



Overgrazing as a wicked problem

Common factors around the world

HEADLINES

A “wicked problem” is difficult or impossible to solve due to contradictory or changing factors and social complexity; it has no single solution. *Wicked* denotes resistance to change rather than evil. Overgrazing is a wicked and increasing problem affecting grasslands and forests. It is driven by common factors, exacerbated by climate change, yet highly resistant to reform. It threatens biodiversity and ecosystem services and impacts human wellbeing. It also affects some of the oldest and most fragile human cultures, rich in history and tradition.

OVERGRAZING IMPACTS FORESTS AND GRASSLANDS ALL OVER THE WORLD BUT IS SO COMPLICATED TO DEAL WITH THAT IT HAS BEEN WIDELY IGNORED.

THIS BRIEFING SUMMARISES THE MANY COMPLEX FACTORS INVOLVED AND PROVIDES SOME SUGGESTED NEXT STEPS TO RESOLVE THE ISSUE.

Overgrazing creates degradation and desertification in grasslands and savannahs, prevents forest regeneration, causes biodiversity loss, erosion, sand storms, flooding and loss of carbon, and damages human societies. There are multiple factors, not all apply everywhere:

- **Political changes** such as forced settlement of nomadic people, perverse incentives (e.g., tax breaks) to build livestock numbers, a squeeze on land due to expansion of cash crops.
- **Social changes** including demographic changes, a shift to a market economy amongst transhumant societies, changing lifestyle expectations.
- **Ecological changes** associated with climate change (increased droughts and weather extremes, new pests), introduced species and a lack of predators.
- **Economic factors** such as the absence of realistic livelihood alternatives or the need to use livestock numbers as collateral against loans.
- **Cultural factors** including the high prestige that livestock herds bring, which also encourages absentee ownership by people distant from the impacts on the land.
- **Tenure issues** including concentration of land ownership with e.g., artificially high grazer populations maintained for hunting.

Yet well managed grazing is preferable to many other land-use alternatives. People involved in grazing or forest management are aware of the problems but feel trapped in a situation they are unable to control. Others confuse the issue by having romanticised views of pastoral societies or a simplistic understanding of the extent to which livestock can replace natural herbivores. Some degradation is so long term that local people have come to regard it as normal. A focused response is required, particularly in the face of worsening climate change.



INTRODUCTION

Overgrazing is a classic “wicked problem”¹ and is increasing in many parts of the world, impacting forests, grasslands and savannahs.² Pressures come from powerful ranchers and Indigenous or local herders, from introduced species, native species in the absence of predators and changing livestock herd structures and sizes. Many of the human societies involved are amongst the world’s oldest and most fragile, already seriously at risk.³ Management changes need to be taken in agreement with and ideally driven by these people. There are divided views about the impacts of pastoralist societies, even in the conservation community. Climate change is disrupting ancient management systems. In some drylands, centuries of overgrazing mean people have forgotten what a natural environment looks like.



Figure 1: A combination of defoliating moth moving north due to climate change and grazing of saplings by reindeer is inhibiting regrowth of birch forest in boreal Finland, leading to the emergence of new tundra.

STEP BY STEP: WHAT DRIVES OVERGRAZING?

Political

MANY OF THE HUMAN CULTURES INVOLVED IN PASTORALISM ARE AMONGST THE OLDEST BUT ALSO THE MOST THREATENED IN HUMAN SOCIETY.

- **Forced settlement of nomadic peoples:** can mean that wide-ranging herds are abruptly confined to a smaller area, with the result that this becomes over-utilised. This is identified as an important factor in parts of inner Mongolia, China⁴ and East Africa.⁵
- **Perverse incentives:** that for instance link agricultural support to herd numbers rather than food needs or ecological carrying capacity. The Common Agricultural Policy of the European Union has created widespread overgrazing through its support packages.⁶
- **A squeeze on land:** as cash crops (or protected areas) expand, herders can lose access to land, forcing them to manage remaining areas more intensely.⁷ Rapid expansion of cash crops in Africa has created pressure on many tropical savannah habitats.⁸

Changes in society

- **Demographic changes:** which may be population growth or decline, out-migration, in-migration, people coming home in times of crisis, etc. Rapid changes can influence grazing pressure, e.g., by loss of herders. There was concern in the Horn of Africa that COVID-19 restrictions on movement would impact ecosystems in pastoralist societies.⁹
- **Shift to a market economy:** when societies that have traditionally practised subsistence or barter economy start to sell, or increase selling, they often need to build herd numbers, particularly if the family is servicing loans or incurring debts. This can lead to a shift from pastoralism to ranching, as in Central Africa.¹⁰



- **Changing lifestyle expectations:** can also change attitudes to livestock, e.g., once children go to school they incur extra expenses for uniforms, transport, books etc, creating pressure to make more money from livestock, particularly if this is the only source of income, suggesting bigger herds and more pressure on the land.¹¹



Figure 2: Desertification in the plains of Mongolia, where overgrazing is recognised as a national problem

Ecological changes

CLIMATE CHANGE IS CAUSING WIDESPREAD DISRUPTION, THROUGH GRADUAL TEMPERATURE CHANGE, MORE FREQUENT EXTREMES AND SOMETIMES INFILUX OF INVASIVE SPECIES.

