emissions and responding to climate change (UNFCCC 2022). In addition, NDCs provide information on the availability of, or the need for, financing, technology, and capacity development for these initiatives in each nation-state.

Countries report NDCs to the UNFCCC secretariat every five years. To increase ambitions over time, the Paris Agreement stipulates that subsequent NDCs will represent an improvement over the last NDC and reflect its maximum potential ambition (UNFCCC 2022). As of 30 July, 2021, the 164 latest accessible NDCs reflect all 191 parties to the Paris Agreement, containing information on objectives, strategies, and initiatives for reducing national emissions and responding to the effects of climate change (UNFCCC 2021). However, the challenge now would be to put these plans into reality and secure enabling policy and legal frameworks for their implementation and efficacy.

The sixth assessment report of the Intergovernmental Panel on Climate Change (IPCC) analyses the effects of climate change on ecosystems and human communities on a global and regional scale. The IPCC report notes that serious action must be taken in this decade to avert catastrophic consequences (IPCC 2022). The revised version of the first NDCs submitted has heightened the urgency and ambition of fulfilling these promises (UNFCCC 2021). The IPCC report also states that the 1.5°C target is scientifically and economically achievable, but its achievement rests on political leadership (IPCC 2022). Therefore, effective policies and plans for implementing and funding NDCs are vital.

Preliminary insights on the problems of NDC adoption are being developed globally. For instance, the governance agenda for climate change developed by Oxford Policy Management

illustrates how implementing the NDCs necessitates addressing various levels of governance (Cooke et al. 2018). Additionally, the study noted that to ensure the effective and efficient implementation of NDCs, each organisation and individual must have a distinct mandate. Therefore, practical tools and approaches are required to identify and include the key players in the mainstreaming process. Moreover, on every occasion, NDC activities should be matched with sectorial and subnational development goals in order to facilitate rapid implementation.

1.2 Mongolia's Nationally Determined Contributions (NDCs)

The Mongolian Government filed its first NDC in 2016 (UNDP 2020). In November 2019, the Government of Mongolia formally adopted a revised NDC, including more determined targets (Government of Mongolia 2019). The objectives were increased to a 22.7% reduction in GHG by 2030 from the original promise of 14%. The updated NDC of Mongolia seeks to enable the implementation of the Paris Agreement by establishing a more ambitious goal for reducing GHG emissions. Additionally, the NDC specifies specific strategies in significant economic and natural resource management sectors to mitigate and adapt to climate change by 2030.

Mongolia's NDC pledges to cut GHG emissions by 7.2% in 2020, 12.3% in 2025, and 22.7% in 2030 relative to the baseline scenario (Government of Mongolia 2019). As stated in the NDC, the energy sector will provide 66.7% of the reductions in greenhouse gas emissions, followed by the agricultural sector with 31.3%, the industry sector with 1.4%, and the waste sector with 0.6%. Along with that, the Forestry and Other Land Use sector plays a crucial role in the successful implementation of the NDC in Mongolia, which adds to the total mitigation target of 44.9% GHG emission reduction by 2030 (Government of Mongolia 2019). The NDC noted that, in 2014, around 50% of Mongolia's annual GHG emissions came from the energy sector, 48.5% from agriculture, 1% from industry, and 0.5% from the waste sector (Government of Mongolia 2019). This shows how significant it is to analyse the land-use-related policy to meet Mongolia's mitigation plans and adaptation measures for NDCs.

In contrast, Mongolia's commitment to the UNFCCC negotiation process to limit global warming to less than 2°C has already been exceeded (World Bank Group & Asian Development Bank 2021). This demonstrate how vital and urgent it is to accelerate the process of reducing greenhouse gas emissions in a short period of time.

The World Wildlife Fund's (WWF) #NDCsWeWant Checklist tool intends to increase the overall ambition of the NDC process by spotlighting all types of progress, promoting best practices, identifying essential obstacles, and calling out laggards (World Wildlife Fund 2021). The checklist consists of twenty variables, the majority of which are qualitative, organised into five sections. As nations submit amended NDCs, WWF and users of this tool may compare them to the checklist, and WWF posts analyses on their '*NDCsWeWant'* website (de Carvalho 2021).

The amended NDC for Mongolia was published on 13 October 2020. However, due to methodological modifications, it is unclear to what degree progress has been made in establishing adaption measures and enhanced mitigating objectives according to the World Wildlife Fund (2021). Furthermore, according to the WWF report, the NDC of Mongolia lacks detailed information on financial obligations, engagement methods, climate governance institutions, and a transparent national tracking system (de Carvalho 2021).

Since Mongolia is a lower-middle-income nation with comparatively low overall GHG emissions but relatively high per capita emissions compared to other countries, the WWF analysis concludes that Mongolia's NDC has *'Some Way to Go'* to become the *'NDC We Want',* according to the criteria (World Wildlife Fund 2021).

1.3 The principles of policy making framework and climate change policy

1.3.1 The policy cycle

In public policy, policy making is a process that seeks to translate political vision into programmes and actions to deliver desired outcomes and to suggest changes to a specific policy field.

The policy cycle is a method applied to plan and analyse the different policymaking stages in which an issue evolves from basic concepts through implementation, assessment, and the formulation of new agendas (Young & Quinn 2002; Giorgi 2017; HM Treasury 2020). Young and Quinn (2002) highlighted that, even though the policy cycle appears to be an arranged process that starts from one point and ends at another, policymaking can begin, stop, or be revised at any time within the cycle (Figure 1).

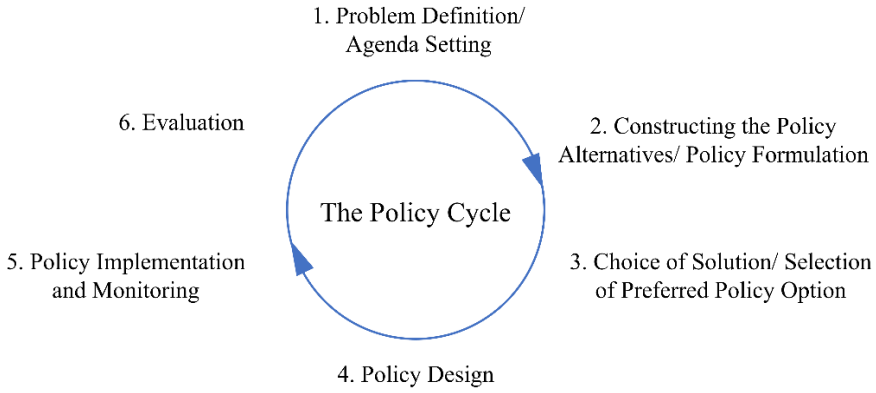

Figure 1. The Policy Cycle. (Source: Young & Quinn 2002).

