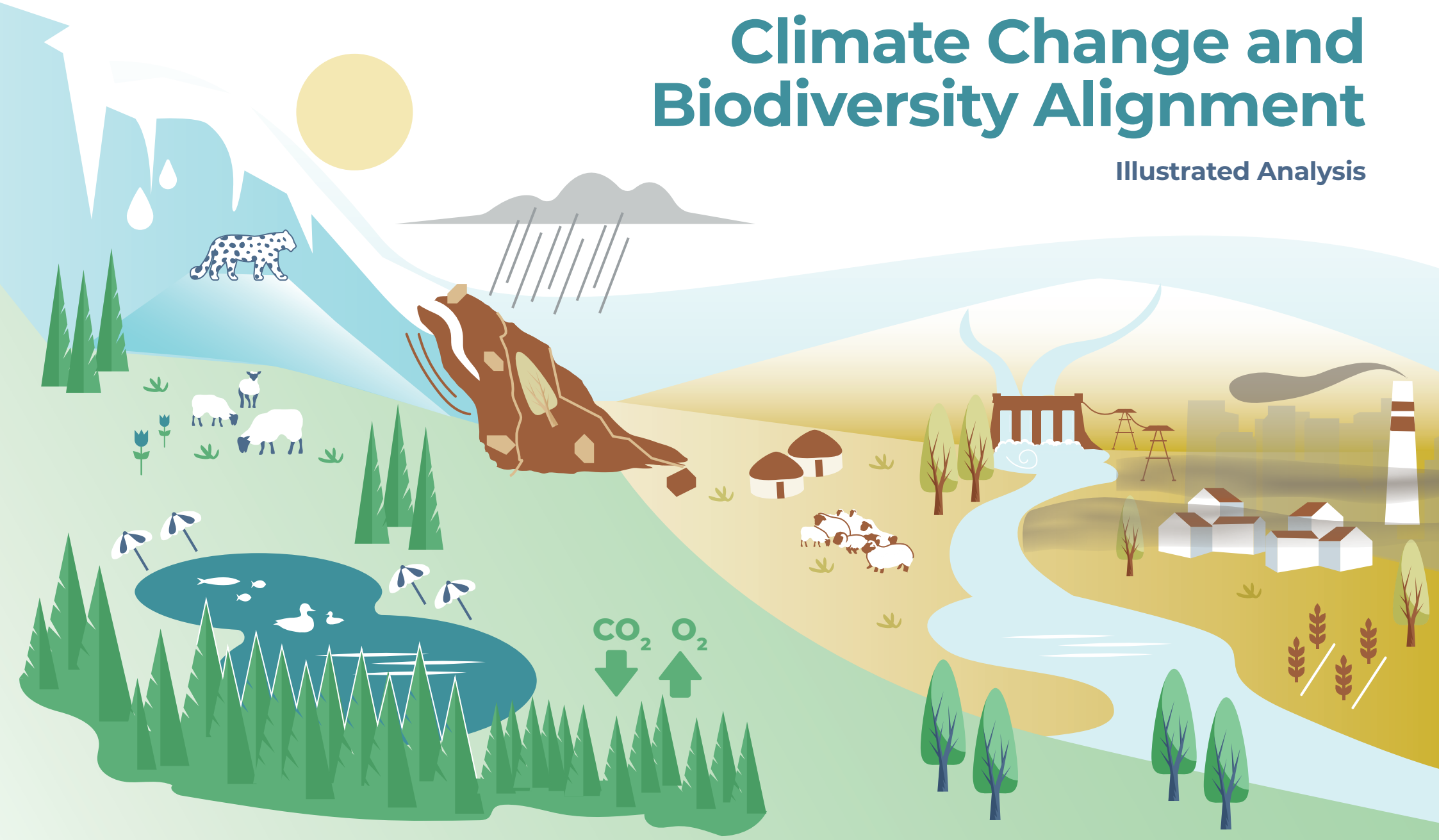


KYRGYZ REPUBLIC

Climate Change and Biodiversity Alignment

Illustrated Analysis



NATIONAL TARGETS AND MEASURES ADDRESSING CARBON EMISSIONS, CLIMATE ADAPTATION, AND BIODIVERSITY CONSERVATION

Kyrgyz Republic

Climate Change and Biodiversity Alignment

Illustrated Analysis

In coordination with UNITAR and UNDP, Zoi Environment Network prepared an illustrated analysis of the interlinkages between climate change, biodiversity, and related challenges and solutions.

