

Climate-Related Disaster Risks in Mongolia's Gobi Region: Challenges and Resilience-Building Strategies

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Abstract

Mongolia's Gobi region is increasingly vulnerable to interconnected environmental and socioeconomic threats, such as drought, dzud, desertification, dust and sandstorms, temperature extremes, flash flooding, water shortages, pasture deterioration, and livestock disease. These risks severely affect rural herding communities that rely on climate-sensitive land, water, and livestock. Drawing on a qualitative review of legislation, policy documents, statistical data, government reports, and international publications, this study evaluates regional hazards and current risk governance.

Using the Sendai Framework and the hazard–exposure–vulnerability–capacity framework, the results indicate Mongolia's gradual transition from reactive emergency management to proactive risk reduction. However, this shift is hindered by insufficient local risk data, limited anticipatory funding, inadequate infrastructure and coordination, ecosystem degradation, scattered settlements, and herders' economic insecurity.

Building resilience in the Gobi therefore requires integrated and forward-looking measures, including multi-hazard warning systems, forecast-based funding, resilient water facilities, responsible rangeland management, diversified livelihoods, responsive social protection, improved local capacity, and consistent disaster-loss tracking.

Keywords: Mongolia Gobi Region, Disaster Risk Management, Climate Change, Drought, Dzud, Water Scarcity, Pasture Degradation, Herder Households, Disaster Resilience, Anticipatory Action, Sendai Framework

1. Introduction

Mongolia's exposure to climate-related disasters is shaped by its extreme climate, fragile ecosystems, vast territory, dispersed population, and reliance on pastoral livestock production. These vulnerabilities are especially pronounced in the Gobi region, where communities repeatedly experience drought, dzud, dust and sandstorms, extreme temperatures, flash floods, water scarcity, livestock disease, and land degradation.

Dzud is a compound disaster in which summer drought reduces pasture and fodder, while severe winter conditions prevent livestock from accessing food and water. Its impacts result from interactions among climatic hazards, pasture conditions, livestock numbers, household preparedness, infrastructure, markets, and institutional capacity. The devastating 2023–2024 dzud, which

caused approximately 7.44–8.1 million livestock deaths, illustrated the continuing vulnerability of herder livelihoods, including in Govisumber and Dornogovi.

Climate change further intensifies these risks through rising temperatures, variable precipitation, declining water availability, and deteriorating pastureland. Although Mongolia adopted the 2017 Law on Disaster Protection and developed institutions and strategies aligned with the Sendai Framework, effective implementation remains difficult in remote and sparsely populated Gobi communities [1].

Therefore, this study assesses the Gobi region's principal hazards, exposure factors, and vulnerabilities; identifies weaknesses in existing disaster risk management; and proposes strategic measures

to improve preparedness, anticipatory action, emergency response, recovery, and long-term community and institutional resilience.

1. Theoretical Framework of Disaster Risk Framework

Disaster risk in Mongolia's Gobi region can be understood through four interconnected components: hazard, exposure, vulnerability, and capacity.

Hazards are potentially damaging events, including drought, dzud, dust and sandstorms, extreme heat and cold, flash floods, livestock disease, and wildfire.

Exposure refers to the people, livelihoods, infrastructure, services, economic assets, and ecosystems located in hazard-prone areas. These include herder households, livestock, wells, winter shelters, roads, electricity networks, communication facilities, schools, health services, mining operations, and fragile ecosystems [2].

Vulnerability describes the conditions that increase the likelihood of harm. In the Gobi, these include poverty, heavy dependence on livestock, pasture degradation, water scarcity, geographic isolation, weak infrastructure, limited savings and insurance coverage, and inadequate access to essential public services.

Capacity refers to the resources and abilities available to anticipate, withstand, respond to, and recover from disasters. It includes early-warning systems, household preparedness, veterinary services, emergency organizations, local government resources, social protection, livestock insurance, community cooperation, and recovery assistance [3].

This framework explains why the same climatic hazard may produce different consequences across households and provinces. For example, a herder household with adequate winter shelters, fodder reserves, reliable wells, diversified income, insurance, transportation, and timely warning information is more capable of coping with drought or dzud than a household without these resources. Disaster losses therefore result not only from the severity of a hazard but also from the level of exposure, underlying vulnerability, and available capacity [4].