Giorgi (2017) noted that there are many ways to represent the policy cycle with varied names and numbers, but the basis of each phase stays consistent. As summarised by Georgi (2017, p.13-14), the following are the five main stages of a policy cycle:

1. **Agenda setting:** "The general approach starts out with agenda setting which identifies the problem or issue that needs addressing. This first step often has specific phases of 'defining the issue' and 'understanding the situation'."
2. **Considering and formulating policy options/alternatives:** "This is then followed by steps which formulate and assess the different alternative courses of action and preparation for delivery."
3. **Choosing and specifying (designing) the preferred option:** "In the following phase, Government decides on the course of action (which includes maintaining the status quo, i.e. taking no action)."
4. **Implementing and monitoring:** "The decision made in the previous step will then be put into practice through implementation and monitoring".

5. **Evaluating and providing feedback for the next period:** "The final phase (which is the first step in the next cycle) is about assessing the effectiveness of the policy in terms of its intended objectives, outcomes, and impacts. This 'assessment of effectiveness' is done through evaluation and adapting lessons learned into the future delivery of the policy."

1.3.2 Climate policy

The Intergovernmental Panel on Climate Change (IPCC) was created by the World Meteorological Organization and the United Nations Environmental Programme (UNEP) in 1988 with the objective to deliver scientific information to governments at all levels to assist them in developing climate policy (IPCC 1988). Following that, many countries signed an international treaty, the UNFCCC, in 1992 as a framework for international cooperation to combat climate change by limiting increases of average global temperature and the resulting climate change, as well as coping with the already inevitable effects (UNFCCC 1992). The Paris Agreement, which is the current framework for all nations, was adopted in 2015 to limit global warming to below 2°C, preferably 1.5°C, in comparison to pre-industrial levels.
Therefore, it is evident that the worldwide political community acknowledged the necessity to stabilise greenhouse gases in the atmosphere and thus reduce global emissions in the early 1990s. However, the negative impacts of global warming are now beginning to become quite vividly apparent, and the world is getting closer to reaching the point of 'dangerous anthropogenic interference' (Archer & Rahmstorf 2010). Despite this, Archer and Rahmstorf (2010) emphasised that climate policy has progressed at a 'glacial pace' since 1992, and emissions continue to rise unabated. Therefore, there is an urgent need to analyse current climate policies and reform the policy and legal framework if necessary.

2. METHODS OF STUDY

This study is essentially a policy analysis based on data from two key sources: systematic analysis of policies and legal frameworks and semi-structured interviews (Figure 2).

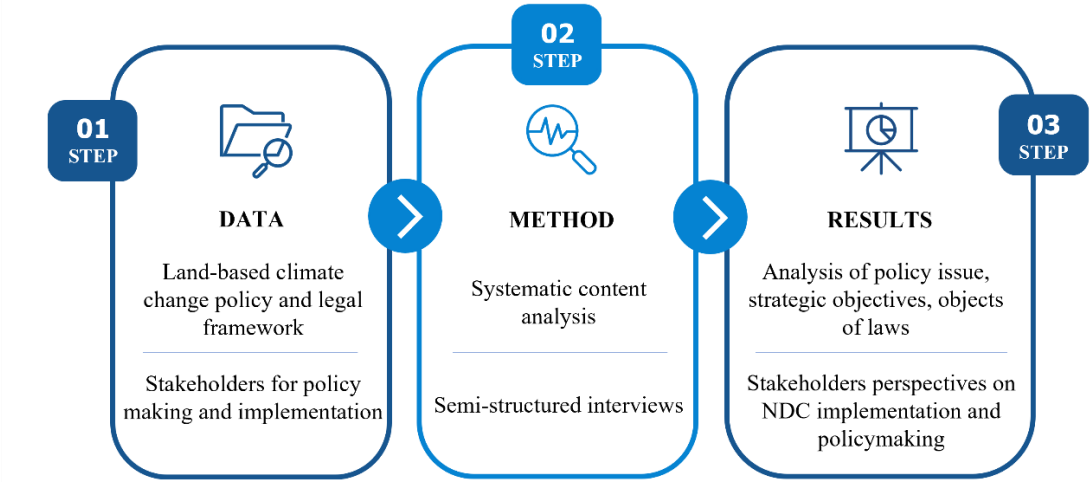

Figure 2. Project methodology structure.

2.1 Systematic analysis of the Mongolian policy and legal framework for NDC implementation

The methodology of policy and legal framework analysis was based on qualitative content analysis. Content analysis is an approach for detecting content by objectively and systematically analysing specific message characteristics (Holsti 1969). The study analysed policies and legislation that are land-based climate change policies reflected in the NDC of Mongolia for specific stipulations for the NDC and its implementation. The analysis was conducted on policy provisions, laws, and regulations issued by the State Great Khural and responsible Government departments in Mongolia's environment, forestry, and agricultural sectors. The research aims to provide further information to countries such as Mongolia as they proceed from the NDC registry to a stage of NDC implementation.

2.1.1 Selection of policies and laws to be considered

The policies and regulations included in Mongolia's NDC (Government of Mongolia 2019), as well as additional policies and laws regarded to be directly or indirectly connected to land-use-based climate change, were analysed. The laws considered were:

- Law on Forest, 2012
- Law on Crop Farming, 2016
- Law on Land, 2002
- Law on Air, 2012
- Law on Environmental Protection, 1995

The legally binding policies considered were:

- Green Development Policy of Mongolia, 2014
- National Action Program on Climate Change, 2011
- State Policy on Food and Agricultural Sector, 2010
- State Policy on Forest, 2015
- Sustainable Development Vision-2050, 2020
- Mongolian Shepherd National Program, 2020
- Action Plan of the Government of Mongolia for 2020-2024
- 2020, Mongolia's Five-Year Development Guidelines for 2021-2025, 2020
- Mongolia's National Livestock Program, 2010

To avoid monotony, this work's subsequent references to policies and legislation do not contain the complete nomenclature and years of formation and adoption.

2.1.2 Analysis of the policies

Policies are developed to address a public issue (Knoepfel et al. 2007). According to Bacchi (2009), policy analysis should consider how the policy's characterisation and problematisation are reflected. *Characterisation* corresponds to the factors or causes defined as the root or cause of an issue, whereas *problematisation* refers to how the policy issue was conceptualised in the policy statement. This study defined climate change, mitigation, adaptation, and greenhouse gas emission as policy issues. The study used a framework proposed by Polski and Ostrom (1999), which suggests that policy analysis should examine provisions of policy objectives. Moreover, given that NDC is a new policy instrument, examining policy documents is an

excellent place to begin in the search for informed reforms that will promote coherence and reinforce existing sectoral linkages for effective NDC implementation.

Including the abovementioned methods, the study partly adopted a framework developed by Namaalwa & Byakagaba (2019). This framework also implies interrogation of laws and policy issues. The ensuing question led to the interrogation of the policy issue: Are the drivers of greenhouse gas emissions that the NDC is anticipated to address recognised and characterised in the policy issue? The NDC measures provided for in the policy were analysed following two interrogation levels, which included occurrence and characterisation. Each NDC measure occurrence was assigned a single score for each policy examined. Similarly, each NDC measure that appeared in the characterisation of the policy issue was given a score of 1. At these two levels of analysis, the predicted minimum and maximum scores are 0 and 8, respectively.