- **Climate change:** disrupts ecosystems, particularly in drylands where hotter, more frequent droughts are followed by rain and flooding. If grazing pressure has reduced plant cover this can result in serious erosion.¹² Meanwhile, in boreal Europe, defoliating moth are moving north,¹³ stripping and eventually killing birch trees, with forests unable to recover because saplings are grazed by domesticated reindeer.
- **Introduced species:** can play havoc with natural systems if unchecked. In southern England introduced deer species such as muntjac, with no natural predators, are preventing regrowth of woodland.¹⁴
- **Absence of predators:** native species can overgraze if natural predators are absent. In the eastern United States, white-tailed deer populations are at damaging high levels due to the extirpation of wolves and other predators.¹⁵

Economic factors

- **Livestock as capital:** pastoralist communities by necessity have few possessions, even among richer members of society. This can make it hard to get a bank loan, and livestock herds are used as collateral, providing a perverse incentive to increase herd sizes. These issues are noted in Mongolia.¹⁶

Cultural factors

- **Livestock as status:** in virtually all pastoralist communities livestock numbers are an important symbol of status, perhaps particularly in places where nomadic communities suffer discrimination.¹⁷ This can also mean that wealthy urban dwellers still keep large herds, managed by others, while not taking part in management and therefore unaware, or uninterested, about the implications of increased herd sizes.



Tenure issues

- **Concentrated land ownership:** large tracts of land focused on a particular management aim can create overgrazing. In Scotland, deer moors over much of the Highlands are set aside for hunting red deer, a minority sport, while artificially high deer populations undermine forest regeneration.¹⁸

Yet well-managed grazing is a far better use of land than many of the alternatives. Most herders are aware of the implications of overgrazing. Those directly concerned understand what is happening, are often deeply worried, but unable to see a way forward. The factors listed above compete with sustainability as a priority and there are often practical reasons why an individual may have problems in breaking the cycle. Nor can this issue usually be solved solely by legislation, even if there is the political will to do so. Things are often made worse by the entrenched positions of some observers, including idealised views of nomadic societies, and simplistic responses to overgrazing, particularly about the extent to which domestic livestock can be substituted for natural grazers within conservation management.

THERE IS NO SINGLE SOLUTION TO OVERGRAZING. LEGISLATION CAN HELP IN SOME CASES, IN OTHERS A LONGER-TERM AND MORE PARTICIPATORY APPROACH IS NEEDED, LINKING HERDER STATUS AND RESPECT TO THE HEALTH OF THE ENVIRONMENT RATHER THAN SIMPLY THE SIZE OF THE HERD

WHAT CAN BE DONE?

It follows from the definition of a “wicked problem” that there are no easy answers and certainly no single solution available. Where multiple factors are driving herders to maximise livestock numbers, providing extra land probably just means more land being degraded. While some political changes, like the removal of perverse incentives, can help, long-term solutions require a wholesale shift towards sustainable management.

- Status of herders needs to be aligned more with the health of the grazing environment than a simple head count of livestock.
- A more holistic understanding of grassland and forest quality is therefore needed, worked out collectively by all stakeholders and rightsholders involved in a particular ecosystem.
- Analysis is needed to identify grassland and savannah ecosystems at particular risk (*grassland hotspots*) where urgent action is required to stem degradation and loss.
- Grassland ecosystem services need to be better understood¹⁹ and linked to ongoing global processes like the CBD’s Global Biodiversity Framework, the Sustainable Development Goals and particularly the UNCCD’s Land Degradation Neutrality target.
- Protected areas can, if properly planned and managed, serve as laboratories for integrating pastoralism with management for biodiversity and ecosystem services.²⁰
- Legislative changes are also needed, when one interest group is dominating over wider environmental concerns or where perverse incentives are creating lack of sustainability.

None of these will solve the problems alone. But recognition of the scale of the problem, particularly amongst the people involved, is a valuable step towards positive progress.

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Figure 3: horses at dawn near Son Kul Lake, in Kyrgyzstan

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