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Perceiving the climate crisis: pastoral futures and ecosystem compensation in post-socialist Mongolia

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This paper presents findings from ethnographic research on post-socialist herding groups in Mongolia, situated within the broader context of the climate crisis. The transition to a market economy in the 1990s – marked by livestock privatization and the dissolution of herder collectives – resulted in fragmented herding practices and intensified pressure on rangelands already affected by mining and climate change. In response to these challenges, Pasture User Groups (PUGs) were established with the support and initiative of donor organisations. This study draws on fieldwork conducted among members of a PUG engaged in pasture rehabilitation and biodiversity compensation in Bayangol *sum*, Selenge *aimag*. It explores how herders perceive climate change, ecological restoration, and the narratives that underpin such interventions, particularly in relation to their livelihoods and perception of the landscape they inhabit. The findings illustrate how herders interpret and respond to environmental change through socially embedded narratives and adaptive practices, revealing the dynamic interplay between lived experience, collective memory, and global climate discourses in a context of socio-economic uncertainty.

KEYWORDS

Mongolian pastoralism, climate change, pasture user group, landscape perception, pasture rehabilitation

Introduction

In this paper, I explore the differences I observed between institutional narratives of "climate change" – particularly as embodied in rangeland management and biodiversity conservation projects – and the perceptions of these same phenomena among mobile herders involved in one such project. The paper is based on the ethnographic fieldwork I conducted for my PhD, from April to November 2023, among herding families who are members of the Dorgont Pasture User Group (PUG), located in Bayangol *sum*, Selenge *aimag*, in northern Mongolia.

I contextualise the establishment of Pasture User Groups within the broader political, economic and social transformations that followed the end of socialism in Mongolia. These include the retreat of the state from the pastoral economy after the privatisation of

livestock, the dismantling of the so-called "dual control" system for managing customary pastoral production and of herders' collectives (*negdel*s), and the transition to a free-market economy, as well as the occurrence, in the 2000s, of severe *zud*s – climate-induced socio-economic disasters in which extreme cold, snow, or drought prevent livestock from accessing pasture in winter, resulting in high animal mortality. Zuds have often been framed within institutional narratives of climate change, which, while not inaccurate, tend to abstract the phenomenon from the situated knowledge and embodied experiences through which herders encounter and interpret environmental hardship. Such framings risk overlooking how climate variability is locally perceived in relation to shifting social, economic, and institutional landscapes, rather than through measurable climatic and ecological trends.

The intense rainfall during the summer of my fieldwork, which caused flooding of the Haraa River – along which most herder's summer camps were located – created the conditions to investigate herder's perceptions of the climate crisis. In particular, it allowed me to explore the contrast between their framing of the issue, grounded in phenomenologically experienced weather, and "institutional" approaches based on the more abstract and detached concept of climate. Instead of counterposing "scientific knowledge" and "traditional beliefs," I propose a more nuanced approach loosely inspired by Eduardo Viveiros De Castro's notion of *controlled equivocation* (Viveiros De Castro, 2004), which seeks out productive tensions between divergent conceptual worlds. As Viveiros De Castro (2019), p. S304 argues, these tensions can serve as generative spaces "situated in the gap between languages, the only location [. . .] where we can properly address the Anthropocene world." The goal, as the author clearly states, is neither to change *our* beliefs nor *theirs*, least of all taking them as models for our future, transforming their status from being our victims to our redeemers. Rather, anthropology must recognize others' unique socio-political realities and ontological visions as equal to our own – especially in the *patchy Anthropocene* (Tsing, 2015), where diverse ways of being inevitably intersect.

The use of the concept of "climate change," central to many institutional approaches and donor interventions, has been sharply criticised by philosopher Timothy Morton. They argue that "climate change" is not a neutral descriptor but a euphemism that fails to capture the existential gravity of the crisis (Morton, 2013). Moreover, by implying a distant and abstract phenomenon, it obscures its local manifestations and contributes to a sense of disconnection that hinders effective action. Rather than treating climate change as a clear-cut explanatory principle – an approach that inevitably oversimplifies the issue and gives the false impression that it is a manageable problem – they proposes that it should be understood as a *hyperobject* – entities that they define as so vast in temporal and spatial scale that exceeds conventional human understanding, and demands new ways of thinking and talking.

I conclude by examining how these dynamics reverberate in a key aspect of winter preparation – the accumulation of fuel used for cooking and heating the yurt – and how they are intertwined with the cooperative relationships among herders, an important component of PUGs, and more broadly, with the socio-economic uncertainty and inability to act experienced by many of my interlocutors. I interpret these final two aspects through the lens of what Arjun Appadurai terms "the capacity to aspire" – a form of navigational capacity that is "unequally distributed among wealthier and poorer communities, that allows people to make their way from more proximate needs to more distant aspirational worlds" (Appadurai, 2013, p. 213) – in dialogue with the two temporal orientations described by Lars Højer, namely "apathy" and "revolution" (Højer, 2018), which help further contextualise herders' responses.

These theorists were chosen because their works offer conceptual frameworks attuned to ambiguity, fragmentation, and asymmetry – conditions that reflect the lived experiences of my interlocutors navigating environmental change and socio-economic uncertainty. Eduardo Viveiros de Castro's notion of *controlled equivocation* allows for a non-reductive engagement with divergent ontologies, helping to interpret the tensions between institutional climate narratives and herders' phenomenological weather talk not as misunderstandings, but as generative differences. Anna Tsing's concept of the *patchy Anthropocene* underscores the uneven, contingent nature of global ecological processes, providing a way to understand how herders' situated practices and perceptions emerge within disrupted but interconnected landscapes. Timothy Morton's framing of climate change as a *hyperobject* highlights its overwhelming scale and temporal abstraction, which contrasts with herders' focus on tangible variations in weather and pasture conditions. This emphasis on abstraction in dominant climate discourse can also obscure the extent to which climate-related challenges are deeply entangled with structural economic hardship and the retreat of the state in the post-socialist context. Arjun Appadurai's idea of the *capacity to aspire* illuminates how economic precarity and institutional abandonment – only partially addressed by the creation of new institutions such as the PUGs – constrain my interlocutors' imaginative horizon and ability to act, while Lars Højer's temporal orientations of *apathy* and *revolution* help to interpret the affective registers through which uncertainty and deferred agency are experienced.

Post-socialist institutional transformation

One of the reasons I selected Bayangol *sum* in Selenge *aimag* as the site for my fieldwork was to examine how cooperation unfolds among herding families in post-socialist Mongolian pastoralism, with particular attention to the interplay between informal, neighbourhood- and kinship-based exchanges of

labour and more institutionalised forms of cooperation facilitated by formal structures such as the Pasture User Groups. The household that hosted me, along with others I engaged and worked with, are members of the Dorgont Pasture User Group. PUGs are a type of community-based rangeland management institution (CBRM)[1] (Allegretti et al., 2015; Tumur et al., 2020) embedded within local government structures, that have been created under the initiative and with the support of donor organisations – such as the Swiss Agency for Development and Cooperation (SDC) – across Mongolia in the last couple of decades. These groups, composed of herders who share access to specific pastures, are formalized through a participatory process that establishes territorial boundaries and is approved by the *sum*[2] government. A central element of PUG formation involves drafting pasture management plans, which serve as basis for land-use contracts for herders. These plans regulate seasonal rotation, resting of pasture, water point maintenance, and the fencing of areas designated for haymaking (Allegretti et al., 2015).

