

Traditional Livelihoods and Mining in Mongolia's Changing Climate: Exploring the Potential of Cross-sectoral Partnerships in Achieving Sustainability

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HIGHLIGHTS

- This project was a first of its kind to discuss the complex links between livelihoods, the mining sector and climate change and natural disasters in Mongolia.
- A key focus of the project was brainstorming the idea of establishing a network hub of key actors that would value the strengths of individual sector groups and allow partnerships by identifying issues of common concern.
- A clear highlight of the project is the greater appreciation of traditional herding knowledge and its indispensable role in natural disaster management and relief.
- Mining industry in Mongolia is open to discussion centred around climate change and discussing its future implications on the sector. This is particularly noteworthy in light of a more reserved take on global warming internationally across the sector.

ABSTRACT The growing scale of resource development activities accentuates the complexity underlying the sustainability of traditional livelihoods in Mongolia. At the same time, Mongolia experiences growing vulnerability to climatic variability and change, expressed in the form of intense desertification, water stress, and extreme dzuds. This paper is based on APN-funded capacity building workshops that focused on understanding a) how climatic changes impact herding and mining—although in varied forms, and b) how each sector may leverage its resources to devise action, strategies and tools that may help build capacities and boost resilience towards changing climatic conditions. Workshop discussions highlighted that traditional livelihoods remain under multiple threats from climatic variability and change; and institutionalised mechanisms of creating cross-sectoral partnerships - such as a network hub of key stakeholder groups - is fundamental in ensuring climate-resilient coexistence between mining and herding sectors.

KEYWORDS *climate change; mining; traditional livelihoods; Mongolia; public-private partnership; natural disasters*

1. Introduction

Transitioning to a market economy, Mongolia's large share of traditional pastoralist communities have struggled with restricted water availability largely due to extreme weather conditions, poor service delivery and limited government intervention to address some of the underlying causes of water-related community concerns. As explained in further detail below, an expanding mining industry and its water-intensive activities together with a looming climatic disorder present Mongolia with complex biophysical and socio-economic drivers of change. These changes interact with and influence each other, and challenge the existing social, cultural and institutional fabric of local communities, and cause irreversible loss and damage (L&D). The fact that communities possess neither the capacity nor the resilience needed to address these complex climatic challenges further reinforces the need for a project that transcends sectoral boundaries to address disaster risks and resulting L&D.

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Dialogue, coordination, coherence and synergy among relevant stakeholders have been considered key instruments to strengthen risk management approaches to address L&D. In relation to building capacity to address L&D, the significance of better appreciating non-economic losses and the impacts of slow-onset processes such as desertification and loss of biodiversity can hardly be underestimated, particularly for economic enterprises such as herding and mining, which are so integrally dependent on suitable environmental conditions for their long-term viability.

Mongolia's mining sector has grown significantly in the past decade due to intense national and international investment in resource development activities and the recent global commodity boom. It is widely recognised as a country with vast resources of copper, coal, gold, fluorspar, uranium and other natural resources—12 large mining operations are located across the country and 9 more are set to begin operations in the near future (Austrade, 2011). Mongolia's GDP grew by approximately 17.3% in 2011, a direct result of large-scale mining investments, particularly in the South Gobi region (UN Stats, 2013). Latest census reveals that the two major mining centres in the South Gobi, Khanbogd and Tsogttsetsii, both have witnessed an exponential growth in their population between 2000 and 2010 (Ochirsukh, 2011). In 2012, mining accounted for approximately 9% of all new employment opportunities created in Mongolia (Dalaibuyan, 2013). The minerals sector already employs over 14,000 people and contributes to more than 70% of Mongolia's total export earnings (Austrade, 2011). Oyu Tolgoi (OT), besides being the world's largest copper mine, is expected to contribute to approximately 34% of Mongolia's total GDP once fully operational by 2020 (Dalaibuyan, 2013). It is not surprising then that a study of poverty and inequality in Mongolia undertaken by the Asian Development Bank suggested employment in the mining sector as one of the significant factors reducing the likelihood of poverty both at household and individual levels (Ochirsukh, 2011).

In a country where nomadic herding remains the primary source of livelihood, increased mineral exploration and mining activities have led to competition over access to key natural resources such as land and water (Combellick-Bidney, 2012; Reeves, 2011). Over the past two decades, climatic changes—both slow-onset and extreme events—have severely impacted the livestock sector in Mongolia, directly affecting nearly 30% of the country's population. In the last 40 years, Mongolian ecosystems have been noticeably altered by increased variability and changes in global climate conditions (Myagmar & Chuluun, 2013). Statistically, Mongolia's annual mean temperature has increased by 2.07°C between 1940 and 2013. This is a much greater rate of warming than has been observed in global average temperatures, which increased by 0.74°C from 1906 to 2013. Since 1961, the annual potential evapotranspiration rate has increased by 118.1 mm and growing season precipitation has decreased by 33 mm due to climate change, leading to severe aridity and desertification.