Intended use and target audience:

This material is openly accessible and can be used to raise awareness among diverse stakeholders, including local authorities and natural resource users, civil society organizations, youth, and students. The visual synthesis might be helpful in preparing for and participating in international conferences on climate change, biodiversity, health, and sustainable mountain development. It can also support the implementation of national action plans on climate change and biodiversity.

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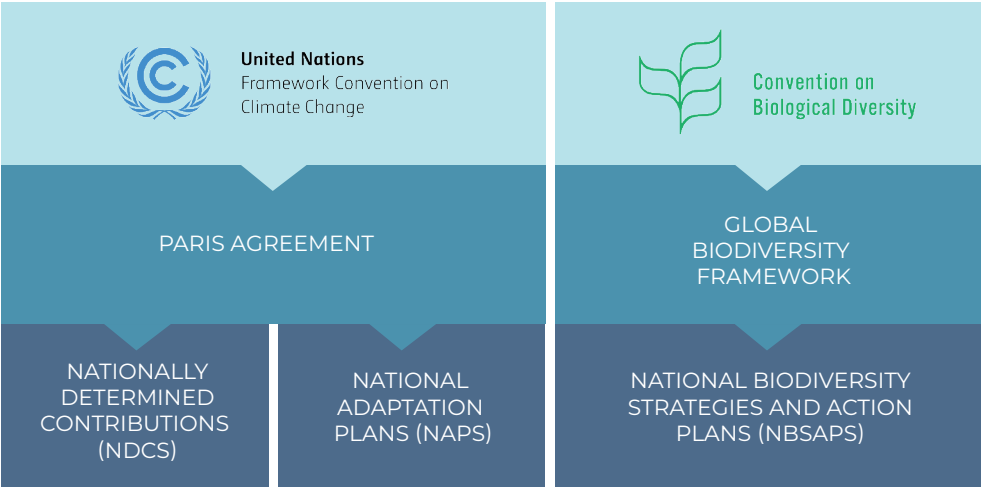
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Introduction

In 2024–2025, the Kyrgyz Republic worked on updating its Nationally Determined Contribution (NDC 3.0) and National Adaptation Plan (NAP) in accordance with the Paris Agreement under the UNFCCC. The country has also progressed in updating its National Biodiversity Strategy (Programme) and Action Plan in line with the Kunming-Montreal Global Biodiversity Framework and targets.

This visual analysis explores how these climate (approved) and biodiversity (preliminary) plans can be coordinated to enhance their collective performance in addressing climate change and promoting conservation. It helps identify synergies and potential overlaps between the target areas and actions.



Thanks to interagency coordination, a similar timeline, and an openness to stakeholder engagement, as well as the mountain context of Kyrgyzstan, where climate impacts, biodiversity loss, disasters and livelihoods are interconnected, the country worked to align and reinforce the NDC, NAP, and NBSAP wherever possible.

Why alignment matters?

Aligning these plans can create a coherent approach to climate and biodiversity efforts, reducing duplication and ensuring policies and actions work well together. By identifying synergies, Kyrgyzstan can leverage the strengths of each plan to achieve a greater impact on mitigation, adaptation, and conservation. Alignment can help optimize the use of resources by identifying areas where actions can be combined and lead to more resilient development.

The updated NDC 3.0 emphasizes that the Kyrgyz Republic is a mountain country vulnerable to climate change. Rapid glacier melt, growing intensity of floods, landslides, heatwaves and droughts affect water, energy and food security, public health, and infrastructure. Mountain ecosystems are sensitive to climate change. Their fragmentation and degradation reduce the productivity of natural pastures. Air pollution in the densely populated areas combined with waste management challenges exacerbate health risks, particularly for vulnerable groups.

Restoring and protecting ecosystems, particularly forests, grasslands, and wetlands, provides climate mitigation benefits, such as sequestration, as well as climate adaptation benefits, such as flood control and improvements in water quality and availability. Practices that enhance soil health and reduce the use of agrichemicals and fertilizers lead to reduced emissions and pollution. These practices also improve crop resilience, contribute

to biodiversity conservation and support healthy food. Afforestation measures reduce climate-related disaster risks. Increasing green spaces in cities makes them healthier for residents and more attractive to businesses.