The emergence of institutions capable of implementing collective land management regulations must be understood within the broader historical, economic and political context of Mongolia's post-socialist transition[3]. Following the collapse of the Soviet Union and the disintegration of the Council for Mutual Economic Assistance (COMECON) – Mongolia's primary economic partner – the country underwent a rapid neoliberal transformation in the early 1990s, often referred to as "shock therapy." These reforms, called in Mongolian *shinjilgee*[4], "thrusted Mongolia and other post-socialist states into a situation marked by the near virtual society-wide collapse of state-based institutions, entitlements, social services, and property regimes rupturing the channels of social and economic life" (Murphy, 2011, p. 48). The effects of this transition included deep economic crisis, hyperinflation[5], soaring poverty, and mass unemployment (Sneath, 2018).

Among the most significant changes that happened in Mongolian pastoralism during the 1990s were the privatisation of livestock – which, apart from a small number of privately owned animals for domestic use, had been state-owned during the collective period – and the dissolution of the herder collectives (*negdels*), which had long formed the institutional foundation of Mongolia's pastoral economy. At a deeper level, the reforms entailed the dismantling of the so-called "dual control" system for managing customary pastoral production (*ulamjlalt mal aj ahui*). Inherited from the pre-collective period, this system integrated the management of the key components of pastoral productions – livestock, labour and land – through interdependent forms of control: formal control, exercised by the state through jurisdictional residency and taxation of production; and informal control, whereby herders managed production and pasture use. It enabled flexibility of movement and the coordination of the components of production, helping to maintain a balanced ratio between livestock and pastoral resources within a given jurisdiction. The dismantling of the integrated management of the components, however, "disembedded the pastoral economy from its social, political, and ecological foundations" (Undargaa and McCarthy, 2016, p. 377).

Following the economic crisis and the ensuing unemployment, many former workers from the collapsed economic sectors and uneconomic state-owned enterprises migrated into the countryside and took up herding as livelihood (Griffin, 1995; Rossabi, 2005). This process was facilitated by new policies that liberalised the labour market and granted the citizens the right to move freely (Undargaa, 2023). As a result, the livestock population, which had remained almost constant during the last 20 years of socialism, increased by 36% in just 10 years (from 24.7 million in 1989 to 33.6 million in 1999)[6], while the number of herding households doubled between 1990 and 1997 (Mearns, 2004).

Despite calls from international development institutions – such as the Asian Development Bank and the World Bank – and domestic political actors for the private ownership of land (Goldstein and Beall, 1994; Sneath, 2002), the state maintained exclusive control over land. Indeed Mongolia's 1992 Constitution states that natural resources such as pasture must remain as a people's asset and state property (Undargaa, 2023). The 1994 Land Law upheld this

1 For a broader analysis on community-based natural resource management (CBNRM) see Brosius, Tsing and Zerner (2005).

2 *Sums*, often translated as "districts," are the intermediate administrative divisions of Mongolia. They are smaller than the twenty-one "provinces" (*aimags*) and comprise multiple *bags*. Their role includes overseeing community services, organising local development and managing resources within the area.

3 See Sneath (2002) for a critique of the idea of *transition* from the inefficient socialist system to the dynamic market economy based on the notion that the economic sphere should be emancipated from the political structure. My use of the term *transition* follows Daniel Murphy's formulation in his doctoral dissertation on the impacts of neo-liberal political transformations on household vulnerability in the context of hazardous events. Murphy clarifies that his use of *transition* "implies not some naturalized, unquestioned path to capitalism envisioned by neo-liberals but rather the practices that attempt to *produce* such a path" (2011, p. 47, emphasis in original).

4 These reforms, similar to those promoted in poor countries during the 1970s and the 1980s by the International Monetary Fund and the World Bank, included the "privatization of public assets, price liberalization, cutting state subsidies and expenditure, currency convertibility, and the rapid introduction of markets" (Sneath, 2003, p. 441).

5 Reaching 268,4% in 1993, according to the International Monetary Fund, https://www.imf.org/en/Countries/MNG, last accessed on 04/04/2025.

6 The same number then peaked at 71.1 million in 2022. All data on livestock numbers were retrieved from the National Statistics Office of Mongolia (*Ündesnii Statistikiin Horoo*), available at https://1212.mn, last accessed on 03/04/2025.

principle while introducing statutory exclusive private rights in the form of leases, which allowed herders to obtain exclusive use of winter and spring encampments (Fernández-Giménez and Batbuyan, 2004). In a context of shrinking available pastoral areas – linked to the aforementioned surge in livestock and herder numbers, as well as urban-to-rural migration – this encouraged herders to increase the number of encampments as families sought to secure access to more pasture (Undargaa, 2016).

Andrei Marin argues that the retreat of the state that happened after the fall of socialism led "Mongolian pastoralism to "fall back on itself" in order to adapt to the new economic system" (Marin, 2008, p. 76). As Undargaa and McCarthy (2016) note, the state developed a decentralized co-management system, sharing responsibility for managing resources between government offices (at the *bag*, *sum*, and *aimag* levels) and local self-governing bodies like the public meeting (*hural*). In practice, *sum* governments kept the power "to arbitrarily interpret and enforce the land law" (p. 372). However, they were mostly ineffective or inactive in managing herders' customary pasture use (Fernández-Giménez, 2001).

The disbanding of the *negdel*s – which among their functions had regulated pastureland use minimising environmental damage, often respecting pre-existing customary rights – and the end of the "dual control" system, left a regulatory void in the area of pasture management (Tumur et al., 2020). This issue was addressed by donor agencies through the creation of new institutions, in an attempt to establish a new nested relationship between state and customary system. However, this strategy overlooked the fact that "the state and customary forms had already been integrated into a single, historically tested and socially embedded form of pastoral production and resource management" (Undargaa and McCarthy, 2016, p. 375). This approach became especially evident after a consecutive series of *zud*s struck the Mongolian pastoral economy between 1999 and 2002.