The Sendai Framework for Disaster Risk Reduction: The Sendai Framework for Disaster Risk Reduction 2015–2030 provides the main international policy foundation for this study. Its objective is to prevent the creation of new risks, reduce existing disaster risks, and strengthen societal resilience through coordinated legal, institutional, economic, structural, social, health, educational, environmental, cultural, and technological measures.

The framework establishes four priorities:

- Understanding disaster risk;
- Strengthening disaster risk governance;
- Investing in disaster risk reduction for resilience; and
- Improving preparedness for effective response and applying the principle of “Build Back Better” during recovery, rehabilitation, and reconstruction.

Mongolia's disaster risk policies generally correspond with these priorities. This alignment is reflected in its national strategy for implementing the Sendai Framework and its community-participatory disaster risk reduction programmers. Nevertheless, the effectiveness of these policies depends on their practical implementation at provincial, district, community, and household levels.

Resilience and Adaptive Capacity.

Resilience is the ability of individuals, households, communities, institutions, and systems to anticipate hazards, absorb their impacts, adapt to changing conditions, and recover while maintaining essential functions. In the Gobi region, resilience extends beyond surviving an emergency. It includes sustainable pasture management, secure access to water, healthy livestock, diversified income sources, strong social networks, accessible public services, reliable communication systems, and responsive local institutions [5].

Adaptive capacity refers more specifically to the ability to adjust practices, resources, and decisions in response to changing climatic and environmental conditions. It is increasingly important because historical weather patterns may no longer reliably predict future risks. Disaster risk management must therefore integrate climate projections, seasonal forecasts, pasture and water monitoring, livestock health information, and flexible livelihood strategies.

2. Community-Based and Ecosystem-Based Disaster Risk Management

Community-based disaster risk management treats local people as active participants in risk assessment, planning, preparedness, response, and recovery—not merely as recipients of government or humanitarian assistance. Herder knowledge of seasonal weather, livestock behavior, grazing conditions, migration routes, wells, and winter shelters can complement scientific forecasts and official planning. Integrating these forms of knowledge can improve the relevance and timeliness of local disaster-management decisions.

Ecosystem-based disaster risk reduction involves protecting, sustainably managing, and restoring ecosystems to reduce hazards, exposure, and vulnerability. In the Gobi, important measures include sustainable pasture use, protection of wells and other water sources, rehabilitation of degraded land, erosion control, and conservation of native vegetation, particularly saxaul ecosystems. These interventions can help limit desertification and dust generation while protecting livestock-based livelihoods [6].

Existing restoration initiatives in the Gobi demonstrate that disaster resilience is stronger when ecosystem conservation is combined with community participation and practical household preparedness. Examples include locally managed pasture restoration, water-source protection, pooled fodder reserves, and community-based monitoring of environmental conditions.

3. Methodology of Study

Research design: This study employed a qualitative descriptive and

analytical research design to examine disaster risk management in Mongolia's Gobi region. A qualitative design is appropriate for investigating complex issues that require interpretation of policies, institutional practices, environmental conditions, and socioeconomic circumstances rather than numerical measurement alone.

The descriptive component was used to identify and systematically present the major hazards affecting the Gobi region, including drought, dzud, dust and sandstorms, extreme temperatures, flash floods, livestock disease, and wildfire. It also described exposed populations and assets, sources of vulnerability, existing institutional arrangements, and disaster-management capacities. The analytical component examined the relationships among hazards, exposure, vulnerability, and capacity. It assessed how environmental degradation, climate change, pastoral livelihood dependence, geographic isolation, infrastructure limitations, and institutional weaknesses interact to increase disaster losses. The analysis also evaluated the extent to which Mongolia's existing laws, policies, institutions, and risk-reduction measures address the distinctive conditions of the Gobi region.

Documentary analysis served as the principal research method. It involved systematic collection, review, comparison, and interpretation of relevant written and statistical materials, including:

- National legislation and policy documents;
- Government strategies, action plans, and official reports;
- Disaster and livestock-loss statistics;
- Climate, pasture, water, and environmental information;
- Reports issued by United Nations agencies and international organizations;
- Academic articles and previous research studies; and
- Programmer evaluations and development project reports.

The documents were reviewed according to four principal analytical categories: hazards, exposure, vulnerability, and capacity. They were also assessed in relation to disaster preparedness, anticipatory action, emergency response, recovery, and long-term resilience. Evidence from different sources was compared to identify recurring patterns, policy gaps, institutional limitations, and strategic opportunities [7].