Due to rapid rates of pasture degradation and an increase in the total number of extreme hot days annually, animals are unable to gain enough weight and energy to survive harsh autumn and winter months, resulting in severe weight loss and declining resistance to dzuds. In particular, the occurrence of

hazardous weather events has increased and the socio-economic losses associated with these events have roughly doubled in the last 20 years. As a result, herder households have borne huge socio-economic costs, with some families having lost more than 90% of their primary source of income. With climate-influenced changes to bio-physical conditions, impacts may also be expected upon the minerals sector as the latter remains highly dependent on suitable natural conditions for accessibility to, and subsequent extraction of, underground resources (Sharma & Franks, 2013).

Although from a conventional viewpoint, mining-led economic boost to the national economy may be considered as one of the early signs of development in Mongolia, economic growth alone that disregards resulting impacts on the country's socio-ecological way of life contravenes the overarching Mongolian identity, as is demonstrated by Mongolians' deep concern for the environment and its extensive reliance on natural resource-based traditional herding lifestyles. Therefore, to maximise the industry's potential to contribute to Mongolia's future development, not only does it need to co-exist with herding but also formulate a better understanding of its role and significance in supporting sustainable livelihoods in a changing climate.

2. Methodology

The proposal acknowledges mining not only as the emerging economic enterprise in Mongolia—one that offers immense socio-economic promise for development—but one that is closely dependent on a suitable natural environment for its operations and long-term viability. With a changing climate, the demands for water and land by both herders and miners are going to increase as their supply and/or quality shrinks. Rather than competing with each other, the project emphasised the synergies that could be developed between the two sectors to build collaborative adaptive capacities and address L&D.

This project was a collaborative effort between the Sustainable Minerals Institute of the University of Queensland in Australia and two Mongolian partners, Civic Solutions NGO and The Institute of Geography of the Mongolian Academy of Sciences. The project entailed capacity building workshops that focused on understanding how climatic changes that impact both herding and mining may provide the impetus to build trust and partnerships between the two industries to better manage climate risks and address L&D in affected rural communities. Specifically, the workshops aimed to identify (a) impacts of climate change on herding and mining, and current capacity to deal with these impacts, (b) priority impacts and specific activities that can be undertaken in a collaborative manner for each impact, and (c) main barriers to collaboration and ways to overcome these barriers.

The project undertook three workshops representing herding groups; mining companies; local, provincial and national government; academics; media; and civil society. These workshops were organised between 14 and 30 September, 2014. Two workshops were at the local/regional level (Umnugovi and Bayankhongor aimags in the Gobi and Gobi-Altai regions respectively), followed by a concluding multidisciplinary workshop in Ulaanbaatar. Findings from the regional workshops informed the final workshop to identify both short- and long-

term policy concerns and possible solutions. The number of participants across the three workshops totalled 115 (Umnugovi: 41; Bayankhongor: 35; Ulaanbaatar: 39).

Appropriate participants for the research were chosen on the basis of 1) the level of impact experience from mining activities and climate change; 2) the extent of knowledge in the extractive industry and regional development to inform research, and 3) the level of influence in decision-making. Participant selection was established firstly through in-country partners as well as via information in the public domain such as media reports, government ministry websites, community organisations and companies, publications such as community directories, and submissions made in response to the Environmental Impact Statements of major projects in the region. Special guidance was sought from advisory members suggested by the APN and expert contacts of the project's in-country team. Snowballing technique was further applied to include networks from these initial contacts and achieve an equitable representation from key stakeholder groups.

Discussion at the workshops was organised around three group activities. The first activity was undertaken with groups made of same sector representatives (e.g. all herders were in one group, all large scale miners in another group, etc.) while participants were mixed for the second and third activities to ensure a fair representation (and therefore, a reasonable voice) of all stakeholder groups. The workshop discussion flow was organised to allow each group activity to target a particular question or set of questions that aligned with addressing the project's objectives.

3. Results and Discussion

Questions followed the 'what, why, how' order to allow participants to gradually move from simple to layered questions and to ensure they were comfortable before addressing ques-

tions that were more complex in nature and that required a greater level of thought, content and analysis.

Table 1 provides more detail on the flow of each workshop, with the flow for the last two workshops adapted slightly in light of experience drawn from the first workshop.

Across Mongolia, there are mining areas where formal mining co-exists with informal artisanal and small-scale mining. The co-existence of mining and traditional livelihoods has become an inevitable reality for many mining areas in Mongolia. In some areas, their relations are adversarial because of environmental and social risks and impacts caused by mining. In some areas, they are synergised in different ways such as multiple employment or livelihood opportunities, company-community partnerships, and community-based ventures.