*Zud*s and land management policies

A *zud* is a climate-induced socio-economic disaster in which extreme winter conditions[7] – particularly when following a summer draught (*gan*) – lead to abnormally high livestock mortality (Janes and Chuluundorj, 2015; Kang et al., 2015). Between 1999 and 2002, the total number of livestock dropped by almost 10 million (from 33.6 million to 23.9 million), forcing approximately 50 thousand households out of the pastoral economy. Such a high impact must be understood in the context of the aforementioned surge in the number of herding households after the transition, the limited herding experience of many of these new herders, and the absence of adequate support. Many of those affected migrated to urban areas in search of employment (Murphy, 2011). Due to the deep interconnections between rural and urban social systems and economies (Humphrey and Sneath, 1999), the impacts of the *zud*s extended beyond herding communities, triggering broader socio-economic disruptions. Having lost their livestock to the *zud*, many of these new herders were forced to abandon pastoralism – which had served as an alternative to unemployment – and return to urban areas, now without prospects for work or support. The effect on the economy manifested in a substantial drop in Mongolia's GDP and high poverty rate. Crucially, these developments were not the result of herders' individual choices of failures, but of structural vulnerabilities exacerbated by the withdrawal of state support enacted during the "shock therapy." This situation exposed already precarious populations to significant health problems (Janes et al., 2006), as well as increases in crime and violence, malnutrition, maternal mortality, depression and suicide (Rossabi, 2005; Janes and Chuluundorj, 2015).

While *zud*s have always been part of Mongolia's ecological history, the increased frequence of major *zud*s that happened in the last thirty years (Janes and Chuluundorj, 2015, p. 28) – along with their scale, the difficulty for herders to rely on traditional knowledge to predict *zud*s due to changing climatic conditions (Soma and Schlecht, 2018), and the social problems caused by the 1999–2002 and 2009–2010 *zuds* – has generated multiple explanations. These range from long-term climate variability, anthropogenic climate change, environmental degradation and desertification. The latter is attributed by some to the broader climate crisis, and by others to more immediate human-induced causes, such as overpopulation, overstocking and grazing mismanagement (Murphy, 2011).

In the context of the aforementioned retreat of the state from the pastoral sector, the dismantling of the "dual control" system, and the new role herders are expected to play in the free-market economy, the important argument put forward by Janes and Chuluundorj (2015), p. 29 – that *zud*s are not "natural" hazards independent of human agency, but rather the result of interacting ecological and social forces – has somehow been distorted in policy discourse, shifting the responsibility for the dire consequences of *zud*s onto the herders themselves. They have been blamed for either their supposed laziness and consequent poor management or excessive greed, resulting in pasture overuse and degradation (Ericksen, 2014).

7 Mongolian herders speak of different kind of *zud* depending on the weather conditions that cause livestock deaths. Heavy snowfalls that prevent animals to reach the underneath grass cause a "white *zud*" (*tsagaan zud*); a "black *zud*" (*har zud*) happens for a lack of water in snowless winters that follow summer droughts; during an "iron *zud*" (*tömör zud*) livestock cannot graze because of the hard ice sheet caused by the thawing and subsequent refreezing of the snow cover; in a "cold *zud*" (*hüiten zud*) animals die for the extreme low temperature, often combined with strong winds that weaken the herds; a "hoof *zud*" (*tuurain zud*), not characterised by weather but by human induced conditions, results from overgrazing or pasture degradation resulting from trampling, often by animals coming from other *sum*s or *aimag*s; a "combined *zud*" (*havsarsan zud*) happens with a combination of adverse conditions, like the white and cold *zud*s of 1999–2000.

This framing – based on a misreading of the Mongolian landscape that misconstrued the natural resource problem as one of "open access" or a lack of property rights – has supported renewed calls for the privatisation of rural land as a means to address these issues by curbing perceived "bad behaviours." Development agencies and aid organisations have proposed interventions that draw on narratives of climate change and herder-induced degradation (Murphy, 2011). These followed a period (1993–2006) during which the Mongolian government joined fourteen international environmental conventions and developed twenty-seven environmental policies and programmes, prompting a proliferation of conservation initiatives (Ichinkhorloo et al., 2017). However, as Ahearn et al. (2017) observe, many of these interventions are shaped by international development discourses skewed by misconceptions about mobile pastoralists' livelihoods and land-use practices. Drawing upon static-equilibrium model's concepts of "tragedy of the commons" (Hardin, 1968; cfr. Ostrom, 1990) and carrying capacity, these projects often fail to recognise "that the Mongolian steppe ecosystem is for the most part a highly variable ecosystem in disequilibrium" (Okayasu et al., 2011; Janes and Chuluundorj, 2015). Moreover, they are not informed on recent studies on the beneficial impact of light to moderate grazing on carbon sequestration (Deng et al., 2023), on soil health (Byrnes et al., 2018) and the reassessment of its previously overestimated negative impact on species richness and diversity (Herrero-Jáuregui and Oesterheld, 2018).

It was in this context that community-based rangeland management institutions like the PUGs were established across the rural countryside. In 2015, the Mongolian National Federation of Pasture User Groups (MNFPUG, *Mongolyn belcheer ashiglagchdyn negdsen holboo*) was founded under the Green Gold Pasture Ecosystem Management Project, funded by the Swiss Agency for Development and Cooperation (SDC).

At the core of its rangeland restoration policy, is the voluntary "rangeland user agreement" (RUA), that is established between local government and PUGs, where they negotiate on seasonal grazing boundaries, livestock stocking rates, and herd age structure and composition. The RUA serves as the foundation for creating yearly grazing and livestock management plans, defining the duties of herders and local authorities, and outlining mechanisms for enforcement. RUAs are expected to reduce stocking rates, alter age structure via the offtake of old and unproductive animals, and encourage diversification of herd composition.

Beyond the development and implementation of a model organisation to assist herders in building their institutions, MNFPUG's work also include a research component focused on rangeland monitoring and management; the improvement of the legal framework; the establishment of credit and savings cooperatives; and a certification and tracking system called "Responsible Nomads," which ensures the origin, quality and safety of livestock products based on various indicators such as pastures condition, animal health and wellbeing, raw materials quality and environmental sustainability.

On its website[8], MNFPUG states that it represents over 80 thousand members, and coordinates a nationwide network of 1,445 PUGs, 156 *Sum* Association Pasture User Groups (APUGs) and 18 *Aimag* Federation of Pasture User Groups (AFEDs). Dashbal et al. (2023) report that 1,575 PUGs had been established at the time of their writing across 184 *sum*s (56% of all *sum*s). They add that Rangeland Use Agreement (RUAs) had been signed with the soum governor for 1,262 PUGs (80%). However, only about 60% of PUGs with RUAs had successfully implemented management practices informed by monitoring data. Beyond the difficulty of assessing how many of these PUGs are actually operational and how effectively they function, an independent audit conducted in 2021 (Borsy et al., 2021) observed that rangeland improvements remained localised. The audit further noted that while some PUGs were considered sustainable, many were financially very weak and lacked operational capacity, leaving them dependent on continued donor support.