Our research design was selected because the study aims to integrate environmental, legal, institutional, policy, and socioeconomic evidence. Rather than testing a single causal relationship or measuring household perceptions through a survey, it develops a comprehensive understanding of disaster risk as a multidimensional and interconnected issue. The design is therefore suitable for evaluating the existing disaster risk management system and formulating strategic recommendations for strengthening resilience in Mongolia's Gobi region.

The study relied primarily on secondary data, defined as information previously collected, produced, and published by government agencies, international organizations, development

institutions, and academic researchers. These sources were used to examine disaster hazards, exposure, vulnerability, institutional capacity, and risk-reduction measures relevant to Mongolia's Gobi region. The principal data sources included:

- Mongolia's Law on Disaster Protection, which provided the legal foundation for disaster prevention, preparedness, risk reduction, emergency response, recovery, and the responsibilities of national and local institutions;
- National disaster risk reduction policies, strategies, and action plans, which were reviewed to assess Mongolia's priorities, planned interventions, and alignment with the Sendai Framework for Disaster Risk Reduction 2015–2030;
- National Emergency Management Agency materials, including disaster reports, preparedness guidelines, risk assessments, response information, and institutional documents;
- National Statistics Office databases, which supplied statistical information on population, households, livestock, economic activities, social conditions, infrastructure, and regional development;
- Mongolia's national reports submitted under international climate and disaster frameworks, which provided evidence on climate trends, national commitments, implementation progress, institutional arrangements, and remaining challenges;
- Reports from UNDRR, UNDP, FAO, and other United Nations humanitarian agencies, which offered information on disaster risk, food security, pastoral livelihoods, climate adaptation, emergency needs, humanitarian responses, and resilience-building initiatives;
- World Bank and Asian Development Bank assessments, which provided climate-risk profiles, socioeconomic analyses, infrastructure assessments, and recommendations concerning climate adaptation and disaster resilience;
- Reports on the 2023–2024 dzud, which contained evidence regarding the event's geographic extent, livestock mortality, household impacts, humanitarian needs, emergency measures, and socioeconomic consequences; and
- Academic and policy studies addressing herder livelihoods, pasture degradation, water scarcity, climate change, livestock health, household adaptation, social protection, insurance, and community resilience.

Priority was given to legislation, official statistics, government publications, and reports issued by recognized national and international institutions. Academic sources were selected based on their relevance, methodological clarity, and direct connection to Mongolia's Gobi region or pastoral disaster risks [8].

The information obtained from these sources was cross-checked to identify areas of agreement, inconsistency, or missing evidence. Using multiple sources increased the credibility of the analysis and reduced dependence on any single institution or dataset. However, differences in reporting periods, geographic coverage, definitions, and disaster-loss estimates were considered when interpreting the findings.

Data-analysis procedure: The collected documents were examined using thematic content analysis, a qualitative method for systematically identifying, coding, organizing, and interpreting recurring ideas and patterns within textual and statistical materials. This method enabled evidence from different sources to be grouped into common analytical themes and compared across documents. The analysis involved reviewing the selected materials, extracting relevant information, assigning codes, and organizing the coded evidence into five principal categories:

- Major hazards: drought, dust and sandstorms, extreme temperatures, flash floods, wildfire, livestock disease, and related climate and environmental threats.
- Exposure and vulnerability: exposed populations, livestock, infrastructure, public services, economic activities, and ecosystems, together with socioeconomic, geographic, environmental, and institutional conditions that increase the

- likelihood of disaster losses.
- Existing disaster-management capacity: early-warning systems, household preparedness, emergency organizations, veterinary services, local government resources, social protection, insurance, community cooperation, and recovery assistance.
- Institutional and operational gaps: weaknesses in risk information, coordination, financing, infrastructure, local implementation, preparedness, service accessibility, disaster-loss reporting, and institutional capacity.
- Strategic response options: measures for improving risk knowledge, anticipatory action, preparedness, emergency response, recovery, ecosystem management, livelihood resilience, social protection, and local governance.