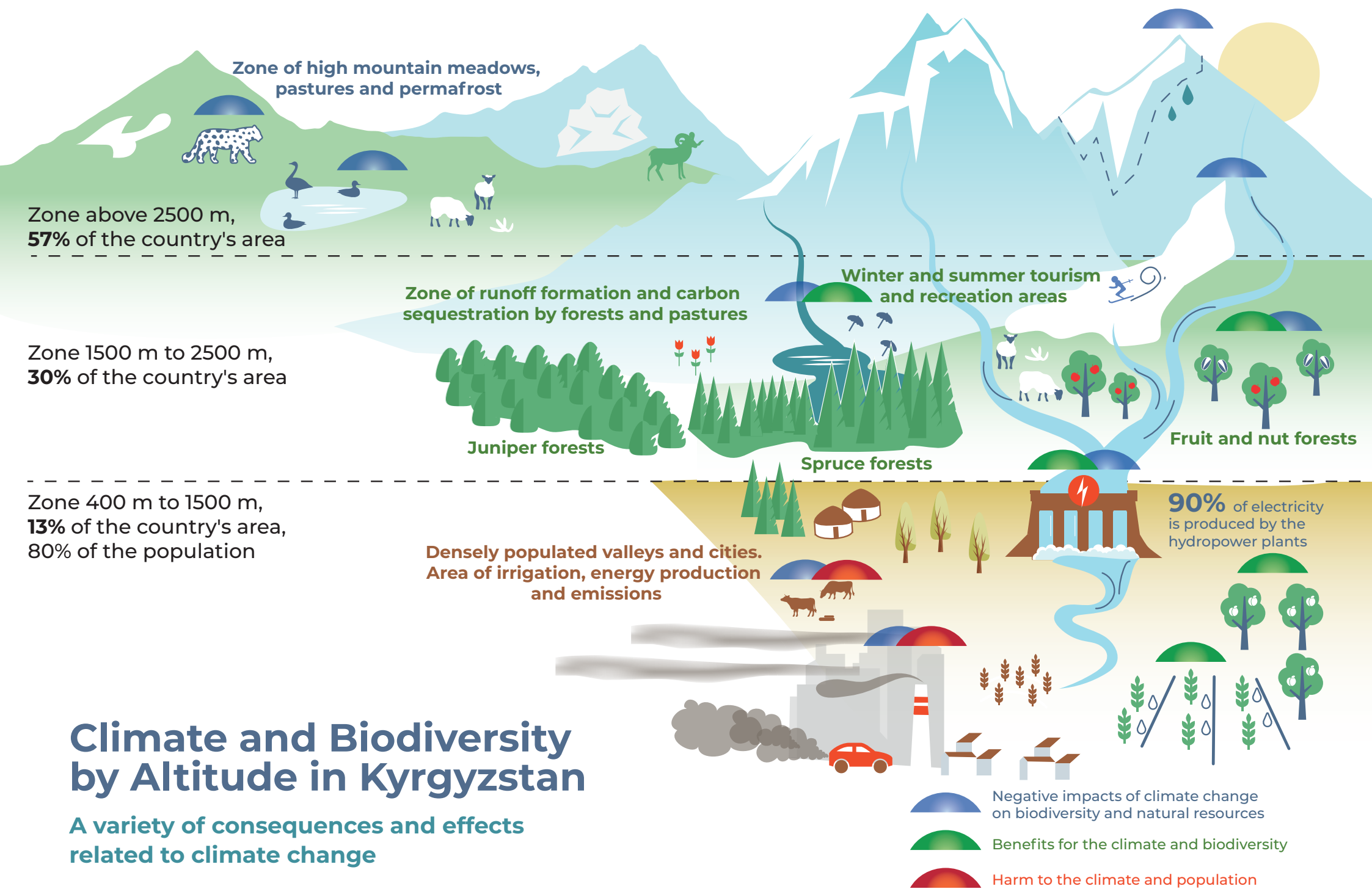
There are enabling and reinforcing links, where climate-related actions are intrinsically linked or create conditions for the achievement of progress on biodiversity conservation. However, there are some situations, where a climate commitment, for example on renewable energy or water sector adaptation, could lead to constraints to achieving results in biodiversity area, i.e. raptors or endemic fish conservation.