MNFPUG also collaborates with mining companies in implementing land reclamation and biodiversity projects. One such initiative – the Dorgont Pastureland and Bortolgoi Range Forest Ecosystem Compensation Project – involves the Dorgont PUG herders with whom I lived during fieldwork. Funded by Boroo Gold[9], a gold mine located about 40 km south of my research site, the project aims to enhance the quality and productivity of pastures through activities such as rotational grazing, haymaking and green fodder planting. It also supports smaller sub-projects, such as leather crafting, dairy processing (*tsagaan idee*) and beekeeping, involving few selected families.

Fieldwork and methods

After learning about the "Dorgont Pastureland and Bortolgoi Range Forest Ecosystem Compensation Project" on the MNFPUG's website, I reached out to the organisation to inquire about the possibility of conducting fieldwork with herders involved in the initiative. Following a series of email exchanges and conversations, they kindly agreed to put me in contact with participating families. This is how I was introduced to Yadamjav, the father of the household that hosted me during my fieldwork in Bayangol *sum*, Selenge *aimag*, from April to November 2023. He and his wife, Enh-Oyuun, both in their late

8 http://en.greenmongolia.mn/scope-of-work; last accessed on 29/06/25.

9 Boroo Gold was operated until 2018 by the Canadian mining company Centerra Gold Inc. and is now a subsidiary of OZD ASIA PTE Ltd., a Singapore-based private company.

40s, lived there by themselves, occasionally joined on weekends and during the summer by their three younger children, two daughters and a son, who live and study in Darhan, one of Mongolia's largest cities, about an hour's drive away. Their eldest daughter lived in Ulaanbaatar, where she graduated in psychology during the year I stayed in Bayangol *sum*. The other herders I mention by name in this paper, Batnyam and Otgon, are two of the household heads with whom I interacted the most, initially due to their friendship with my host father and the proximity of our encampments. Over the months of the fieldwork, I developed deeper relationships with both of them that extended beyond our shared connection to Yadamjav. Batnyam, a *myangat malchin* (a herder with more than a thousand heads of livestock), often came to visit me early in the morning for a chat and a cup of moka coffee. Especially after the flooding, when he and his family relocated their two yurts near my host family's, Otgon spent many summer afternoons with me playing chess, drinking, smoking, and talking about a wide range of topics. His family, much less wealthy than Batnyam's, is related to Yadamjav's older sister's mother-in-law.

This fieldwork period was preceded by a 4-month stay in the capital (from June to October 2022) to refresh my Mongolian language skills, which had grown quite rusty after an 8-year hiatus since I first studied the language for my master's thesis research. This preparation proved essential, as all my interlocutors spoke only Mongolian and, given the length and immersive nature of the fieldwork, I did not rely on interpreters.

The agreement with my host family was that I would attempt to "repay" their hospitality and the sharing of their knowledge by contributing to the household in various ways: helping with herding tasks as my initially non-existent skills gradually improved; teaching English to their children (alongside two of Otgon's daughters) when they returned home from school on weekends and during the summer, and by buying groceries. My daily chores included helping Enh-Oyuun with milking the cows in the morning and evening, cleaning dung from around the milking pen, and watering the sheep and goats at the Haraa river. I also frequently assisted Enh-Oyuun with cooking and participated in tasks that required cooperation with other herders – such as collecting compressed and dried dung used as fuel, castrating animals, and shearing sheep – or with urban-dwelling relatives, including goats combing for cashmere and haymaking.

The Dorgont PUG is divided into three smaller sections – Eriin Nuruu, Bayangol, and 179th Pass - based on geographical area and the type of livestock kept. These divisions do not correspond to the administrative subdistricts (*bag*s) of Bayangol *sum*. The group consists of 20 herding households, half of whom are not originally from the area, but migrated to Bayangol *sum* from the western Uvs *aimag* over the past two decades. They are part of the wave of migration toward the central *aimag*s and the cities of Erdenet and Darhan that occurred after the *zud*s of the 2000s. Like my host family, all of these "newcomers" belong to the Bayad *yastan*[10] rather than the Halha, Mongolia's major subethnic group. As I will elaborate in the Findings section, the majority of daily visits between herders, instances of shared labour, and participation in social events that I observed during fieldwork took place among these ten Bayad families, with only one or two other herders occasionally involved.

My primary research method was participant observation: I immersed myself in the daily lives of my interlocutors, assisted with herding tasks, took part in social events and community gatherings, and engaged in informal conversations with both neighbouring herders and visitors. Fieldnotes were taken regularly, sometime immediately, but more often the next morning, during brief moments of spare time following the completion of morning tasks. Due to limited access to electricity at the field site, fieldnotes were typed upon my return to Italy, then organised thematically and analysed to identify recurring themes relevant to the scope of my research. Oral informed consent was obtained informally throughout the research. I was always straightforward with the interlocutors about my research interests and positionality, conscious of the dynamics of power and representation as a foreign researcher with basic Mongolian language skills. My outsider status, limited herding skills, and the fact that I engaged in activities associated with both female roles – such as cooking and assisting with milking – and male roles often sparked curiosity, especially among herders from other families and visiting guests, prompting and shaping many of the exchanges that emerged.

I also engaged in several in-depth conversations with members of MNFPUG, both at their headquarters in Ulaanbaatar and during their field visits to Bayangol *sum*. When discussing their role in reclamation and biodiversity programmes led by mining companies, they were keen to highlight how their approach differs from that typically adopted by the extractive industry. Mining companies, particularly since the launch of the "One Billion Trees Project" in 2021 – an initiative spearheaded by President Khürelsükh Ukhnaa – prioritise tree planting as a form of environmental compensation. The "One Billion Trees Project" public and private actors, especially those with environmentally damaging operations, to commit to large-scale reforestation.

While acknowledging the value of tree planting in mitigating desertification processes, my MNFPUG interlocutors stressed that, following mine closures, what was formerly used as grazing land should return to herders as rangeland. This stance is driven by growing concern over the shrinking of grazing areas that is happening all over the country, a process that they link to

10 Derived from *yas* "bones," *yastan* is an emic term used to denote an ethnic group, typically understood as defined by common ancestry, language, and customs.

competing land uses, ambiguous land tenure policies, environmental degradation, and the expansion of mining activities. Their perspective on land degradation is informed not only by the Federation's own monitoring efforts – carried out by the Department of Research and Development – but also by recent ecological research on grazing impacts and rangeland health (Sasaki et al., 2008; Fujita et al., 2009; Liang et al., 2009; Yoshihara et al., 2009; Zemmrich et al., 2010).

As Ichinkhorloo et al. (2017) notes, the 2015 report by the Green Gold Ecosystem Project identified overgrazing, poor herd rotation practices and mining operations as major drivers of rangeland degradation, with climate change exacerbating their effects. The topic of climate change – and its current and projected effects on Mongolian rangelands – featured prominently at the VI National Rangeland Forum, initiated by MNFPUG and held at the Parliament House in Ulaanbaatar in June 2023, which I attended with Yadamjav. There, much attention was devoted to the role of pastoralism in delivering ecosystem services that can help mitigate the effects of climate change.