The findings were subsequently interpreted using the four priorities of the Sendai Framework for Disaster Risk Reduction 2015–2030:

Sendai Framework priority	Focus of analysis
Understanding disaster risk	Availability and use of information concerning hazards, exposure, vulnerability, capacity, and disaster losses
Strengthening disaster risk governance	Adequacy of legislation, institutional responsibilities, coordination, accountability, and local participation
Investing in disaster risk reduction	Financing for resilient infrastructure, water security, pasture management, social protection, insurance, and preparedness
Enhancing preparedness and “Building Back Better”	Early warning, anticipatory action, emergency response, recovery, rehabilitation, and post-disaster improvement

Table 1: Sendai Framework for Disaster Risk Reduction 2015–2030

Data triangulation was applied to improve the reliability and credibility of the findings. Triangulation refers to comparing evidence obtained from multiple types of sources to determine whether they support, complement, or contradict one another. Accordingly, legal provisions and policy commitments were compared with official statistics, disaster assessments, government implementation reports, academic studies, and publications from international organizations.

For example, official provisions concerning early warning and preparedness were assessed alongside reports describing their practical implementation during the 2023–2024 dzud. Similarly, livestock-loss estimates were compared across government, statistical, humanitarian, and socioeconomic assessment sources. Where sources reported different figures or interpretations, these variations were retained and examined in relation to differences in reporting dates, definitions, methodology, and geographic coverage. This process strengthened the analysis by distinguishing formally established disaster-management arrangements from their actual implementation and outcomes.

Scope and limitations: The geographical focus of this study is Mongolia’s southern Gobi region, particularly the provinces of Dornogovi, Dundgovi, Umnugovi, and Govisumber. These provinces were selected because they share arid and semi-arid environmental conditions, fragile desert-steppe ecosystems, limited

water resources, dispersed settlements, and a strong dependence on pastoral livestock production. They are also repeatedly affected by drought, dzud, dust and sandstorms, extreme temperatures, flash floods, livestock disease, wildfire, and land degradation. Where province-level or Gobi-specific disaggregated data were unavailable, national-level evidence from Mongolia was used to explain broader climatic trends, disaster-management arrangements, legal frameworks, and socioeconomic conditions relevant to the study area. National evidence was applied cautiously because environmental conditions, infrastructure, institutional capacity, and livelihood patterns differ across provinces. Therefore, national findings were not automatically treated as fully representative of every Gobi province.

The study has several limitations. First, it is based on documentary analysis and does not include primary data collected directly from herder households, local officials, emergency personnel, veterinarians, civil society organizations, or other stakeholders. Its findings should therefore be interpreted as a systematic synthesis of existing evidence rather than the results of an original household survey or field investigation.

Second, the availability and quality of disaggregated data vary across provinces and disaster types. Some sources use different reporting periods, indicators, definitions, and geographical classifications. Disaster-loss estimates—particularly livestock

mortality figures from the 2023–2024 dzud—may also differ according to the date and method of assessment.

Third, official documents may describe intended policies and institutional responsibilities more clearly than their actual implementation in remote communities. Documentary evidence alone may not fully capture household experiences, informal coping mechanisms, local knowledge, coordination problems, or barriers to accessing public assistance [9].

Future research should validate and extend the study’s conclusions through a mixed-methods research design. This could include interviews with herders and institutional stakeholders, focus-group discussions, field observations, and household-level quantitative surveys. Provincial and district-level data on disaster losses, household income, livestock mortality, pasture and water conditions, insurance coverage, preparedness, and access to public services would also allow more precise comparisons among Gobi communities.

4. Results of the Study

Interconnected and Multi-Hazard Characteristics of Disaster Risk: The findings demonstrate that disaster risk in Mongolia’s Gobi region is multi-hazard, interconnected, and cumulative. Hazards do not occur independently; one event can increase the probability or severity of another, creating cascading effects on ecosystems, infrastructure, livestock, and rural livelihoods.

Drought is a major hazard because it reduces pasture growth, depletes surface and groundwater resources, and limits the availability of hay and fodder. Prolonged drought weakens livestock through poor nutrition and restricted access to water. Consequently, animals become more susceptible to disease, severe storms, extreme cold, and mortality during subsequent winter dzud conditions. This drought–dzud sequence demonstrates how hazards occurring in different seasons can combine to produce a compound disaster.