The snow leopard is a national symbol of Kyrgyzstan whose habitat and future depend on the impact of climate change and conservation efforts. Other examples illustrate how low-emission or climate adaptation measures can benefit biodiversity.

There are several possible ways to analyse climate and biodiversity alignment. The current analysis highlights several themed clusters that are important in the mountainous context of Kyrgyzstan. These clusters include:

1. Agriculture, forestry and landscapes (land use), where the linkages between climate and biodiversity are most direct
2. Natural disasters and extreme weather
3. Densely populated and urban areas
4. One Health

At the end of the visual synthesis, a selection of key facts about the climate and biodiversity of Kyrgyzstan help readers quickly understand the current situation, projections, and national targets. The analysis also offers recommendations and a selection of references.



Snow Leopard (*Panthera uncia*)

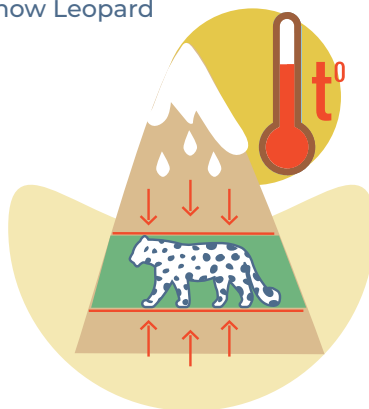
Kyrgyzstan's national symbol whose survival depends on conservation measures and the impact of climate change



International Day
of the Snow Leopard



The species is listed in the National Red Book of the Kyrgyz Republic, the IUCN Red List (VU), and is the main focus of the Global Snow Leopard Conservation Program