The policy objectives were reviewed by examining the selected documents to determine what NDC action is provided for. Then, conventional content analysis (Hsieh & Shannon 2005) using text and a guided method with parameters from the definitions of Greenhouse Gas Emission, Climate Change Adaptation, and Climate Change Mitigation were applied.

2.1.3 Interrogation of the laws

The laws were examined by questioning the law's objectives. The interrogation was accomplished by studying the content of the legislation to see if NDC measures were stated. The following question guided the analysis: "Which NDC activities are provided in the objective and subsequent provisions of the reviewed laws?" For any recognized measure in the laws' objectives and subsequent provisions, a label 'Provided for (PF)' was given, and a label 'Not provided for (NPF)' was used where explicit provisions could not be identified. Through qualitative content analysis, explicit provisions pertaining to any of the NDC activities were determined and paraphrased in order to reflect the legislation and the particular NDC measure that was emphasised.

2.2 Semi-structured interviews with Mongolian stakeholders responsible for land-based climate change policy implementation

Semi-structured interviews were used to address questions of possibilities and restrictions in implementing the NDC and corresponding land-based climate policies. Participants in the interviews were herders and local administration staff. A semi-structured interview is a data collection method involving asking questions within a pre-determined thematic framework (Longhurst 2016). This approach provided flexibility in conducting in-person and online interviews. Even though lists of pre-determined questions were prepared (see appendices), the semi-structured interviews were developed in a conversational approach, allowing participants to discuss important topics. For the interviews, herders participated as a group. Through open-ended questions, participants were encouraged to talk about their experiences and their replies decided the sequencing of subsequent questions.

Mongolia is a unitary State with four government levels, including one central and three local governments. The local government of Mongolia consists of 21 *aimags* (provinces), *soums* (districts) and *baghs* (subdistricts). Interview data collection was performed in Ikh-Uul *soum*, Zavkhan *aimag*, a province with more than 3.7 million livestock (National Statistics Office Mongolia 2022). It is considered one of the provinces affected by land degradation and a slight degree of desertification (Information and Research Institute of Meteorology Hydrology and Environment 2020). The study area was deemed relevant because the area is experiencing

significant effects of climate change and can thus be a representative of other provinces in Mongolia. The average annual air temperature has been rising by 2°C (National Agency Meteorology and Environmental Monitoring 2022). The interviews were conducted in August 2022.

2.2.1 Selection of interviewees

In this study, economic actors and herders were selected as a group in order to analyse the condition of policy implementation in Mongolia as they are the main actors affected by policies and legislation.

To get a broad perspective on the likelihood of policies being implemented, representatives from these two groups were interviewed:

- administrative actors (local administration staff)
- implementation actors (herders)

The interviews took place in Mongolia with different stakeholders of Mongolia's NDC implementation and other relevant programmes. The interviewees were selected using purposive sampling (Palinkas et al. 2015), identifying the relevant actors responsible for policy making and implementation at a local level. The interviews addressed opportunities and constraints in implementing the NDC and tried to seek answers to these main questions: What are the enabling and disabling factors regarding NDC implementation? How do the policy and legal frameworks support the implementation of the NDC commitments? See the appendices for detailed lists of interview questions.

2.2.2 Interview methods and data analysis

The analysis consisted of three steps. First, the interviews were conducted in Mongolian and the qualitative data was translated into English and transcribed in MS Word. The second step involved forming themes of the interview data and creating codes to ensure participant confidentiality. The last step involved reading the transcripts several times to obtain an in-depth understanding and detect common patterns.

Pseudonyms (Roberts 2015) were applied in the study to protect the identity of study participants during data processing. In this study, a numerical code was used to identify interview recordings and transcripts, which allowed for secrecy at the time of analysis.

3. RESULTS AND DISCUSSION

3.1 Analysis of the policy issues (climate change, mitigation, adaptation, and greenhouse gas emissions)

The State Great Khural has rescinded many policies reflected in the NDC of Mongolia after submitting the NDC to the UN to eliminate duplication and contradiction (State Great Khural 2021b). The rescinded policies include the Green Development Policy of Mongolia, the National Action Program on Climate Change, the State Policy on The Energy Sector of Mongolia, the State Policy on the Food and Agricultural Sector, and the State Policy on Forest, and Sustainable Development Vision 2030. Although these policies are rescinded, no new policies have been issued as replacements. The study, therefore, analysed all the rescinded

policies as they provided the basis for the climate change targets in the NDC Mongolia submitted. However, the strategic policy document Sustainable Development Vision-2030 was excluded from the analysis since the parliament updated the policy in 2020 with the Sustainable Development Vision-2050. Table 1 shows a list of policies analysed for the study.

Table 1. List of analysed land-use and climate change policies and legal documents.

Policy and law	Whether mentioned in the NDC
Green Development Policy of Mongolia, 2014	Mentioned
National Action Program on Climate Change, 2011	Mentioned
State Policy on Food and Agricultural Sector, 2010	Mentioned
State Policy on Forest, 2015	Mentioned
Sustainable Development Vision-2050, 2020	Mentioned
Mongolian Shepherd National Program, 2020	Not mentioned
Action Plan of the Government of Mongolia for 2020-2024, 2020	Not mentioned
Mongolia's Five-Year Development Guidelines for 2021-2025, 2020	Not mentioned
Mongolia's Livestock National Program, 2010	Not mentioned
Law on Forest, 2012	Not mentioned
Law on Crop Farming, 2016	Not mentioned
Law on Land, 2002	Not mentioned
Law on Air, 2012	Not mentioned
Law on Environmental Protection, 1995	Not mentioned
Law on Soil Protection and Prevention of Desertification, 2012	Not mentioned

The Vision-2050 Long-Term Development Policy, Green Development Policy of Mongolia, and National Action Program on Climate Change are the policies that recognise greenhouse gas emissions, climate change, adaptation, and mitigation as policy issues. On the other hand, the State Policy on Food and Agricultural Sector, and State Policy on Food and Agricultural Sector recognise only adaptation, while the State Policy on Forest recognises only greenhouse gas emissions as a policy issue.

The National Action Program on Climate Change is the only strategy document that characterises greenhouse gas emissions and climate change, prescribing sources and causes of the issue. On the other hand, the Vision2050 Long Term Development Policy is a national development policy document which characterises only greenhouse gas emissions, whilst the State Policy on Forest, the State Policy on Food and Agricultural Sector and the Green Development Policy of Mongolia do not characterise any policy issue.

Climate change is recognised as a policy issue in three of five reviewed policies. These include the Vision-2050 Long Term Development Policy, the Green Development Policy of Mongolia, and the National Adaptation Programme of Mongolia. However, only the National Adaptation Plan on Climate Change identifies a driver of climate change: greenhouse gas emissions caused by human activities. There is no other characterisation of the issue 'climate change' in the other policy documents reviewed.