A recurring concern – and an important thrust for some of their initiatives – voiced by Ulaanbaatar based MNFPUG members was what they perceived as a lack of preparedness among herders to face the challenges posed by a changing climate. One contributing factor, they suggested, is a widespread "misunderstanding" of the phenomenon – particularly the "belief" among many herders that the current changes are temporary and that the climate will eventually revert to its former state.

In the following section, I explore this issue in more detail, without attempting to counterpose a single, coherent perception of climate change among Mongolian herders – which I neither encountered in conversations with my interlocutors nor believe exists – to a scientifically grounded perspective adopted by MNFPUG and other institutional actors, which ultimately aligns closely with what could be called the mainstream international narrative. Given the length and scope of my fieldwork, my aim is not to offer generalisations, nor to fall into the unproductive binary between "scientific knowledge" and "traditional belief." Instead, I argue that a more fruitful approach is to seek out productive tensions between divergent conceptual worlds, following Eduardo Viveiros De Castro's notion of *controlled equivocation* (Viveiros De Castro, 2004).

Findings

Changing climate or changing weather?

Ahearn (2019) cites a remark made by former President Elbegdorj during his speech at the 2014 UN Secretary-General's Climate Summit: "If you have doubts about whether climate change is happening or not, come to Mongolia. Ask a herdsman, "Is climate change happening?" Our herdsman will give you a true answer. They've already told me that it is happening, and happening for real." A similar sentiment emerged during my conversation with Bulgamaa, head of the Research and Development Department at MNFPUG, when she spoke about how herders perceive climate change:

> They very much talk about climate change, because they really are . . . the persons who spend most of their life out in the open. In general, herders are very observative people, observing everything. The flower colour is changed . . . So they are able to observe different changes. So they talk about that, that is getting more dry because of climate change (D. Bulgamaa, 20/09/2023).

Since her English was stronger than my Mongolian, our conversation took place in English. The term she used, "climate change" – the same expression quoted in Elbegdorj's speech – is most commonly translated into Mongolian as *uur am'sgalyn öörchlölt*, a phrase typically found in official discourse, scientific publications, and national or international development projects. It appears, for instance, in the name of institutions such as the Ministry of Environment and Climate Change (*Baigal' orchin, uur am'sgalyn öörchlöltiin yam*) and in policy instruments like the National Climate Change Programme (*Uur am'sgalyn öörchlöltiin ündesnii hötölbör*). However, during my fieldwork in Bayangol *sum*, I never heard herders use this formal term in everyday conversations – particularly when speaking among themselves. The phrase only emerged in response to my questions, in which I had introduced it first. While discussions about unusual weather patterns[11], shifting pasture conditions, and changes in floral composition were indeed very common, these phenomena were never explicitly linked to *uur am'sgalyn öörchlölt*. The root of *öörchlölt* (change) occasionally appeared in verbal form, but instead of referring to *uur am'sgal* (climate), when I heard it, it was usually coupled with *tsag agaar* (weather) and often preceded – or replaced entirely – by the verb *dulaarah* (to warm)[12]. Beside the lexical choice – possibly reflecting an avoidance of formal terminology – it is important to note that my interlocutors were far less concerned with abstract discussions about climate than with articulating the changes they perceived around them through

11 For example, 1 day toward the end of April, I heard Enh-Oyuun complaining about the cold winds that kept blowing, asking out loud: "When will summer come? There has been a cold winter, and this long spring is not ending!" (*Zun hezee boloh yum be? Övöl hüiten baisan, urt havar duusahgüi!*).

12 In their investigation into children's perceptions of environmental transformation, Irvine et al. (2019) report that the Mongolian children who participated in the study associated the reduced flow of rivers with a lack of rain, with several attributing this to "global warming" (*delhiin dulaaral*), a phenomenon they had learned about through television and school lessons.

phenomenologically experienced weather, shifts in pasture quality and changes in floral composition.

"The Russians shot the clouds"

An opportunity to engage more deeply with these themes emerged in July, when heavy rainfall caused the Haraa River to flood the area where most of the summer camps (*zuslan*) were situated. At the time, I was travelling in Dornod *aimag*, in the eastern part of the country, and on my return journey to Bayangol *sum*, I received a stream of memes and images circulating online. Among them were photos of inundated neighbourhoods in Ulaanbaatar–humorously dubbed "the Mongolian Venice" – along with scenes of submerged roads from various provinces and a widely shared video showing the collapse of a bridge that had once crossed the Haraa River.

When I returned to my fieldwork site about a week after the flooding, I found that every household had moved their *zuslan* away from the river, relocating either to their spring (*havarjaa*) or winter encampments (*övöljöö*). Of my host family, only Bayasaahüü, the second daughter, was present; her parents and younger siblings had left 2 days before my arrival to visit relatives in Uvs *aimag*, the western province where most of my adult interlocutors were born and raised. Bayasaahüü described how hard it had been to pack up and move both their *gers*[13] and belongings to the *havarjaa* in a single day – something that is usually done over a couple of days – amid relentless rain and the rapidly rising river. There had been no time to rest, not even to eat some food.

Summer is the season when most of the precipitations falls in Mongolia, so rainfall itself was not unusual. However, the intensity of the rains that occurred across the country during that season marked them as extraordinary. Several herders later told me that the flooding had been caused by the most intense rainfall the region had experienced in 60 years. The increased intensity and amount of rainfall that tends to be concentrated in shorter events is a recurrent observation reported by herders across the country (Reid-Shaw et al., 2021). Initially, I perceived this as contradicting the earlier-mentioned focus on weather rather than long-term climatic patterns. However, at least two further considerations complicate this apparent contradiction.

Firstly, none of the herders who described the event as "the most intense rainfall in this area in the last 60 years" had actually lived there 60 years ago – nor had their parents. As previously mentioned, half of the Dorgont PUG families had migrated to Bayangol *sum* from Uvs *aimag* within the past two decades[14]. While this means they lacked direct 60-year experience of local environmental history, their statements likely drew on conversations with long-established residents, as well as broader social exchanges. Such claims, therefore, point not only to individual observation but also to forms of shared environmental knowledge constructed collectively over time. These "migrant" herders were also the people with whom I had the most frequent interactions. This was largely because, during the most labour-intense activities – such as collecting *hörzön*, shearing sheep, or castrating animals – it was primarily among these migrant families that mutual support and labour exchange occurred. Few people originally from Bayangol *sum* participated in these collaborative efforts. While one explanation could be the higher concentration of migrant families in the PUG's subdivision where I conducted my fieldwork, the same pattern extended to everyday interactions: the daily visits herders paid to one another; long summer nights spent playing card games; and shared participation in public events like the Naadam festival in Baruunharaa, the *sum* centre. Although promoting cooperation among members is an important aspect of the PUG model, most of the help and the interaction I observed unfolded along kinship, friendship, and neighbourhood lines, often independent of, or parallel to, the formal structure of the PUG.