Climate change affects snow, glaciers, and the habitat of snow leopards

Threats to the Snow Leopard

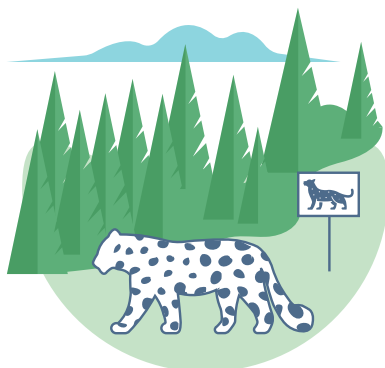


Decline in the number of ungulates and degradation of pastures



Retaliatory killing and trapping in response to livestock attacks

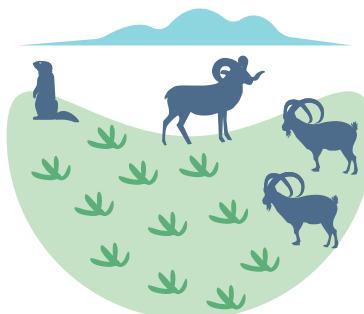
Solutions



Development of protected areas network



Ecological corridors to facilitate species migration



Preserving habitats and prey species for snow leopards



Improving access to energy to reduce deforestation and wood fuel collection



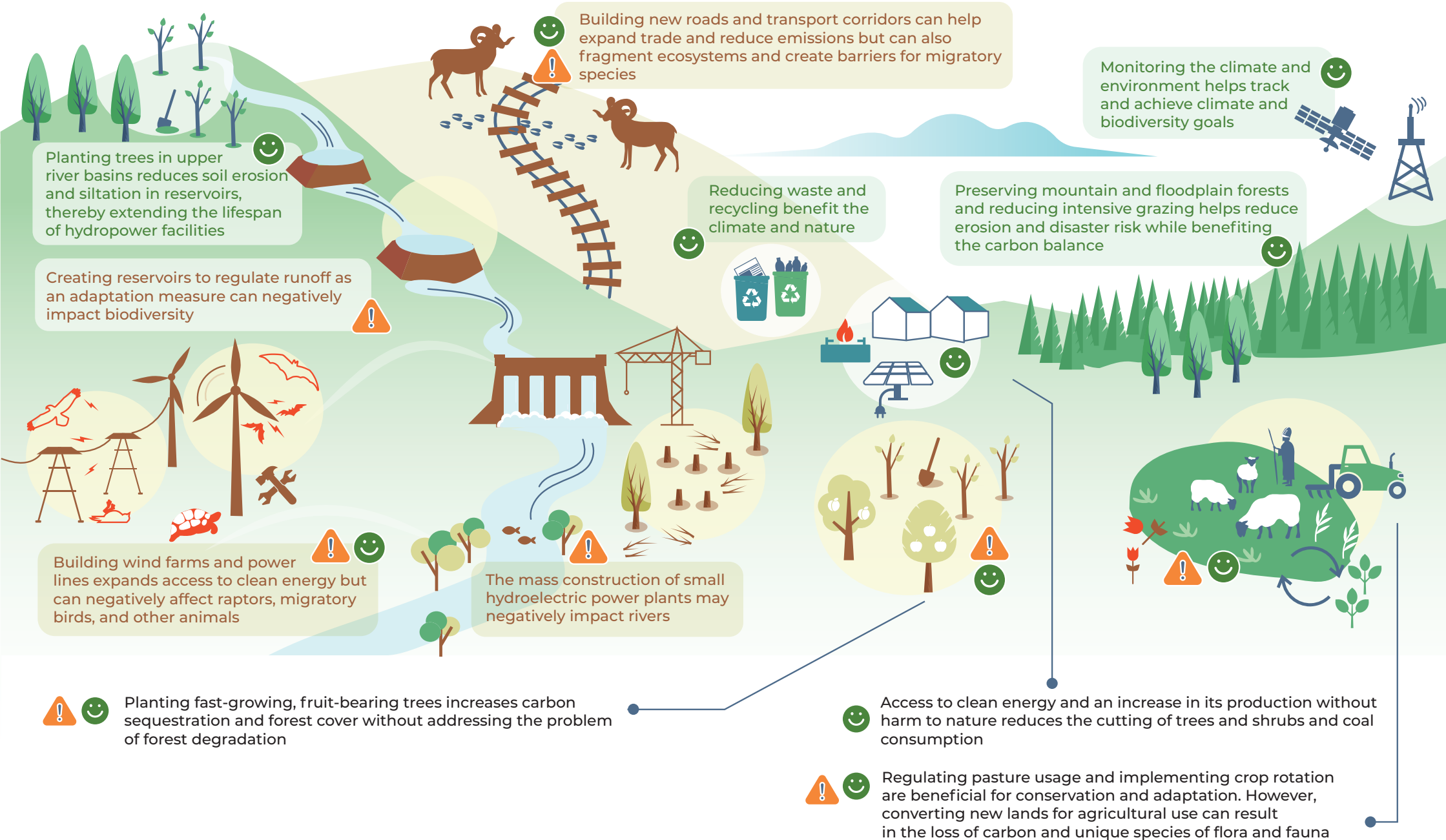
Protecting livestock from leopard attacks