Greenhouse gas emissions are presented as a policy issue in four out of five policies reviewed. These include the Vision-2050 Long Term Development Policy, the Green Development Policy of Mongolia, the National Action Program on Climate Change, and the State Policy on Forest. The Vision-2050 Long Term Development Policy has identified drivers of greenhouse gas

emissions, including the energy, agriculture, construction, transportation, and waste sectors. Meanwhile, the National Adaptation Program on Climate Change identifies drivers of greenhouse gas emissions, noting that human activities cause greenhouse gases in the atmosphere. In the National Adaptation Program on Climate Change, other projected trends of greenhouse gas emissions and steps to take in the future were also identified.

Adaptation to climate change is a policy issue in four of the five policies. These include the Vision-2050 Long Term Development Policy of Mongolia, the Green Development Policy of Mongolia, the National Action Program on Climate Change, and the State Policy on Food and Agricultural Sector. However, while these policies recognise adaptation as a policy issue, causes or threats are not characterised.

Climate change mitigation is mentioned as a policy issue in three of the five reviewed policies. These include the Vision-2050 Long Term Development Policy of Mongolia, the Green Development Policy of Mongolia and the National Action Program on Climate Change. However, all the reviewed policies are silent on the characterisation of the issue climate change mitigation.

Regarding Mongolia's NDC-related policy documents, climate change is predicted to negatively impact the environment and socio-economy, leading to environmental disasters, poor quality of life, and human migration in the long-term. Even though some parameters, such as adaptation and mitigation, are not mentioned in the policy, further steps for fighting against climate change and adaptation and mitigation strategies are identified. Potential environmental crises in the long term are defined as the main challenges in the policies, while the policies indicate that these challenges can be avoided by implementing an economy based on clean or 'green' technologies.

Table 2 provides the outcomes of the analysis of Mongolia's policies, identifying the NDC activities recognised as a policy issue and characterised.

Table 2. Analysis of all policy issues to identify NDC considerations.

Policy	Problematisation of NDC in the issue	Characterisation of the issue
Vision 2050 Long-Term Development Policy of Mongolia, 2020	GHGE, CC, A, M	GHGE
Green Development Policy of Mongolia, 2014	GHGE, CC, A, M	-
National Action Program on Climate Change, 2011	GHGE, CC, A, M	GHGE, CC
State Policy on Food and Agricultural Sector, 2003/2010	A	-
State Policy on Forest, 2015	GHGE	-

GHGE = greenhouse gas emission; CC = climate change; M = mitigation; A = adaptation

In terms of problematisation of the policy issue, the Vision-2050 Long Term Development Policy, the Green Development Policy, and the National Action Program on Climate Change have all four policy issues (Table 2). Meanwhile, the other policies include one issue each (Figure 3).

With regard to the characterisation, prescribing the causes of the policy issue, the National Action Program on Climate Change is evaluated with the highest score – two – while Vision-

2050 Long Term Development Policy is assessed with a score of one. All the other policies are rated with a score of zero (Figure 3).

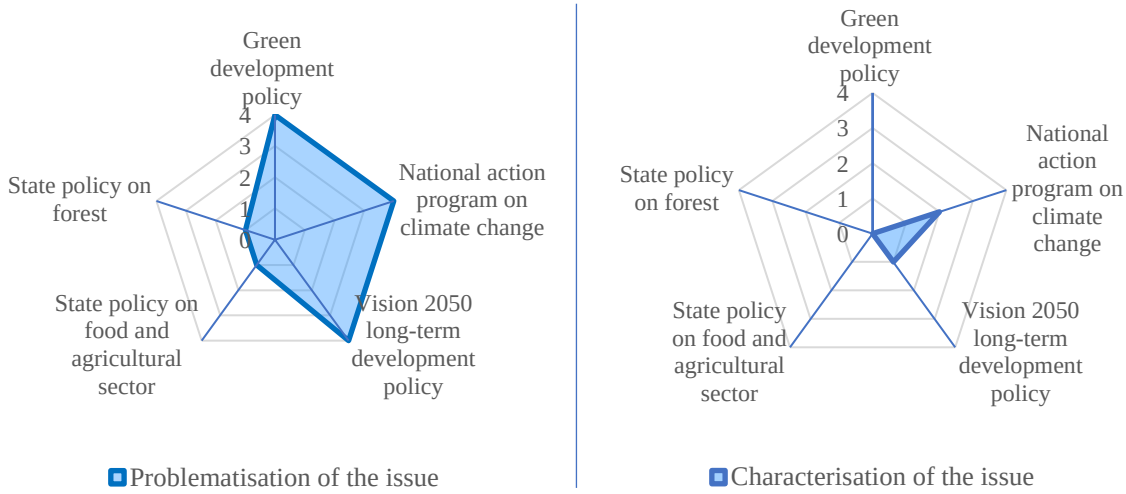

Figure 3. Occurrence of each NDC activity assigned with scores (policies stated in NDC).

Moreover, for the achievement of NDC targets, both mitigation and adaptation targets are defined. In the mitigation target, the agricultural sector accounts for 94% of the total GHG emission reduction from the non-energy sector. Animal husbandry, pastureland, arable farming, and forest resources are considered critical factors for the adaptation targets. Therefore, some policies and legal documents not mentioned in the NDC were included in this analysis (Table 1).

Mongolia's Five-Year Development Guidelines for 2021-2025 is the only policy that recognises climate change, greenhouse gas emissions, adaptation and mitigation as policy issues. The Mongolian Shepherd National Program and the Action Plan of the Government of Mongolia for 2020-2024 recognise three of the activities, while Mongolia's Livestock National Program recognises two activities as a policy issue. However, these policy documents remain silent on the challenges with these policy issues.

Climate change and adaptation are presented as policy issues in all four relevant policies reviewed. These include the Mongolian Shepherd National Program, the Action Plan of the Government of Mongolia for 2020-2024, Mongolia's Five-Year Development Guidelines for 2021-2025, and Mongolia's Livestock National Program. However, characterisation of the issues is not recognised in any of these policy documents.

In three out of four policy documents, greenhouse gas emission is recognised as a policy issue. These include the Mongolian Shepherd National Program, the Action Plan of the Government of Mongolia for 2020-2024, and Mongolia's Five-Year Development Guidelines for 2021-2025. However, these policy documents do not characterise it.

Climate change mitigation is only mentioned as a policy issue in Mongolia's Five-Year Development Guidelines for 2021-2025, yet the policy does not characterise the issue. Table 3 provides the outputs of the analysis of Mongolia's policies to identify the NDC activities recognised as a policy issue and characterised.

Table 3. Analysis of the other relevant policies to identify NDC considerations.

Policy	Provision of NDC in the issue	Characterisation of the issue
Mongolian Shepherd National Program, 2020	GHGE, CC, A	-
Action Plan of the Government of Mongolia for 2020-2024, 2020	GHGE, CC, A	-
Mongolia's Five-Year Development Guidelines for 2021-2025, 2020	GHGE, CC, A, M	-
Mongolia's Livestock National Program, 2010	CC, A	-

GHGE = greenhouse gas emissions; CC = climate change; M = mitigation; A = adaptation

Regarding problematisation of the policy issues, Mongolia's Five-Year Development Guidelines for 2021-2025 stated all the policy issues, scoring the highest points, whilst Mongolia's Livestock National Program is assessed with two points and scores the least (Figure 4). The Mongolian Shepherd National Program and the Action Plan of the Government are evaluated with a score of three.