Environmental degradation further increases disaster risk. Heavy or sudden rainfall falling on dry, compacted, and degraded land may not be absorbed effectively into the soil. Instead, rapid surface runoff can generate flash floods that damage settlements, roads, bridges, wells, livestock shelters, and other infrastructure. Therefore, even in an arid region, water-related disasters can cause substantial losses. Strong winds interact with dry soil, sparse vegetation, and degraded pasture to intensify dust and sandstorms. These events reduce visibility, disrupt transportation, damage infrastructure, affect human and animal health, and accelerate soil erosion and desertification. Wildfires may also become more likely during hot, dry, and windy conditions, further damaging pasture resources and increasing livelihood insecurity. The impacts extend beyond livestock losses. Droughts, dzud, floods, and storms can damage or disrupt:

- Roads and transportation networks;
- Electricity and energy systems;
- Mobile and other communication facilities;
- Veterinary and emergency operations; and
- Mining and other local economic activities.

Damage to one system may create further consequences. For example, blocked roads can delay the delivery of fodder, fuel, medicine, and emergency assistance. Communication failures may prevent communities from receiving timely warnings, while power disruptions can affect water pumping, health services, and local government operations. Damage to wells may intensify water scarcity for both households and livestock.

These interactions show that disaster risk in Gobi should not be managed through separate, hazard-specific interventions alone. It requires an integrated multi-hazard and systems-based approach that recognizes seasonal relationships, cascading infrastructure failures, environmental degradation, and the interconnected vulnerability of herder livelihoods. The principal hazard relationships can be summarized as follows:

Primary hazard	Cascading consequences	Immediate effects
Drought	Livestock weakness, fodder shortages, increased debt	Reduced pasture and water
Dzud	Income loss, food insecurity, migration	Restricted access to pasture; livestock mortality
Dust and sandstorms	Accidents, respiratory risks, pasture degradation	Low visibility, soil erosion, infrastructure disruption
Flash floods	Isolation, contamination, service interruption	Damage to roads, homes, wells, and utilities
Extreme heat and cold	Higher mortality and energy demand	Human and animal health stress
Land degradation	Greater drought sensitivity and livelihood insecurity	Declining ecosystem productivity

Table 2: Primary Hazards, Immediate Effects, and Cascading Consequences in Mongolia’s Gobi Region

The results therefore support a compound-risk perspective. Treating drought, dzud, water scarcity, and land degradation as separate problems can lead to fragmented interventions and inefficient resource allocation.

4.1. High Dependence on Climate-Sensitive Livelihoods

The vulnerability of the Gobi is strongly connected to pastoral livestock production. For many households, livestock simultaneously represents income, food, savings, social identity, and financial security. Large-scale livestock mortality therefore produces multidimensional consequences, including:

- loss of income and productive assets;
- increased household debt;
- reduced access to food, education, and healthcare;
- psychological stress and uncertainty;
- displacement and migration to provincial centers or Ulaanbaatar;
- increased dependence on government and humanitarian assistance.

The 2023–2024 dzud caused nationwide agricultural and livelihood impacts, with millions of livestock deaths and major economic losses. The evidence indicates that livestock mortality is not merely an agricultural loss; it can trigger longer-term poverty, unemployment, migration, and pressure on urban public services.

Water scarcity and ecosystem degradation: Water scarcity emerged as one of the most important structural risks. Many Gobi households and livestock depend on wells and limited groundwater resources. A damaged, frozen, poorly maintained, or inaccessible well can become a critical emergency. Mining, population concentration, increasing livestock pressure, and climate variability may further intensify competition over water.

Pasture degradation also reduces the natural capacity of ecosystems to withstand drought and recover after extreme events. When livestock numbers exceed local carrying capacity, herders may enter winter with weaker animals and insufficient reserve pasture. This increases the probability that a climatic shock will become a livelihood disaster.

Progress in disaster risk governance: The study found that Mongolia has made important progress in establishing the legal and institutional foundations of disaster risk management. The Law on Disaster Protection defines responsibilities for prevention, preparedness, risk reduction, response, search and rescue, and recovery. It also provides a basis for coordination among emergency organizations, national and local authorities, private entities, and civil society.

Mongolia has also aligned national disaster policies with the Sendai Framework. The availability of national and local disaster loss data represents an important institutional strength because systematic loss information can guide policy and investment decisions. UNDRR has recognized Mongolia's investment in recording local disaster losses and damages across hazard events [10].

Implementation gaps: Despite formal progress, several weaknesses were identified.