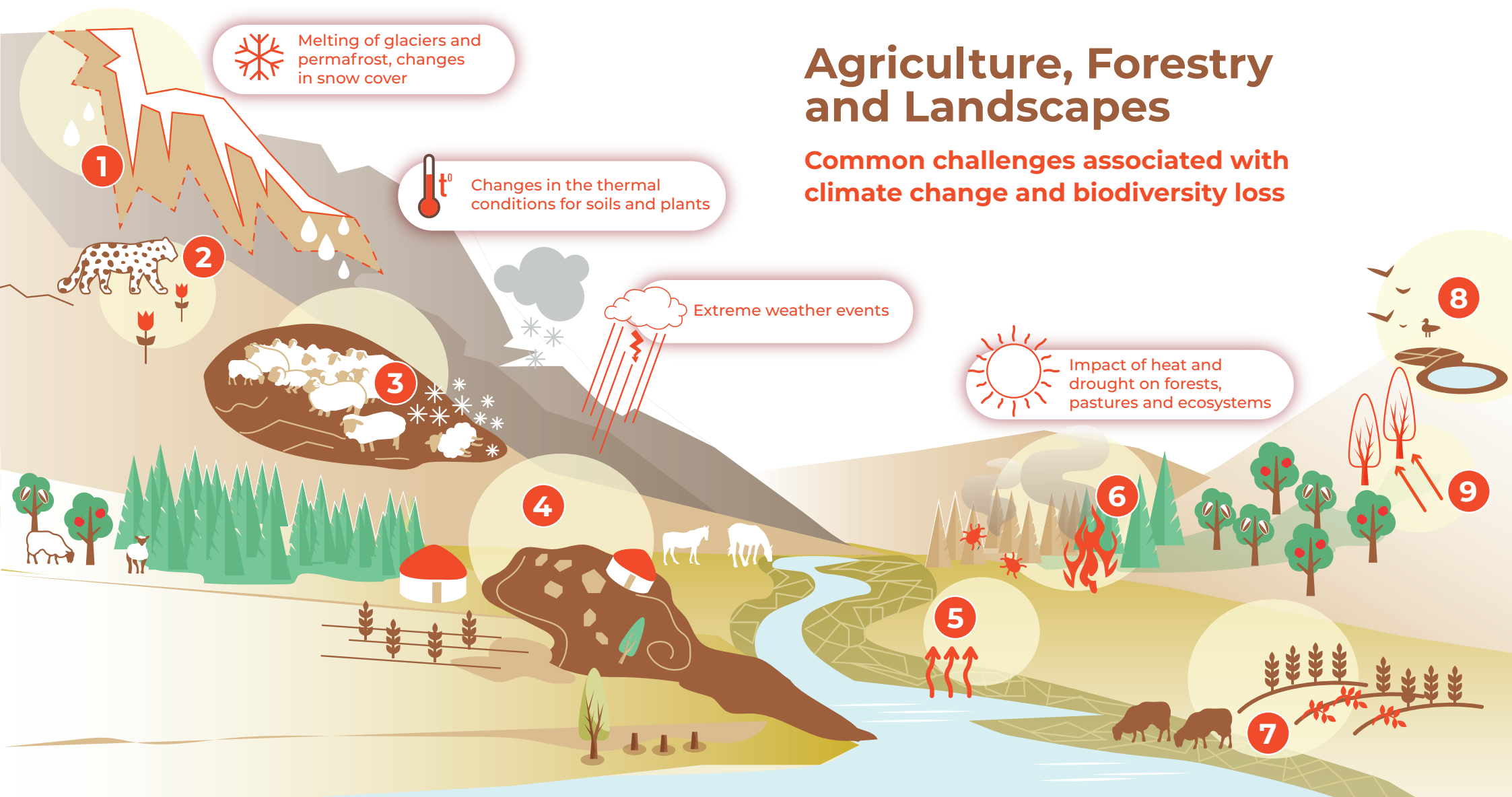


Improving monitoring and patrolling

Climate and Biodiversity Alignment

Examples of win-wins and tradeoffs





Agriculture, Forestry and Landscapes

Common challenges associated with climate change and biodiversity loss

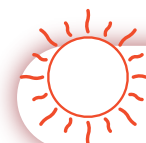


Melting of glaciers and permafrost, changes in snow cover



Changes in the thermal conditions for soils and plants

Extreme weather events



Impact of heat and drought on forests, pastures and ecosystems

1

Reduction of glacier area, changes in high-mountain landscapes

2

Changes in the conditions and habitats of flora and fauna species

3

Pasture degradation due to intensive grazing, livestock deaths due to lack of forage, and extreme weather events

4

Extreme weather events can cause landslides and mudflows, especially when forests and pastures are degraded and slopes are used for farming

5

Impact of heat and drought on water resources and aquatic species and ecosystems

6

Deterioration of forests and an increased risk of fires due to pests, increased heat, and drought

7

Food insecurity

8

The impact of climate change and land development on migratory species, sites of species aggregation and wildlife habitats

9

Degradation and shifting of forests due to climate warming and changes in precipitation