Concerning the characterisation, all the policies analysed are assessed with no score (Figure 4).

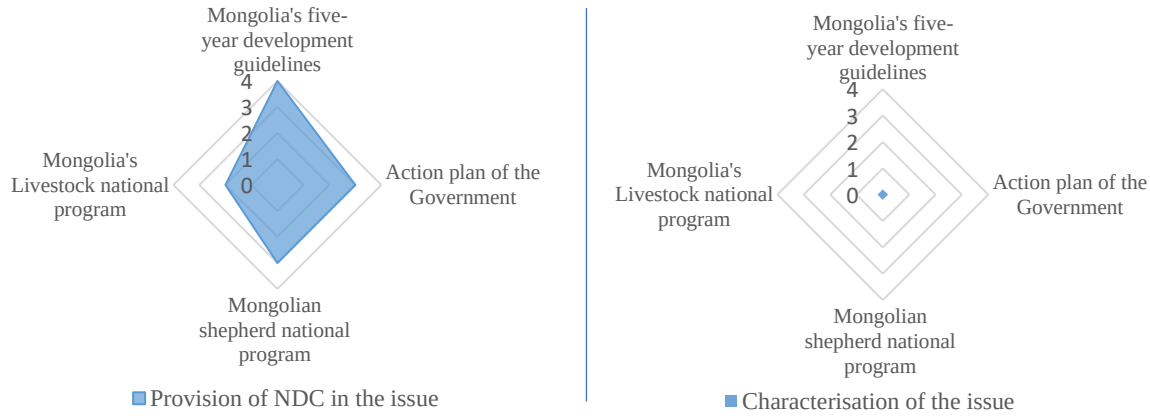

Figure 4. Occurrence of each NDC activity assigned with scores (policies not stated in NDC).

Mongolia's Vision-2050 Long Term Development Policy includes all NDC measures in policy issues and objectives, creating a supportive environment in the sectors working towards climate change adaptation and mitigation. The NDC's main objectives are consistent with national development policy papers, for instance the Vision-2050 Long Term Development Policy, which addresses the development framework indicated in other policies (Government of Mongolia 2019). However, the State Great Khural has rescinded essential policy documents, including the Green Development Policy and National Action Program on Climate Change, all represented in the NDC of Mongolia (State Great Khural 2021b). Good practice policies should serve as a reference for the next global stocktake toward more ambitious NDCs (Baptista et al. 2022). However, this practice of the parliament withdrawing policies may impact negatively and limit its measures to fight against climate change by reducing GHGEs for decision makers in all levels.

All of the analysed policies in the NDC, except for the National Action Program on Climate Change, do not define drivers and causes of climate change in the characterisation of the policy issue. This analysis has revealed that the important policies that can help address the negative effects of climate change do not recognise the root of the problem to be addressed. Therefore, it is making it more challenging to address climate change because there is no evidence of the drivers of the issue.

The forestry and agriculture sectors can play huge roles in reducing greenhouse gas emissions and implementing climate change mitigation strategies in Mongolia (Government of Mongolia 2019). However, it is apparent that the State Policy on Forest and the State Policy on Food and Agricultural Sector show an absence of responses to this in their policy objectives. The adaptation strategy reflected in the State Policy on Food and Agricultural Sector is still unclear for those implementing the policy. Therefore, it may not help them to take any measures in terms of adaptation.

Mongolia's NDC document defined its mitigation targets based on sectors including agriculture, but no mitigation objectives were stated in the relevant policies. This creates a gap between policy and the NDC document itself. Therefore, there is a risk that climate mitigation will not be fully implemented due to the absence of climate mitigation provisions in the agricultural policy. Not meeting its climate mitigation goals could also have a negative impact on Mongolia's next NDC report, due in 2025.

Combating climate change involves numerous policy areas, including disaster risk reduction, regional planning, ecosystem- and water management, and more (European Environment Agency 2016). Yet, the NDC of Mongolia excluded these sectors and related strategic documents that can be considered important for NDC measures, even though these strategic documents could induce big impacts on fighting effectively against climate change.

Policy coherence is required to facilitate the accomplishment of global goals (United Nations System Staff College 2018), such as the Paris Agreement. However, there seems to be little coherence between Mongolia's agricultural policy and national programs regarding livestock and herders. Moreover, Mongolia's Government is responsible for ensuring that the country meets its NDC objectives through 2025, and the Government has five-year development guidelines and an action plan until 2025 which overlaps with the year to submit the report to UN. However, these strategic documents are not in line with the NDCs, and it is unclear what the Government's detailed strategy for climate change adaptation, mitigation, and greenhouse gas reduction is.

3.2 Analysis of the strategic objectives

Out of the nine policies reviewed, all policies have provisions within the objectives relevant to NDC activities (Table 4). Mongolia's Vision-2050 Long Term Development Policy, the Green Development Policy of Mongolia, the National Adaptation Program on Climate Change, and Mongolia's Five-Year Development Guidelines for 2021-2025 all have provisions relevant to all four parameters: climate change, greenhouse gas emission, adaptation and mitigation.

Both the Mongolian Shepherd National Program and the Action Plan of the Government of Mongolia for 2020-2024 provide objectives on greenhouse gas emissions, climate change and adaptation. Mongolia's Livestock National Program has provisions connected to climate change and adaptation objectives.

The State Policy on the Food and Agricultural Sector only provides for adaptation, while the State Policy on Forest provides for greenhouse gas emissions. Adaptation to climate change is the most provided for activity in the policy objectives mentioned in eight of nine policy documents. Meanwhile, mitigation is the least recognised and only covered in four of the nine policies (Table 4 and 5).

Table 4. NDC measures considered in the reviewed policy objectives (CC=climate change, M=mitigation, A=adaptation, and GHGE=greenhouse gas emissions).

Policy	CC	M	A	GHGE
Vision 2050 National Development Document	✓	✓	✓	✓
Green Development Policy of Mongolia	✓	✓	✓	✓
National Action Program on Climate Change	✓	✓	✓	✓
State Policy on Food and Agricultural Sector			✓	
State Policy on the Forest				✓
Mongolian Shepherd National Program	✓		✓	✓
Action Plan of the Government of Mongolia for 2020-2024	✓		✓	✓
Mongolia's Five-Year Development Guidelines for 2021-2025	✓	✓	✓	✓
Mongolia's Livestock National Program	✓		✓	

The strategic objectives of the policies in Table 4 above are mostly satisfactory in terms of addressing greenhouse gas emissions, climate change and adaptation. By contrast, these policies lack strategic objectives for mitigation, which are essential to avoid significant human influence on the climate. Mitigation strategies can help reduce the rate of atmospheric temperature rise and at the same time, Mongolia would be targeting its air temperature reduction. Therefore, Mongolia should address these strategies in their policy objectives to achieve the goals of the Paris Agreement.

