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Investing in rural people

POLICY BRIEF

# Low carbon and resilient livestock development in Kyrgyzstan

## Key messages

Livestock are key in combating and adapting to climate change in Kyrgyzstan.

Pasture conditions are worse than at the beginning of the century due to unsustainable management practices, exacerbated by climate change. More efforts are needed to strengthen sustainable pasture and herd management.

More milk and meat can be produced with fewer emissions and without increasing the number of livestock. Fewer emissions are possible by improving the herd structure, animal health and feed.

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## Resilient pastoral systems

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Kyrgyzstan is a livestock country. A large part of the country's land area serves as pasture for its 1.7 million cattle and 6.3 million sheep and goats. Pastoral and agro-pastoral systems, if well managed, are the best-suited and adaptive form of agriculture for the majority of Kyrgyzstan's land area that is too dry, cold, or mountainous for crop farming.

The production system relies on livestock mobility as a key strategy, that allows herders to mitigate risks and manage pasture and water resources in a planned manner. Mobility allows herders to use the entire landscape, from the valleys to the high summer pastures, adding value to resources that would otherwise not be used. Mobility also allows them to respond to climate shocks and extreme weather events such as drought, heavy snowfall or rainfall, and strong winds. Measures that strengthen the pastoral system, also strengthen its capability to respond to climatic shocks.



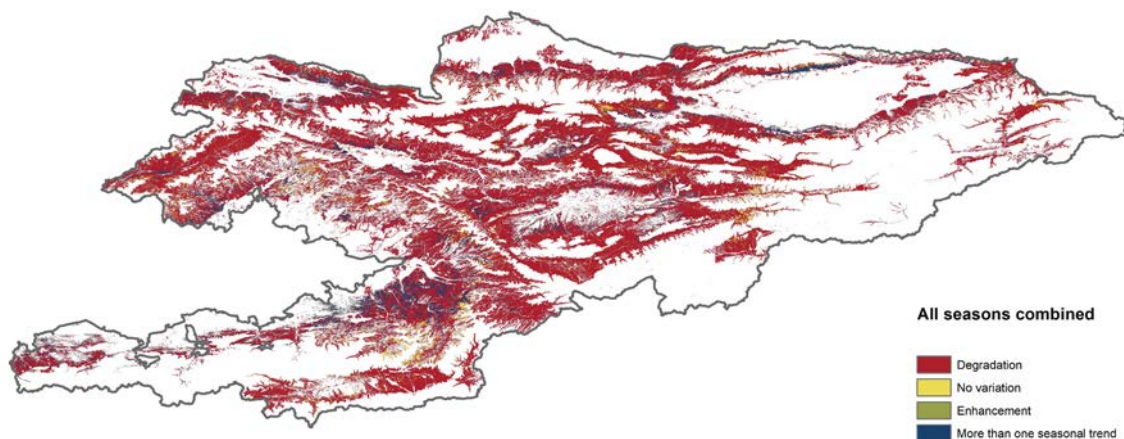
## Pastures at risk

Kyrgyzstan's pasture conditions are worsening. A recent assessment undertaken by the Climate Resilience Cluster of Earth Observation for Sustainable Development (EO4SD) estimates that 94% of pastures, over 69,900 km<sup>2</sup>, are degraded at least during one season per year.

The study compared the average pasture conditions of 2000–2004 and 2016–2020. The remote sensing analysis took into account pasture types, grazing periods and altitudes, along with a set of field measurements.

Over 40% of the summer pastures have been severely degraded since 2000–2004. More than half of spring, summer and autumn pastures have been moderately damaged. Winter pastures are the worst affected, with 82% being severely degraded.

Unsustainable grazing practices are most likely to be the main cause of degradation. These interact with climate change impacts, causing further deterioration. Between 2006 and 2020, the number of sheep and goats has increased by 55% and the number of cattle by 46% (National Statistical Committee of the Kyrgyz Republic). Pasture degradation is also linked to loss in biodiversity.