Agriculture, Forestry and Landscapes

Mutual benefits and synergies of climate and biodiversity measures



1 Monitoring and projections of snow, glaciers and permafrost

2 Protecting habitats and creating migration corridors for vulnerable animal species

3 Creating artificial glaciers and water reserves

4 Regulate livestock grazing based on weather and pasture productivity forecasts

5 Grass seeding and pasture restoration using native plant species

6 Protecting livestock from extreme weather

7 Planting trees around populated areas, on mountain slopes, and along river and canal banks

8 Agroforestry, reducing grazing in forests

9 Drought-resistant agricultural crops

10 Greenhouse farming

11 Canal lining

12 Drip irrigation

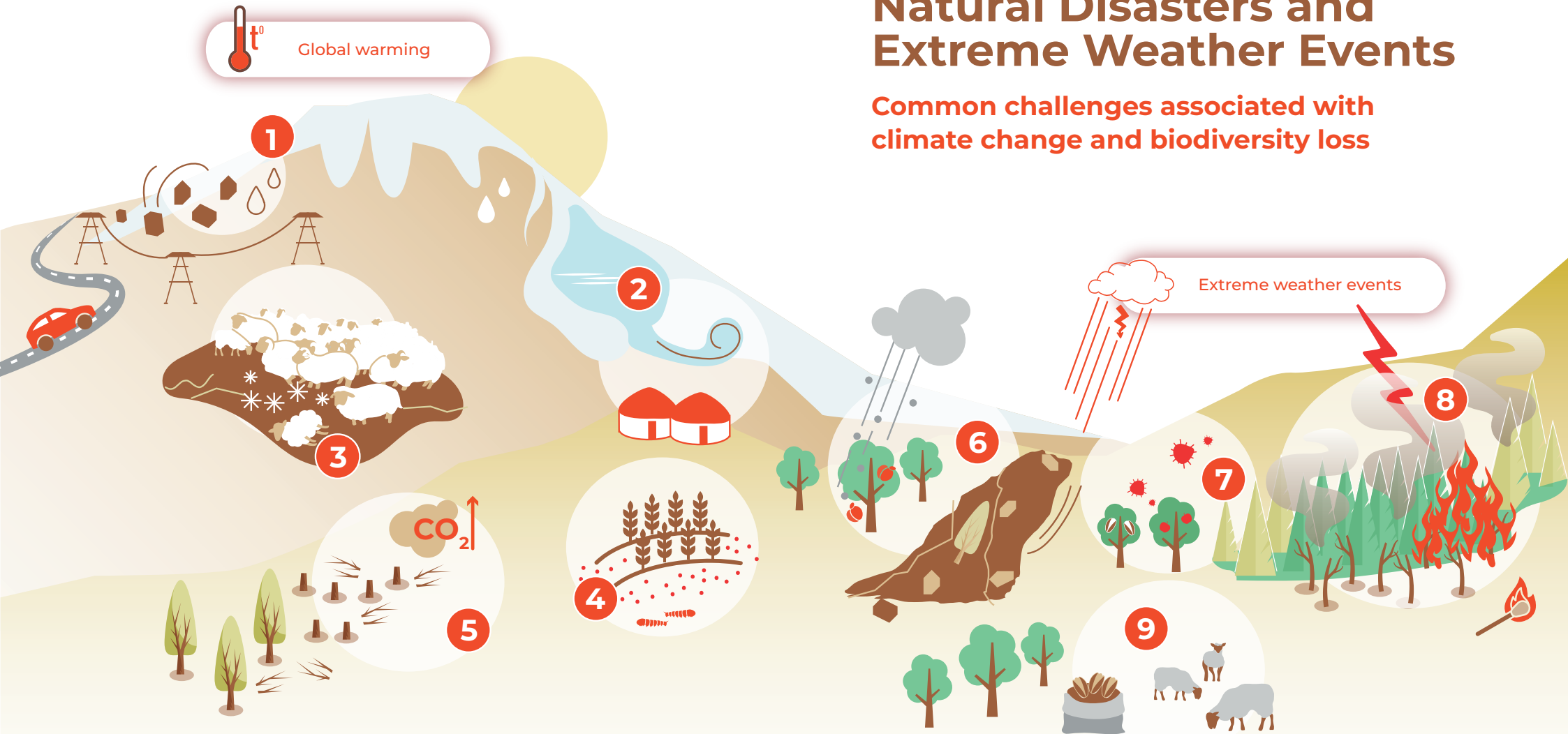
13 Forest management and conservation with consideration of climate change scenarios