Table 5. Strategic objectives with emphasis on Mongolia's NDC (GHGE = Greenhouse Gas Emissions; CC = Climate Change; M = Mitigation; A = Adaptation; N/A = Not applicable).

Policy	Objectives	NDC measures considered
Vision 2050 National Development Document	6.4. To contribute to international efforts to mitigate climate change by developing a low emission, productive and inclusive green economy (Stage I-III).	GHGE, CC, M, A
	8.3. To develop agriculture as a leading economy sector that is environmentally friendly, adaptable to climate change, resilient, responsive to social development trends, needs and requirements, responsible, highly productive, and sustainable (Stage I).	CC, A
	9.2. To develop a liveable city with a balanced ecosystem, low greenhouse gas emissions and green technologies and ensure a healthy and safe living environment for citizens (Stage I-III).	GHGE, CC, M, A
Green Development Policy of Mongolia	1. To develop production and consumption that conserve natural resources and reduce greenhouse gas emissions and waste.	GHGE
	2. To reduce pollution and degradation of the environment by intensifying environmental protection and restoration and maintain the balance of the ecosystem.	CC, A, M
	4. To promote green lifestyles by reducing poverty and promoting green employment.	CC
National Action Program on Climate Change	Main purpose	GHGE, CC, A, M
	1. To create a legal framework, structure, organisation and management system that supports activities against climate change.	GHGE, CC
	2. To build national capacity to adapt to climate change, ensure environmental balance, and reduce economic and social vulnerability and risk in stages.	A, M
	3. To reduce greenhouse gas emissions and start the transition to a low-carbon economy in stages by introducing environmentally friendly technologies, improving the efficiency and productivity of production and consumption.	GHGE
	5. To provide the public with information on climate change and support them to participate in actions and measures against climate change actively.	CC, A, M
State Policy on Food and Agricultural Sector, 2010	1. Common ground. To predominantly engage in pastoralism that preserves the traditional heritage and is adapted to climate change, to develop specialised intensive farming in the area of profitability in the vicinity of densely populated cities and towns and in agricultural areas.	A
	2. Livestock production and supply of raw materials and products. To adhere to the appropriate ratio of the number, type,	A

	and herd structure of livestock, adapt to climate change in livestock production, and strengthen the capacity to bear risks.	
State Policy on Food and Agricultural Sector, 2003	2. The basic model of agricultural development in Mongolia shall be based on legal entities of all forms of ownership and fully self-sustaining farming, adapted to nature and climate change, efficient, reliable, pastoral and intensive animal husbandry and agriculture.	A
State Policy on the Forest, 2015	3.2. To increase the area covered by forests by reforestation, afforestation, growing seedlings and saplings, increasing the amount of high-quality seeds of saplings and seedlings, improving methods and technologies, and creating actual capacity.	GHGE
	3.4. To increase financial resources for sustainable forest management.	
Mongolian Shepherd National Program, 2020	4.4. To stimulate cooperatives, eco-initiatives, and investments of herders, and implement projects and measures aimed at sustainably engaging in environmentally friendly and responsible animal husbandry.	GHGE, CC, A
Action Plan of the Government of Mongolia for 2020-2024, 2020	5. Green Development 5.1. To protect the environment, properly use natural resources, introduce advanced techniques and technologies, reduce environmental pollution and degradation, and create conditions for citizens to live in a healthy environment.	GHGE, CC, A
Mongolia's Five-Year Development Guidelines for 2021-2025, 2020	6.4. To implement the green development policy, introduce environmentally friendly, resource-saving, and efficient, clean technologies, and build national capacity to mitigate and adapt to climate change.	GHGE, CC, A, M
Mongolia's Livestock national program, 2010	3.4.4. Capacity building for animal husbandry risk reduction.	CC, A

3.3 Analysis of the objectives of the laws

This study only analysed laws that are relevant to land-based climate change. Therefore, energy-sector-related laws mentioned in the NDC were excluded because they were considered non-relevant. However, since the agricultural and forest sectors play a vital role in meeting the mitigation and adaptation targets of the NDC, some laws related to these sectors were considered relevant to the NDC targets and therefore were included in the analysis. The analysed laws include the Law on Forest, the Law on Crop Farming, the Law on Land, the Law on Air, the Law on Environmental Protection, and the Law on Soil Protection and Prevention of Desertification.

All these laws were developed before the Paris Agreement, and thus most of the NDC activities are not provided for in these laws (Table 6). The Law on Air recognises all the four activities in the objectives of the law. The Law on Forest and the Law on Soil Protection and Prevention of Desertification provide for two and three respectively out of the four activities in the objectives. Meanwhile, the other three laws do not provide for any NDC-related activities in the objectives.

Climate change and adaptation to climate change are the most provided for activities in the objectives of the analysed laws. Conversely, climate change mitigation is the least recognised activity.

Table 6. Recognition of NDC in the laws (PF = Provided for; NPF = Not provided for).

Law	Climate change	Mitigation	Adaptation	Greenhouse gas emission
1. Law on Air, 2012	PF	PF	PF	PF
2. Law on Forest, 2012	PF	NPF	PF	PF
3. Law on Soil Protection and Prevention of Desertification, 2012	PF	NPF	PF	NPF
4. Law on Crop Farming, 2016	NPF	NPF	NPF	NPF
5. Law on Land, 2002	NPF	NPF	NPF	NPF
6. Law on Environmental Protection, 1995	NPF	NPF	NPF	NPF

The long-term direction of climate strategy should be determined through strong framework legislation, which provides a credible commitment to the continuity of climate objectives across political mandates (World Bank Group 2020). The Law on Air provides a satisfactory environment for reducing greenhouse gas emissions and tackle climate change, addressing all the NDC activities in its objectives.

The land sector has been recognised as having the greatest impact on GHG emissions (Tachiiri et al. 2021; IPCC 2022). However, land-based legal documents including the Law on Land and the Law on Soil Protection and Prevention of Desertification are silent in the laws' objectives regarding greenhouse gas emissions, climate change mitigation and adaptation. Therefore, implementing programmes and projects focusing on land management as a key driver for climate change mitigation and adaptation could be challenging because the relevant laws do not recognise it as a fundamental legislative goal.

Furthermore, as mentioned before, Mongolia's NDC mentioned the agricultural sector as one of the main sectors responsible for mitigating climate change. Unfortunately, as with the land sector, the laws on the agricultural sector are lacking statements about activities in their objectives. It is clear that policy makers need to reform the land and agriculture-related laws, providing a strong background for the NDC activities.

Strong, clear and effective laws are significant for fighting against climate change effectively, and laws need to create enabling conditions for countries to achieve climate-resilient and nature-positive development (UNEP 2021). Therefore, laws that recognise NDC activities in their objectives are important. However, as for Mongolia, there is a risk that the legal environment is not encouraging Mongolia to achieve the Paris Agreement commitments because the relevant sectoral laws do not state provisions that are considered necessary for the activities of NDC.