Secondly, among all my interlocutors, only Yadamjav – the father of my host family – explicitly linked the intense rainfall that caused the flooding to broader changes in the climate, though he still used the term for weather (*tsag agaar*). When I asked others, "Why has there been so much rain?" the most common answer I received, in slightly varying forms, was: "The Russians shot the clouds to bring water for the crop fields"[15]. This referred to cloud seeding, a technique of artificially inducing rain for agricultural purposes. It typically involves dispersing a seeding agent – usually silver iodide – into clouds using aircraft or ground-based generators to encourage the formation of ice crystals, which then grow larger and fall as snow or melt into rain.

What stood out to me in this explanation was the notable absence of any blame directed at those responsible – allegedly "the Russians." Nor did I encounter the kind of moral objection that Murphy describes in his ethnography, where herders considered shooting at the sky to induce rain spiritually unclean and offensive (Murphy, 2011). This may be because

13 A *ger* (also known as a yurt) is a Mongolian round, mobile house made of a wooden lattice structure covered with felt and canvas. While it has long served as the primary dwelling of nomadic herders, it is also commonly found on the outskirts of Mongolian cities, where many urban residents continue to live.

14 The first family arrived from Uvs *aimag* in 2002, and the most recent one toward the end of the summer of 2023. The main motivations for migration that people shared with me included proximity to roads, the railroad and cities; better prices for their products as a result; and improved educational opportunities for their children. The head of the last family to arrive was the only one to mention the poor quality of pastures in Uvs in recent years as a reason for relocating.

15 *Oros hümüüs üül buudsan, gazar tarian talbai us garahaar* (Otgon, 22/07/2023).

herders are becoming more familiar with the technology, which is increasingly used in Mongolian agriculture. Moreover, despite the considerable disruption caused by the flooding and the challenges associated with hastily relocating the encampments, none of my interlocutors expressed complaints about the rain itself. Batnyam, a wealthy *myangat malchin* – a person with more than 1,000 heads of livestock – was almost amused by the framing of the intense rain as an issue in my questions, remarking that nobody should complain about rain in summer since, in his opinion, it is always beneficial for the pastures.

Debt, helplessness and revolution

On separate occasions, two herders brought up cloud seeding as an explanation for the intense rainfall and promptly asked for my thoughts on the matter. They explained that this was something they had heard from others in the area and seen circulating on Facebook, adding – almost apologetically – that as "herders from the countryside" they "do not know many things" and had not had the opportunity to pursue higher education. One of them, Otgon, had mentioned the warming of *tsag agaar* (weather) as the reason why the Russians had shot the clouds, saying that their fields were not receiving enough rain due to high temperatures[16].

I replied that I also believe temperatures are rising and that, as far as I know, in a warmer world more water evaporates from the seas, making extreme rainfall events more likely. Perhaps prompted by my mention of "the world," his following response took on a more "global" perspective: he said that "the natural world needs to be interacted with in the correct way" and that "Mongolians are not alone, everybody in the world needs to do this"[17]. While this could be read as a call for shared planetary responsibility, I understood it as a reflection of his awareness of the broader global ecological and economic dynamics underpinning the climate crisis–an indirect way of saying that the true responsibility for rising temperatures lies elsewhere. Indeed, he later noted that most of the polluting factories are located in "developed countries" (*högjingüi uls*), and that there is very little that they – the Mongolians, but especially the herders – can do in their situation.

This sentiment came up frequently in conversations about herders' roles in pasture rehabilitation and biodiversity conservation projects – such as the one they are involved in through MNFPUG – and what these initiatives mean for winter preparations and, more broadly, for the changing weather conditions. While my questions were initially framed around environmental concerns, my interlocutors often responded by focussing on economic pressures. Rather than diverting the conversation, these responses revealed the extent to which climate-related challenges are deeply entangled with structural economic hardship and the retreat of the state in the post-socialist context. The high costs of winter fodder, children's tuition fees, and occasional medical expenses all shape herders' capacity to adapt and prepare, embedding the effects of climate change within the daily struggle to sustain livelihoods. These conditions have created a widespread reliance on bank loans, which most herders take out each year using their livestock as collateral.

> Y: Preparing livestock for winter, buying grain and hay costs 5 million MNT[18]. [. . .] All herders are in debt.

> E: We say that we are herding the bank's livestock. In the past the animals belonged to the state. Then they become private. Now they belong to the banks. (Yadamjav and Enh-Oyuun, 25/10/23)[19]

They repay their debts by selling butchered animals (*idesh*) in late autumn to urban families, and especially by selling cashmere in the spring – a situation closely resembling what Murphy describes in his paper on the so-called "cashmere-debt cycle" (Murphy, 2018). This creates a situation of deadlock, in which herders feel abandoned by institutions and perceive alternative courses of action as not only unfeasible, but almost unimaginable:

> E: Just a few people are "eating" Mongolia's wealth. So we herders are left out in the middle of it all. We are the ones who have been abandoned. There's no one discussing or making decisions about us. We're just getting by on our own. [. . .] This means that we've truly been left behind. [. . .] We don't know what to do in the future. Who can we complain to about it? We live with it quietly, without much opportunity to raise our concerns, because we chose this livelihood, so we just endure it in silence. (Enh-Oyuun, 25/10/23)[20]

16 A thoughtful comment by one of the anonymous reviewers made me realise that the state of necessity motivating the cloud shooting might help explain the absence of blame directed at those responsible.

17 *Baigal' delhiitei zöv har'tsah heregtei. Gants Mongol ch bish delhii niiteeree hiih heregtei* (Otgon, 22/07/2023).

18 The exchange rate during the period of my fieldwork was around 3,500 Mongolian tögrög (MNT) for 1 USD.

19 Y: *Mal övöljiltiin beltgel, budaa övs avahaar 5 saya tögrög boldog [. . .] Büh malchid zeeltei*. E: *Bid nar bankny mal mallaj baina gej yar'dag. Bür ömnö n' ulsyn mal baisan. Tegeed huviin mal bolson. Odoo bankny mal bolson*.

20 Hedhen hümüüs l mongolyn höröngiig idej baina l daa. Tegeed dund n' malchid bid nar hayagdaad l. Bid nar bol hayagdsan hümüüs shüü dee. Bid naryn talaar avya heleltsej baigaa hen ch baihgüi. Bid öör öörsdiigöö l bolgoj baina. [. . .] Tegeheer bid nar hayagdsan baigaa baihgüi yuu. [. . .] Tsaashid yahyg medehgüi. Hend gomdohov dee. Gomdoh erhgüi l am'darch baina daa. Bidnii songoson am'dral geed chimeegüi l baidag.