The interconnection between mining, traditional livelihoods and climate change has not been addressed often by research institutes and government agencies in Mongolia. Nor have the mining and other economic sectors raised this issue for broad discussion. In fact, when Civic Solutions first approached some mining industry representatives to discuss their interest in this issue many of them were very keen to learn and promote the project. It was clear that the whole scholarly and policy discourse in Mongolia on climate change adaptation and mitigation and L&D has not fully considered the role of mining.

The project brought together two of Mongolia's key economic sectors of herding and mining to consider climate change as a common concern and one that would require unconventional but realistic changes to the current modus operandi of policy- and decision-making in Mongolia. The project was successful in addressing all of its objectives and was able to capture in some detail, current levels of regional knowledge of disaster management, emerging climatic thresholds, as well as key grassroots concerns and priorities in relation to reducing vulnerability by building resilience to disaster events. Table 2 highlights key findings based on workshop discussions.

Activity	Key questions addressed
<p>Activity 1 (Participants organised in sector-specific groups)</p>	<p>Identify impacts from mining and climate change on your sector. How do you currently address these impacts.</p> <p>Identify impacts from climate change on your sector and current capacity to address these impacts.</p> <p>Identify impacts of climate change on other sectors and what their current capacities may be to address these impacts.</p>
<p>Activity 2 (Participants organised in mixed groups)</p>	<p>Identify two or three priority impacts from the previous activity. Suggest specific activities for collaboration for each priority impact. Identify what barriers exist to these collaborative activities.</p>
<p>Activity 3 (Participants organised in mixed groups)</p>	<p>What support mechanisms, tools, policy instruments would you require to overcome these barriers?</p> <p>And from whom?</p>

TABLE 1. Workshop discussion flow

Climate change impacts

Opportunities for cross-sectoral collaboration

Key barriers to collaboration

Across all stakeholder groups, the following key impacts of mining and climate change were identified (in order of importance).

Pasture degradation	Increase the number of green facilities.	Lack of trust across sectors.
Desertification	Protect groundwater resources by creating water reserves and encouraging water recycling.	Lack of, or insufficient budget allocation to, disaster management, including raising disaster awareness among citizens.
Water shortage		
Dust	Improve infrastructure for mine-related shipment to minimise impacts on herder lifestyle and pasture quality.	Limited technological know-how, in particular on workings of the mining industry (including use of water, treatment of waste water and other chemical pollutants during and or after the mining process).
Loss of traditional livelihoods	Monitor impacts using citizen participation.	

TABLE 2. Workshop findings

It was noted that political instability and a lack of legislative requirement for key sectors to cooperate on matters of national priority and concern greatly hinder any systematic approach to building cross-sector synergies and identifying avenues for close cooperation. To counter this, a key output of the project has been to recommend setting up a 'Knowledge Hub' platform to bring stakeholders together, and to generate new knowledge by sharing perspectives, that would allow for a more holistic understanding of Mongolia's development challenges. The hub would bring representation from mining companies, herder groups, districts, provinces and central government authorities, civil society and media to facilitate dialogue on capacity building in relation to climate adaptation and managing climate change-related loss and damage.

While herding maintains a deep social and cultural significance for Mongolia, the mining sector offers huge potential for socio-economic development. As such, the rationale behind the knowledge hub is to promote the idea of "cooperation for co-existence". The hub will function to:

- Identify strengths of each sector and foster partnerships to address common concerns;
- Facilitate innovative means to address climate-related concerns and disaster management; and
- Provide districts and provinces with decision-making responsibilities.

4. Conclusion

As a result of the finding of this study, policy recommendations are presented for five key areas:

Green development: the significance of green development at the local level is fundamental to guide changes in behaviour across Mongolia with regard to climate change, disaster management and resilience building. Workshop participants

strongly advocated for stakeholder involvement in the development of a climate change policy framework at the local level.

Disaster management: central government needs to build a better knowledge base on what forms a disaster, and disaster management and prevention plans, both for pre- and post-disasters. Investment in terms of obtaining best practices from national and international sources may help the process with better managing and addressing disasters.

Mining and impacts of climate change: the mining sector in Mongolia is open to discussing potential impacts of climate change, climate variability and natural disasters on the mining sector. The sector is willing to embrace action to address climatic perturbations as there is an acceptance of a strong business case for the mining industry to take note of changing environmental conditions across Mongolia.

Greater recognition of traditional herding knowledge: Mongolia should further invest in studies that reaffirm the importance of herder movement, and its role in disaster management and maintaining pasture quality. Additionally, a systematic policy refocus to move attention from herd quantity to quality is essential in the country's current policy landscape. Improved government funding may allow studies on genetic herd improvements and the importance of focusing on a balance herd composition.

Knowledge hub: an established avenue for stakeholder groups to come together, discuss common concerns, debate options and identify pathways forward is vital to Mongolia's future sustainability. Until such time when legislative requirements call for cross-sectoral cooperation, a knowledge hub may help institutionalise the practice of nudging sectors that may have been in conflict thus far to cooperate and use consensus—not conflict—to ascertain solutions to common challenges.

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