3.4 Semi-structured interview results from Mongolian stakeholders responsible for land-based climate change policy implementation

Semi-structured interviews were conducted to investigate the implementation of land-based climate change policy, legal environment, and herders' herding practice. The focus group interviews with herders and local administrators were based on three overarching research questions: What is their awareness of climate change? How are policies and legal objectives implemented by herders? How are their herding practices related to the NDC measures? A total of two focus group interviews were carried out with a sample of 20 herders.

Three semi-structured interviews with local administrators were performed to examine their perspectives on the implementation of climate-related policies.

3.4.1 Herders' perceptions of NDC implementation in Mongolia

Awareness of climate change

The findings of this study showed that the interviewed herders' climate-change policy awareness is diverse. Herders from the first focus group (hereinafter referred to as group A) mentioned that climate change is an annual weather condition and global warming, whilst herders from the second focus group (hereinafter referred to as group B) emphasised the effects of climate change more, such as rainfall loss, desertification, and vegetation cover loss. Both groups also stated that they are experiencing hot summers and lack of precipitation.

> *In my opinion, climate change is this year's weather condition and how it is going to change in the following years. (Herder, group A)*

> *Climate change is represented as negative natural phenomena that we face. That includes rainfall reduction, desertification, and loss of fodder and green plants, I think. (Herder, group B)*

Even though some herders did not share it, but most of the herders seemed to have a common view on the issue:

> *This year was warmer than the previous years, so vegetation this year was much greener than before.*

> *Last few years have been hotter and hotter. Because of this heat, there is not enough palatable vegetation for livestock, and my children are getting allergies of annual species that have been covering the area in last few years.*

> *As herders, we are experiencing extreme weather events, such as droughts and* dzud. *Year by year, fodder is decreasing, and rangeland capacity is becoming less and less. Even winter is getting warmer than previous years.*

Dzud is a winter occurring climate disaster in which large numbers of livestock die, primarily due to starvation as they are unable to graze due to severe climatic conditions.

Herding practices

The interviewed herders answered in unison that it is better to focus on the quality of livestock rather than quantity. However, when asked separately, the herders revealed that they do not always follow that principle of focusing on quality:

> *We can project if the next summer is going to be green or not based on previous year's winter and spring scenery. If there is a dry year, we take measures to reduce the number of livestock by sending them for slaughter before winter. But this is done because we are saving our efforts and money not because of land degradation or climate change. And when the summer is good next year, then we don't have to worry about our livestock, and we focus on raising the number of livestock to receive the* Myangat Malchin *award.*

In Mongolia, there is a traditional practice that herders are honoured with the award *Myangat Malchin,* which translates as "a herder with a thousand or more livestock", by their local administration. This practice of motivating herders to increase their livestock was established to improve the economic situation in Mongolia. However, there is now a common pattern that most herders want to be awarded *Myangat Malchin* since the award describes the herders' economic status. If a herdsman has less than 200 livestock, he or she is considered poor. This is one of the contributing factors for herders to focus on the number of livestock rather than the quality of a smaller number.

One common practice was noticed that indicates that the herders know about the land's potential and sustainable use:

> *Our traditional herding practice is based on a rotational system, in which we move to different areas in different seasons. But vegetation cover is becoming less and less each year, so there is no such big difference whether we do it or not.*

There seemed that no other measures had been taken regarding climate change adaptation of their herding practices.

Implementation of NDC measures

The herders were not familiar with any policies or laws related to climate change. There is a lack of information for herders about adapting to climate change. Moreover, there is a lack of measures taken related to the NDC activities:

> *I do not know such things as climate change policy. We herders are unaware of adaptation to climate change and how to prevent exceeding carrying capacity. Since there is no information about climate change, we just work like we are used to do.*
>
> *Due to the number of livestock and limited area for rangeland, our livestock is focused on grazing in the same place. We are aware that the land is degraded, but we do not know what to do. We have no choice but to let our livestock graze in the same area.*
>
> *Local administrators say that we should change the grazing area and try to restore the land, but if my neighbours are still grazing their sheep here and take no measures, I am not doing it for them.*

The herders mentioned that they are ready to take any measures and follow the regulations if there is a climate change policy which is friendly to the herders. The participants also noted that

local administration is a bridge between the policies and herders, and if herders would have more information about climate change and specific regulations, they are willing to follow them.

3.4.2 Local administrators' perspectives on implementation of climate-related policies

The administration staff mentioned that herders are quite aware of climate change as the herders are working on the ground. In the last few years, international projects have been implemented to improve herders' subsistence and raise awareness of rangeland degradation:

> *… hoping that the implementation will be better, since the President of Mongolia's initiative to plan a billion trees had huge effects in the area, so that locals and herders are aware of the government's policies.*

> *In the past, there were huge effects of carrying capacity exceeded due to climate change, overgrazing, and illegal logging, but now the condition has improved a lot. It can be connected to locals' awareness of policies.*

The administration staff also stated that herders do not hesitate to follow any policy and decision from the Government. Herders are even supporting these policies:

> *The local administration receives tax from herders depending on the number of livestock and the condition of rangeland each year, and the money contributes to sustainability of the herders' livelihoods. Herders do not object to any policy and decision from the Government. … [L]ately herders are following policies to have fewer but quality livestock in order to save the pastureland.*

> *Herders get training about rangeland degradation by international projects, and these projects also provide loans for herders to improve their livelihood, so herders are better prepared for any extreme weather event.*

> *International projects are being implemented to increase quality of life in the area. For example, a loan fund was established, and dairy production and wool production industries were established. Instead of use only source "nature", herders started to fence some areas for themselves to have their own source of fodder. It was given free. The amount of fodder they get was increased by five times.*

The administrator interviews revealed that local administrators have different perspectives than the herders and that herders are more aware of climate policies than the local administrators because social media is part of their everyday life:

> *Thanks to technological advancements, herders are getting more information that us. People started using solar panel-TV and are introduced to internet connection, so that herders get enough information with the touch of a button.*

It was found that there are many levels of hierarchy at the local level, and that it is likely to slow down the transmission of information and the transfer of any process between persons:

> *The* bagh *director* [bagh is the smallest administration unit] *is a bridge between herders and local administration. They should have meetings with herders one-to-one, discussing about obstacles and let the administration know.*

During the interview, participants responded that the herders focus more on quantity of livestock to obtain the award *Myangat Malchin* and other honours. However, this practice has negative effects on the implementation of adaptation and mitigation measures of Mongolia's NDC. Moreover, judging the standard of living of households based on the number of livestock has the negative effect of encouraging herders to have more animals.

Implementing the policy without raising the policy awareness of the herders is challenging. Findings from the interviews suggested that local administration should play an important role for bridging this gap between herders' knowledge and legal documents. However, it is also challenging to disseminate messages from local administration to herders because there are different levels of administration within the local zone, including province administration, *soum* administration and *bagh* administration.