First, local risk assessments are not always sufficiently detailed or regularly updated. Province-level averages may conceal major differences between soums, bags, pasture zones, water points, and individual households.

Second, early warning does not consistently lead to early action. Forecast information may be produced, but vulnerable households

may lack money, transport, fodder, labor, storage facilities, or alternative pasture necessary to act on it.

Third, disaster financing remains weighted toward emergency response and compensation. Insufficient pre-arranged financing can delay preventive actions that would cost less than post-disaster recovery.

Fourth, the geographic isolation of Gobi settlements complicates emergency operations. Long distances, limited roads, severe weather, weak communication coverage, and shortages of specialized personnel can delay assessments and assistance.

Fifth, institutional coordination remains uneven. Disaster risk reduction requires cooperation among emergency management, meteorology, veterinary services, agriculture, environment, health, social protection, infrastructure, mining, and local government institutions. Information and responsibility may remain fragmented across these sectors.

Finally, livelihood recovery programmers do not always address the differentiated needs of women, older persons, persons with disabilities, poor households, and families that have lost most or all of their livestock.

Strategic responses. The findings support the following strategic priorities: Risk-informed early warning and anticipatory action. Weather, pasture, water, livestock health, market, and household-vulnerability information should be integrated into a single decision-support system. Warnings should trigger predefined actions, responsibilities, and financing. Previous FAO experience in Mongolia demonstrates that timely early-warning information can support early interventions that protect livestock assets and livelihoods.

Climate-resilient water management. Strategic wells should be mapped, rehabilitated, protected, and equipped with renewable-energy pumping systems where appropriate. Emergency water-supply plans should identify alternative water points, mobile delivery capacity, and maintenance responsibilities.

Sustainable pasture and livestock management. Local authorities and herder groups should strengthen rotational grazing, reserve pasture protection, seasonal mobility arrangements, fodder storage, animal-health services, and livestock quality improvement. Risk reduction should prioritize herd resilience and productivity rather than livestock numbers alone.

Adaptive social protection and disaster insurance. Social assistance should be capable of expanding automatically when objective hazard thresholds are reached. Index-based livestock insurance, emergency cash support, debt restructuring, and livelihood-recovery grants should be coordinated to avoid gaps and duplication.

Resilient infrastructure and public services. Roads, electricity, communication systems, healthcare facilities, schools, shelters, and water infrastructure should be designed and maintained according to local multi-hazard risk assessments.

Community participation and local capacity. Each Soum and bag should maintain participatory disaster maps, vulnerable-household registries, evacuation and livestock-movement plans, emergency contact systems, and annual simulation exercises.

Livelihood diversification. Support for small-scale processing, renewable energy, sustainable tourism, local services, handicrafts, and climate-resilient enterprises can reduce household dependence on livestock.

Ecosystem-based risk reduction. Land restoration, protection of saxaul and other native vegetation, sustainable groundwater use, and rehabilitation of degraded pasture should be treated as disaster risk investments rather than only environmental activities.

5. Conclusion

Disaster risk in Mongolia's Gobi region arises from the interaction of extreme climatic hazards, ecosystem degradation, dispersed settlements, inadequate infrastructure, and strong household dependence on pastoral livestock. Drought, dzud, water scarcity, dust storms, extreme temperatures, and flash floods are interconnected, with one hazard often intensifying the impacts of another. The severe livestock losses during the 2023–2024 dzud demonstrate that current preparedness and livelihood-protection capacity remain insufficient.

Although Mongolia has established important legal, institutional, and policy foundations for disaster risk reduction, significant gaps remain between national commitments and local implementation. Key challenges include limited localized risk information, inadequate anticipatory financing, fragmented institutional coordination, weak rural infrastructure, unequal household capacity to respond to warnings, and insufficient integration of pasture, water, livestock, and social-protection policies.

Disaster management in the Gobi must therefore shift from reactive emergency response toward an anticipatory, multi-hazard, climate-informed, ecosystem-based, and community-centered resilience model. Early-warning information should trigger predefined actions and accessible financing, while water and pasture management should be integrated with livestock policy, social protection, infrastructure, and local development planning.

Ultimately, strengthening Gobi resilience requires sustained investment before disasters occur. Such investment must protect not only livestock and physical infrastructure but also human well-being, traditional pastoral knowledge, fragile ecosystems, and the long-term sustainability of Gobi communities.

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