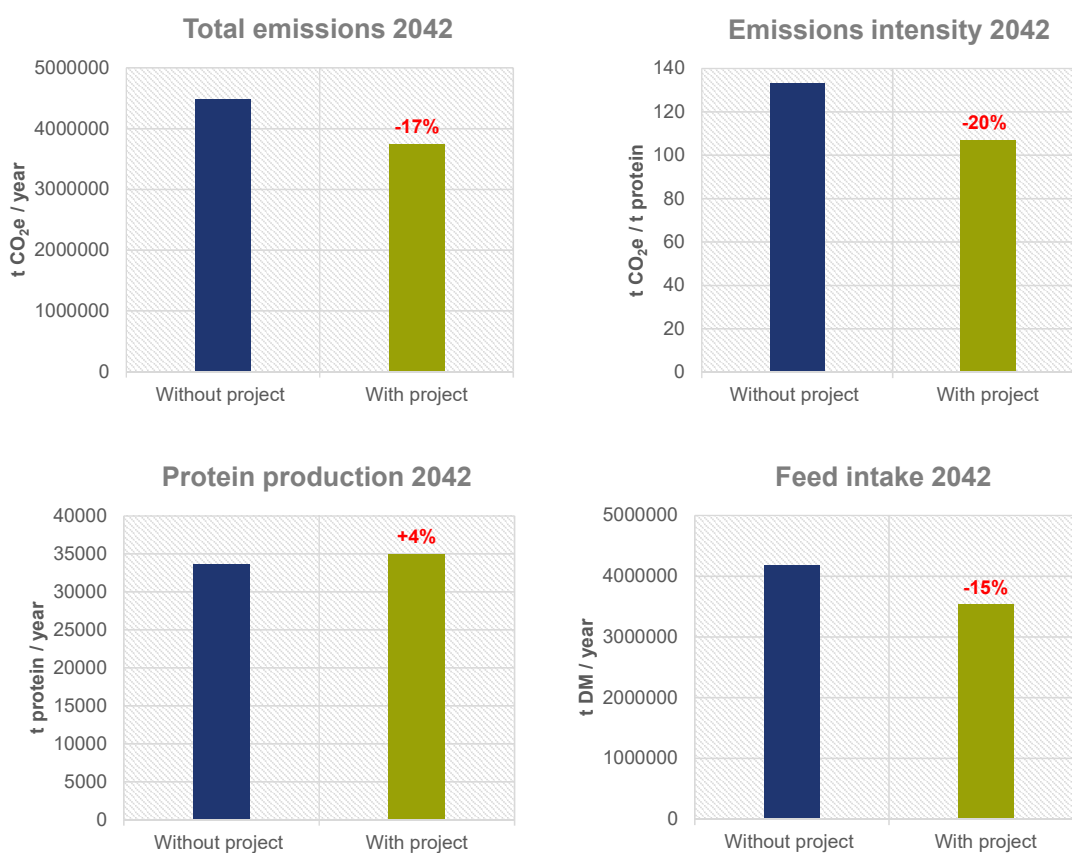


## Reducing emissions while increasing productivity

Livestock are part of the solution to combat climate change in Kyrgyzstan. An assessment by FAO and IFAD shows that it is possible for Kyrgyzstan to boost its livestock production and reduce its greenhouse gas emissions at the same time.

Analysts from FAO and IFAD used a tool called the Global Livestock Environmental Assessment Model-*interactive* (GLEAM-*i*) to calculate the potential reductions in emissions achievable through a new [IFAD-funded project](#) being planned for the country.

The new IFAD project would make it possible to increase the total production of meat and milk by about 4% while cutting emissions by 17%, without an increase in the number of animals. Improving feed quality, also results in reducing the overall quantity needed.



### Investments in livestock and pastures have a positive impact

The impact assessment of IFAD's Livestock Market Development Programme II (2014 to 2021), which includes 3,000 households and 157 pasture committees, found out that the programme increased the value of livestock production by 69% and the overall gross income by 43%, resulting in 25% of poverty reduction. It also registered that women got further involved in pasture committees and in animal husbandry activities.

The study discovered that pastures, especially winter ones, were in a better condition thanks to the project. The share of healthy winter pastures have increased by 4%. A challenge that the study highlighted is that the number of livestock increased, but not the productivity per animal. This calls for increased investments in productivity, as the positive gains of the project could be undermined if this trend continues.





## Key measures to adapt to climate change

Measures to improve pasture conditions go hand-in-hand with those needed to adapt to climate change. There are nine key measures, many of which also help sequester carbon and/or reduce greenhouse gas emissions:

- 1. Animal health and veterinary services.** Changes in climate can lead to new livestock pests and diseases, or the return of previously eradicated illnesses, to which animals in poor health will be more susceptible. Strengthening the animal health system mitigates this risk.
- 2. Breeding productive farm animals adapted to climate change.** Breeding efforts should not only aim to increase livestock productivity, but also maintain traits of indigenous breeds that make them well adapted to the harsh mountain conditions of Kyrgyzstan. Adaptive traits include heat and cold tolerance, ability to thrive on poor-quality feed, and the ability to walk long distances.
- 3. Animal and herd management.** Adjusting herd size and composition to favour smaller herds that are more productive, is an important step to manage pasture resources sustainably and increase resilience. Effective regulatory and incentive measures are necessary to manage and control herd growth.



4. **Sustainable grazing management.** Improved pasture management (through pasture resting, seasonal migration and rotational grazing) increases feed availability and the habitat's capacity to withstand unfavourable climate stressors. Good management practices also increase the amount of carbon sequestered in grassland soils.
5. **Pasture rehabilitation.** Control of harmful vegetation, reseeding, protection of water sources and erosion-control structures, can mitigate climate-related hazards such as landslides, mudslides, flooding and erosion that further degrade pastures.
6. **Fodder quality and availability.** Winter pastures are the most degraded pastures. Keeping more animals indoors during winter helps to protect these areas. For this to happen, more fodder is needed, both in terms of amount and improved quality, which makes animals more productive and reduces greenhouse-gas emissions.
7. **Pasture-related infrastructures.** Infrastructures such as water points, bridges, sheds, and rural roads, give herders more options and flexibility to adapt to changing conditions, by moving their herds to areas where pasture and water availability are better, and extreme weather events are avoidable.
8. **Pasture monitoring and inventories.** Scientific data and evidence are needed to understand the effects of climate change and assess which measures are the most effective. Solutions include more field measurements to monitor pasture conditions and using this information to improve pasture-management plans.
9. **Pasture governance.** This includes policy-related work, setting standards and regulations, establishing mechanisms to strengthen community-based pasture management, ensuring that institutions have sufficient capacity to implement climate action, and mobilizing financing mechanisms to overcome initial investment barriers.