Both herders and local administration staff mentioned that disseminating information through social media may be an effective way to increase the herders' awareness. Thus, local administrators should consider this social media function to disseminate information effectively. However, what posts and accounts people connect with the most decide what appears first in their social media feed.

4. CONCLUSIONS AND POLICY RECOMMENDATIONS

The findings emerging from this study show that Mongolia's policy and regulatory environment is quite satisfactory for addressing the causes of greenhouse gas emission. Still, there is a lack of addressing barriers to measures regarding climate change, adaptation and mitigation. In conclusion, Mongolia has a suitable policy to reduce greenhouse gas emissions to tackle climate change but still does not have a proper legal environment for mitigating climate change.

Addressing the barriers to climate change mitigation, and adaptation under the NDC may require policy and legal reforms. Climate change mitigation provisions are lacking in the policies of critical sectors of the NDC, such as agriculture, land and forestry. On top of that, most applicable policies were developed before the preparation of the NDC, except for the Vision-2050 Long Term Development Policy. Therefore, policymakers should consider the necessary measures and activities of the NDC for reform of these policies.

Mongolian policies about NDC identify mainly climate change, adaptation, and greenhouse gas emission as policy issues, omitting mitigation activities. Moreover, barriers for climate change mitigation and adaptation were least provided in the reviewed policies. Therefore, policymakers need to address causes and obstacles to achieving Paris Agreement promises in the policy objectives for solid and effective policies.

There is one well-suited policy, Vision-2050 Long Term Development Policy, which connects other policy objectives to achieve NDC targets. In contrast, there is no integration between the laws reviewed in this study. Therefore, a new and coherent climate law, providing coherency between relevant laws, is required to fulfil the NDC targets.

The study revealed that a key challenge of implementing the NDC at a local level is the current practice of estimating a household's quality of life based on the number of livestock held by a family. It makes herders focus on increasing the number of animals rather than emphasising livestock quality, which is a countermeasure to the climate adaptation strategy and might also lead to an increase in the number of low-quality livestock. In addition, there is an ineffective

way of disseminating policy messages which leads to a lack of understanding of the importance of policies at a local level. Finally, there is a lack of communication between local administration, overseeing communication with locals, and stakeholders, who are in charge of policy implementation at a local level. On a local scale, tackling hierarchy levels by creating an open and transparent environment to communicate with locals could be effective and create a bridge between policy and its implementation.

Outcomes from this study demonstrate that a failure to consult the people affected by policies or required to implement policies leads to constraints of NDC implementation. The study noticed the lack of local administrations' attention to local herders. Mainly, local administrators are in charge of spending tax money raised from herders, and the tax should be spent on climate change adaptation measures. Therefore, discussing problems and solutions with local stakeholders could help them to effectively take action against climate change and to implement policies locally.

Moreover, the findings indicate that the current herding practices counteract the strategic and climate policies. The traditional practice to receive the *Myangat Malchin* title, or honour, by holding 1000 livestock or more, is counteracting the policy objectives to adapt to climate change. This practice leads to an increase in the total number of livestock, which leads to land degradation, working against the NDC's climate change adaptation measures. Therefore, policymakers may need to change the relevant policies to encourage focus on livestock quality rather than the number of animals. To conclude, although herders are aware of climate change and land degradation, their herding practices appear to be contrary to climate adaptation and mitigation practices.

ACKNOWLEDGMENTS

This study was funded by the GRÓ Land Restoration Training Programme under the auspices of UNESCO and undertaken as part of the GRÓ LRT six-month postgraduate training programme. This work would not have been possible without all the support from the programme.

Firstly, I am immensely grateful to the GRÓ LRT Programme Director Sjöfn Vilhelmsdóttir, Deputy Director Berglind Orradóttir, Operations manager Halldóra Traustadóttir, and Project Manager Brita Berglund for giving me the opportunity, strength and knowledge to undertake this study and for their contribution and support in ensuring my completion of the programme.

Furthermore, I would like to express my sincere gratitude to my supervisor, professor Jón Geir Pétursson, for his expertise, input, and encouragement throughout this project. I am also thankful to my coordinator, Dr Sjöfn Vilhelmsdóttir, for her insights and guidance that assisted me to complete this project.

Moreover, I would also like to show my appreciation for my fellow researchers and all the staff members at the Institute of Geography and Geoecology, Mongolian Academy of Sciences for their help and support that motivated me to study for the programme in Iceland. Also, I am much obliged to Dr Delgerjargal Dugarjav and Dr Khishigjargal Mookhor from the Mongolian University of Life Sciences for always giving me encouragement.

I am also deeply indebted to all the fellows of the GRÓ LRT Programme, especially to Abdubakir Qo'shboqov from Uzbekistan, Dina Maldybaeva from Kyrgyzstan, Moselantja Rahlao from Lesotho, and Erdenetuya Boldbaatar, Badam Ariya and Sumjidmaa Sainnemekh from Mongolia for their precious time, inspiration, and thoughtful ideas that motivated me to complete the programme successfully.

Last but not least, I am extremely thankful to my mother Altantogos Darisuren and my sister Bayarmagnai Altankhuyag for supporting me during my study, day and night.

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APPENDICES

APPENDIX I. Questions for herders and local communities

1. What does ‘climate change’ mean to you?
2. How has been climate changing throughout the years?
3. How is climate change affecting you as a farmer? ‘Pastureland degradation? Extreme weather events?’
4. Do you work focusing on number of livestock or quality of products?
5. How do you think you can work to adapt climate change as a farmer?
6. What is your practice for adapting climate change?
7. Are you familiar with any policies or laws related to climate change?
8. Do you think the climate change policies are working well?
9. How do you think the Government should make/implement policies against climate change in a way that is friendly to farmers?
10. Do you think that you would be more likely to adopt a new practice if (a) there were penalties, fines, or taxes in place for not using the practice, or (b) there were incentives in place to adopt the practice? (Which motivates you more to work without exceeding the grazing capacity?)
11. Where do you get your information about climate change? (Personal observation, news, conversations, local administration?) What kind of information has the biggest impact on you?
12. What are the other factors that influence your choice of farm practices? (Economic constraints, social pressure, etc?)

APPENDIX II. Questions for local administrators

1. Do you think the government climate change policies are working well? Why?
2. How do you think government policies and laws are related to farmers (down to earth)?
3. How do you think farmers are implementing laws and policies related to climate change? (focusing on numbers of livestock or few and quality of livestock)
4. As a local administrator, how farmers should work for climate change adaptation?
5. How farmers have challenges and/or benefits from climate change related laws and policies?
6. Do you think that you would be more likely to adopt a new practice if (a) there were penalties, fines, or taxes in place for not using the practice, or (b) there were incentives in place to adopt the practice? (Which motivates you more to work without exceeding the grazing capacity?)
7. How do farmers get information about climate change? (Personal observation, news, conversations, local administration?) What kind of information has the biggest impact on farmers?
8. What kind of tools do you think are effective for farmers’ awareness about laws and policies?