Even when the urgency of shifting course to address the climate crisis was acknowledged by my interlocutors, the possibility for such change was often situated in the future – distant from a present dominated by socioeconomic precarity and a pervasive feeling of helplessness. While climate change was physically experienced in their daily lives, it was perceived as something they had little power to influence, and thus became a lesser priority compared to the immediate demands of sustaining livelihoods. As a result, meaningful action was not seen as possible in the current conditions, but rather as something that might emerge with the younger generation, viewed as more educated and more attuned to dominant international narratives. For some, this pointed to the need for a radical transformation – both in the structural conditions shaping herders' lives and in prevailing mindsets. Otgon, the herder who remarked that "Mongolians are not alone" and that "everybody in the world needs to act," framed this challenge in terms of revolution, saying: "A revolution in mindset is greatly needed"[21].

Getting ready for winter, with *hörzön* and coal

I want to conclude this paper by showing how the dynamics discussed above reverberate in herders' cooperative practices surrounding a key aspect of winter preparations – the accumulation of fuel used for cooking and heating the *ger* – and the resulting implications for understanding the everyday realities and limitations of projects such as the one the Dorgont PUG is involved in.

In this part of Mongolia, as in many other regions, trees are scarce, making wood an uncommon fuel source. Instead, the primary material used for this purpose is *hörzön* – compressed and dried animal dung. Unlike the other seasons, during winter nights sheep and goats are kept in pens where their waste accumulates. Constant trampling compacts it into a dense mass, which is then harvested in the spring, typically around late April. Using spades, herders cut the compacted dung into blocks, which are carried outside and stacked in mounds aligned north to south to maximise exposure to sunlight for drying throughout the summer. Once fully dried, the *hörzön* is used as fuel during the following winter. The collection process is physically demanding and labour-intensive, usually carried out with the help of neighbouring male herders. This assistance is not compensated with money; rather, those who help are served a meal – prepared by the women of the host household. The labour is then reciprocated by helping them with their *hörzön* later, sustaining a system of mutual support among herding families.

The preparation and collection of *hörzön* was the first instance in which I observed this reciprocal labour exchange, which I initially perceived as a practice introduced or revitalised by CBRMs such as the PUGs – particularly those engaged in biodiversity and conservation projects, like the Dorgont PUG. From both part of the literature and my conversations with members of MNFPUG, I understood that PUGs emerged in the context of the atomisation of Mongolian pastoralism following the dissolution of the *negdel*s (herders' collectives), when herding families tended to live and work independently, often only alongside a few relatives. According to the narrative adopted by such organisations, it was just after experiencing several *zud*s that herders realised the importance of coming together – leading to the formation of PUGs – to manage shared grazing areas and support one another in labour-intensive tasks, particularly those related to winter preparations. This framing, however, is biased by the highly localised focus of PUGs, which overlooks the broader networks in which herders participate (Ichinkhorloo and Yeh, 2016), as well as the longstanding dynamics of labour collaboration and reciprocity that predate the formation of such institutions. The instances of cooperation I participated in signalled that such reciprocal labour was not solely a product of the PUGs, but rather part of deeper, enduring social practices – often taking forms and expressions not accommodated by the narrative of institutions such as the MNFPUG.

I witnessed something that initially appeared to me as a shift in the opposite direction one afternoon of late October. That day, I accompanied Yadamjav to buy a full truckload of coal for 350,000 MNT near the station in Erhet, a small hamlet situated along the railroad that crosses Mongolia from north to south, a short drive from our camp. Upon returning, he told me to pile it next to the mounds of *hörzön* we had collected in spring. The irony of breaking my back heaping this infamous polluting fossil fuel par excellence while doing the fieldwork for a PhD funded by the Italian Ministry of University and Research with a scholarship dedicated to "green" research projects was not lost on me. Even though the specific place where I was instructed to stack it – on a mound parallel to the piles of *hörzön* – made a lot of practical sense, it nonetheless created a strong dissonance in my mind. This moment made me reflect on the gap between what compensation projects envision and the complex realities of life in the Mongolian countryside, where herding families continue to depend on diverse sources of fuel and must address immediate needs and practical constraints.

Beyond considerations of the differing environmental sustainability of the two fuels (Endicott, 2012; Yembuu, 2016), my initial impression was that the act of buying coal symbolised a movement in the opposite direction from the mutual help dynamics at the heart of PUGs – toward greater individualisation. However, I began to re-evaluate this initial, somewhat naïve framing by reflecting on the moments of reciprocal labour I had observed – specifically, who participated and, more broadly, the actual scope of the social relations my interlocutors enacted. As mentioned earlier, most of the herders involved in those communal works represented only a subset of the Dorgont PUG membership, nearly all of whom had migrated from Uvs *aimag*. They were part of what Sneath (1993) describes as a "network of social relations of obligation," which, in this context, exists alongside rather than within the formal PUG structure.

21 Oyuun uhaany huv'sgal ih heregtei.

Moreover, in certain seasonal tasks that families undertook simultaneously – such as goat combing – assistance often came not from fellow PUG members, but from non-herding relatives and friends residing in urban areas. These were, in some cases, the same individuals who purchased meat for the winter (*idesh*) from my host family, sent their sons to spend the summer in the countryside to help tend the herds, or hosted the children in their city apartments. This dynamic resonates with Ichinkhorloo and Yeh's (2016) critique of CBNRM programmes, which they characterise as fostering "ephemeral" communities. They are ephemeral in part because such initiatives attempt to construct "community" within fixed localities, while overlooking pre-existing social networks that extend well beyond them and connect the countryside with urban areas.

At the same time, the act of buying coal proved far less individualistic than I had initially assumed. While I was shovelling coal, Yadamjav went back to purchase more and delivered it to an elderly woman living alone in a nearby encampment. The following day, we went together to help a couple living in Erhet store their coal – people who had assisted us with haymaking a few weeks prior. When I asked Yadamjav why he had bought coal, considering that we already had *hörzön*, he gave me two reasons. First, a new family of relatives from Uvs *aimag* had arrived at their camp that summer, along with their large new *ger*, which would be difficult to heat using *hörzön* alone. Second, there was a widespread expectation among herders in the area of an especially harsh winter – which in fact did occur.

Discussion and conclusion

In this paper I have examined how the herders I lived with in Bayangol *sum* experience, interpret, and navigate environmental change within a broader landscape of socio-economic uncertainty and evolving kinship and community ties. By foregrounding local discourses about weather, rainfall, and cloud seeding, I have sought to shift the analytical lens from abstract notions of "climate change" to lived experiences grounded in social and ecological entanglements.