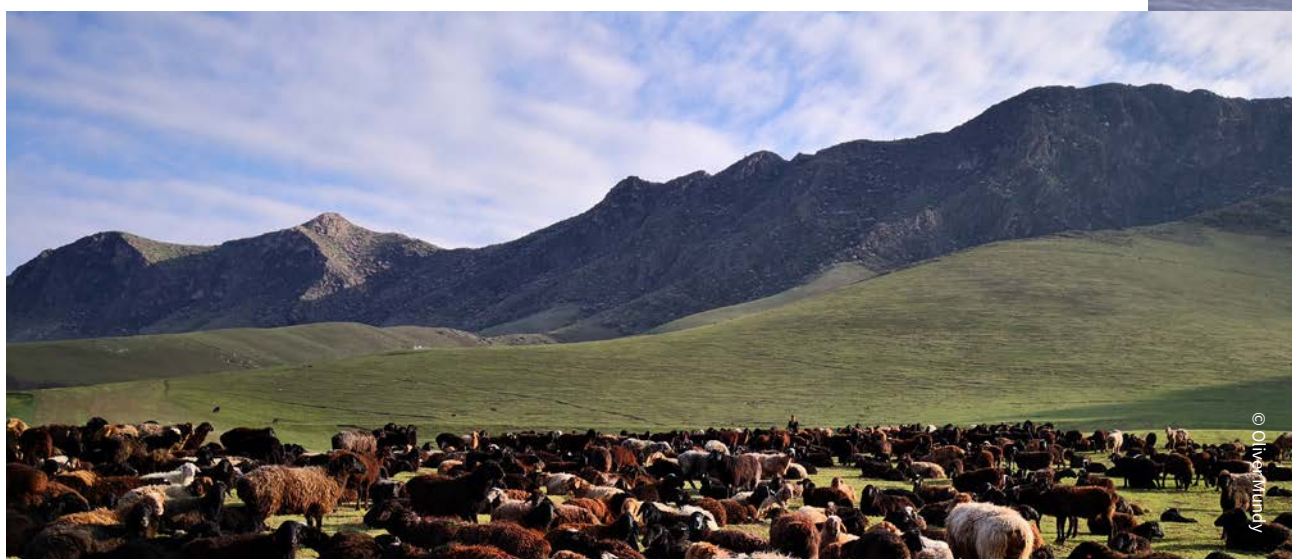


## Key measures to reduce and offset emissions

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A combination of measures can help reduce emissions while increasing productivity.

- 1. Breeding cows at an earlier age.** Breeding cows at a slightly younger age would reduce the number of female calves needed for replacement. This, in turn, would decrease the number of meat animals in the herd, shrinking the overall herd size. The same amount of protein can therefore be produced with fewer animals, reducing both the total emissions and their intensity (i.e. emissions per unit of product).
- 2. Improving animal health.** Healthy animals produce more meat and milk than sick animals do. Vaccination and better veterinary services are thus crucial for reducing mortality rates and for increasing milk and meat production. When animals are healthier, owners do not need to keep as many of them: it is better to keep fewer productive animals, rather than a large herd of less or non-productive livestock.
- 3. Producing quality fodder.** Better feed also helps keep animals healthy and productive. Emissions can therefore be reduced even further, by reducing the amount of low-quality hay in their diets and increasing their consumption of more nutritious crops, such as sugar beet and maize.
- 4. Improving pasture management.** Healthy and productive pastures are not only the most important source of feed in Kyrgyzstan but also an important store of carbon.



## Further information

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- Full report: Analysis of livestock and pasture sub-sectors for the NDC revision in Kyrgyzstan ([view](#))
- Technical note: Low carbon livestock development in Kyrgyzstan ([view](#))
- Technical note: Pasture condition maps in Kyrgyzstan ([view](#))
- Web-blog: Livestock key to combatting climate change in Kyrgyzstan ([view](#))
- Impact assessment of IFAD's Livestock Market Development Programme II ([view](#))



## About this brief

This brief was produced by the International Fund for Agricultural Development (IFAD) in collaboration with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Food and Agriculture Organization of the United Nations (FAO). It summarizes the contributions of FAO and IFAD to the GIZ-led publication “Analysis of livestock and pasture sub-sectors for the NDC revision in Kyrgyzstan”. This work was supported with funding by the second phase of IFAD’s Adaptation for Smallholder Agriculture Programme (ASAP2). Pasture condition maps have been produced by the Climate Resilience Cluster of the Earth Observation for Sustainable Development initiative, a programme of the European Space Agency (ESA). The impact assessment of the Livestock Market Development Programme II was conducted by the Research and Impact Assessment division of IFAD.

## Disclaimer

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