I suggest that my interlocutors' tendency to speak about *weather* – referring to immediate[22] atmospheric conditions in a particular place – rather than invoking the more distant, detached and abstract notion of *climate*, and especially the way they express such observations through changes in the floral composition of the pasture and in specific weather patterns, reflects not only their experiential engagement with the constantly shifting landscape they inhabit (Ingold, 2000) in an entanglement of more-than-human social relations (Tsing, 2015), but also resonates strongly with some of Timothy Morton's critiques of the term "climate change" (Morton, 2013). Understanding "climate change" as an *hyperobject*–an entity so vast in temporal and spatial scale that exceeds conventional human understanding and demands new ways of thinking and talking – rather than treating it as a clear-cut explanatory principle, as it is often the case in institutional policies and donor projects – helps avoid the risks of oversimplifying the issue and obscuring its local manifestations. These tendencies contribute to a sense of disconnection that can hinders effective action. As reminded by Tim Ingold, in order to address the threat and to secure a world suitable for human and non-human life, it is of paramount importance "to close the gap that currently exists between the experienced environment of our everyday lives – that is, the world around us – and the projected "environment" of science and policy discourse." An environment, the latter, that we can only know through data-sets drawn from detached observations, "apprehended as the globe with its atmosphere rather than a manifold of earth and sky, as a catalogue of biodiversity rather than the entangled lifeways of animals and plants, as susceptible to climatic change rather than the vicissitudes of weather" (Ingold, 2014).

My findings highlight how environmental interpretation among Dorgont PUG herders is not strictly rooted in scientific reasoning nor in long-term ecological monitoring, but rather in an assemblage of lived experience, circulating explanations, and historical imaginaries. The fact that none of the herders I spoke with had personally witnessed 60 years of weather patterns in the area – and yet spoke confidently of an unprecedented rainfall – suggests a form of collective environmental memory, shaped through conversation and possibly social media narratives.

Similarly, the recurring explanation that "the Russians shot the clouds" reflects a socially shared causal narrative that blends circulating explanations with past geopolitical memory and observable weather anomalies. Rather than dismissing such statements as misinformed, they should be understood as culturally embedded ways of interpreting and making sense of extreme weather events, especially in contexts where official climate discourse fails to engage with herders' lived realities, priorities and everyday concerns.

Yadamjav's attribution of the flooding to climate change – albeit framed in terms of *tsag agaar* (weather) – and Otgon's connection between a warming weather and cloud seeding, hint at the selective incorporation of global environmental discourses into local narratives. These examples

22 I thank Professor Elisabetta Ragagnin (personal communication) for pointing out that the first word of the compound *tsag agaar*, meaning "time," when added to *agaar*, "air," gives a temporal dimension to this expression of weather. Nevertheless, I maintain that – at least in the way my interlocutors used it – the term conveys a perception that is both spatially and temporally situated, grounded in lived experience rather than in an abstract or detached notion of climate. Beyond their choice of terminology, I believe my interpretation is supported by the ways herders spoke about these changes, articulating them through phenomenologically experienced weather and observed shifts in pasture quality and composition.

highlight not only an awareness of broader climatic shifts, but also the ways in which scientific terms and concepts are refracted through locally meaningful frameworks. Rather than viewing scientific language and local perceptions as binary or oppositional, it is more productive to see them as overlapping, and at time contradictory, interpretative frameworks through which people make sense of a rapidly shifting environment.

Far from representing passive victims, the herders I worked with articulate situated critiques and engage in pragmatic adaptations that often go unrecognized by institutional frameworks. Their actions – ranging from reciprocal labour exchanges within extended networks to the integration of fossil fuels like coal alongside the "traditional" *hörzön* – reveal both the fragility and resilience of social life under pressure.

The fact that many herders responded by focussing on economic pressures when asked about their roles in pasture rehabilitation and biodiversity conservation projects – and what these mean for winter preparations and, more broadly, the changing weather conditions – highlights how deeply these themes are intertwined with their economic situation, their sense of abandonment by institutions, and the resulting challenges in envisioning alternative courses of action.

I suggest that Enh-Oyuun's remark – the mother of my host family – can be productively interpreted through the lens of what Arjun Appadurai terms "the capacity to aspire," a form of navigational capacity that is "unequally distributed among wealthier and poorer communities, that allows people to make their way from more proximate needs to more distant aspirational worlds" (Appadurai, 2013, p. 213). As Appadurai notes, it is not the case that the poor – and, by extension, the excluded, the disadvantaged, and the marginal groups – cannot wish, want, need, plan or aspire, but rather that the diminishing of the circumstances in which these practices can occur is a hallmark of their marginality. And since – like every other cultural capacity – it requires "practice, repetition, exploration, conjecture and refutation," the capacity to aspire remains less developed where the opportunity to enact these practices in regard to the future are limited. Consequently, those at the margins are left with a more fragile horizon of aspiration precisely because they lack opportunities to develop and exercise this navigational capacity (pp. 188–189).

Rather than suggesting an outright inability to imagine alternative courses of action in response to the climate crisis, I propose that economic and institutional constraints limit the space for articulating and pursuing such alternatives in the everyday lives of my interlocutors, and underlie Otgon's framing of the challenge in terms of revolution.

In this context, Lars Højer's discussion of the two temporal orientations he identified in his Mongolian material – apathy and revolution – is especially relevant (Højer, 2018). Højer states that "revolution" develops from "apathy," which he characterises as a feeling of being entrapped in a tragic present devoid of subjecthood – understood here as "the ability to act in ways that make a genuine difference" (p. 78). Revolution is thus something that is sought as a yearning for rupture, to bring about drastic change by creating discontinuities between the "here" of the present and "then" of the future, but that share with "apathy" the same point of departure: an intensely felt inability to act. I contend that my interlocutors' reflections resonate with this formulation of apathy – extended, in some cases, even to the possibility of blaming someone for their condition. Otgon's call for a "revolution of the mindset," then, can be read not as a concrete demand for action, but as an expression of what Højer describes as "felt impossibility for making a smooth change in one's own life and in relation to Mongolia's future as a whole" (p. 86).

These lived realities challenge policy models of community-based resource management, which often assume fixed, locality-bound notions of "community." In practice, herding life is shaped by mobile, kin-based networks, migration histories, and rural-urban ties that extend well beyond the formal structures of PUGs. While PUGs were introduced to restore governance capacity, they failed to address the deeper disruption caused by the dismantling of the dual control system – once an integrated framework balancing state oversight and customary pastoral coordination.

Its collapse fractured the alignment of land, labour, and livestock management, leaving herders to navigate increasingly uncertain socio-environmental conditions with diminished institutional support. As a result, policy expectations for local participation and responsibility often clash with herders' constrained ability to act.

The perception of changes in weather patterns and ecological conditions is real and widespread, yet herders' responses are often deferred, articulated as the responsibility of younger, more educated generations. This deferral reflects not disengagement but structural limitations, economic precarity, and a loss of coordinated governance. Otgon's voiced need for a "revolution in mindset" signals both the necessity of systemic change and recognition of present constraints. In his words, resignation and hope coexist, shaped by lived experience rather than technocratic policy logics. For climate interventions to be effective, they must account for these complex temporal, social, economic, and political textures. Without this, the vision of sustainable community-based management risks remaining disconnected from the realities it seeks to transform.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Written informed consent was not obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article because Verbal consent was obtained, as common for ethnographic research.

Author contributions

The author confirms being the sole contributor of this work and has approved it for publication.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The author(s) declare that Generative AI was used in the creation of this manuscript. Generative AI was used to check the manuscript for grammatical accuracy.

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