14 Expanding forest plantations using native species

15 Monitoring and conservation of water systems

Natural Disasters and Extreme Weather Events

Common challenges associated with climate change and biodiversity loss



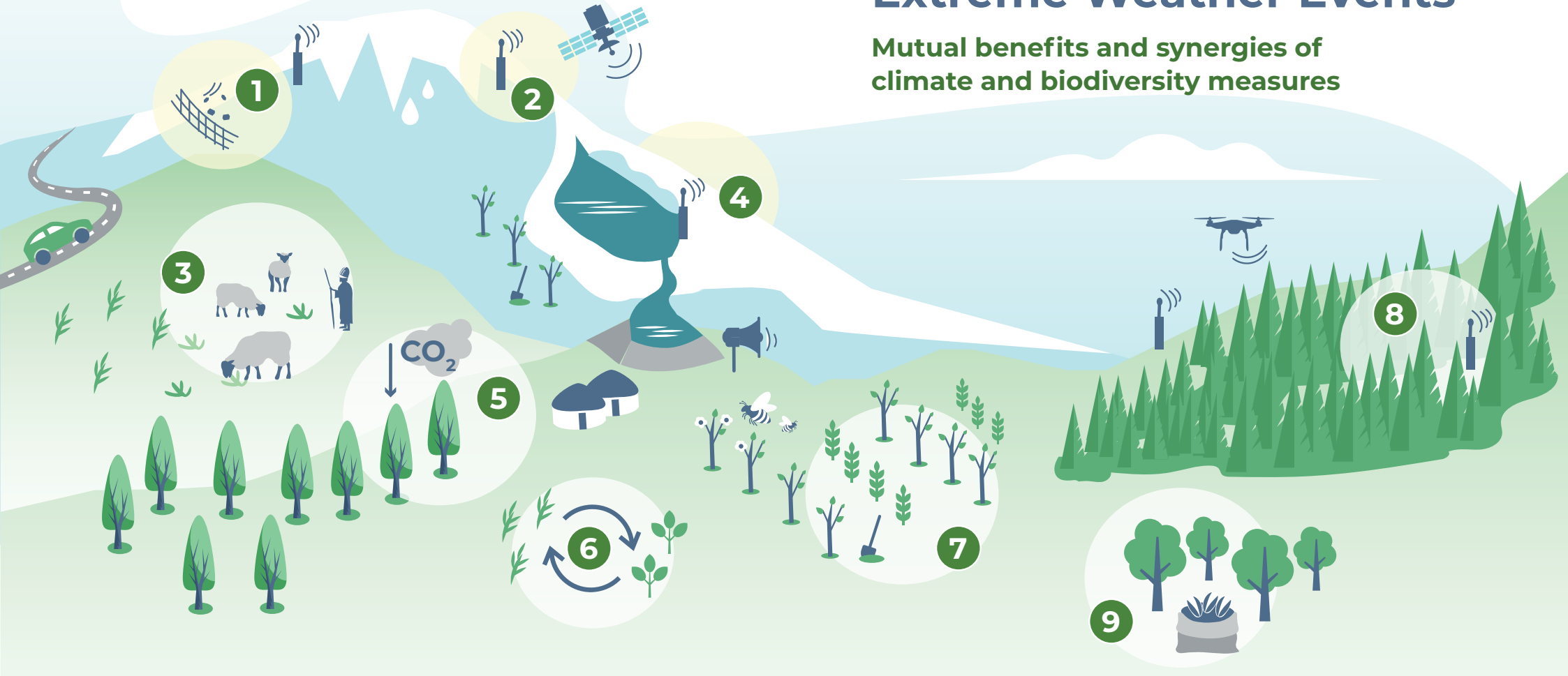
- 1 Melting permafrost and changes in rock stability increase the risk of landslides
- 2 A growing number, extent, and danger of glacial lake outburst floods
- 3 Overgrazing, soil erosion, and livestock deaths from extreme weather

- 4 Decline in crop yields and soil fertility. Favorable conditions for pest development
- 5 Deforestation reduces forests' carbon stocks and their protective role against natural disasters
- 6 Damage from mudflows, frost and hail

- 7 Forest diseases and pests
- 8 Forest fires due to the careless handling of fire and adverse weather (heat and wind)
- 9 Overgrazing and overharvesting of non-timber forest products decreases forest productivity and their long-term resilience to climate change

Natural Disasters and Extreme Weather Events

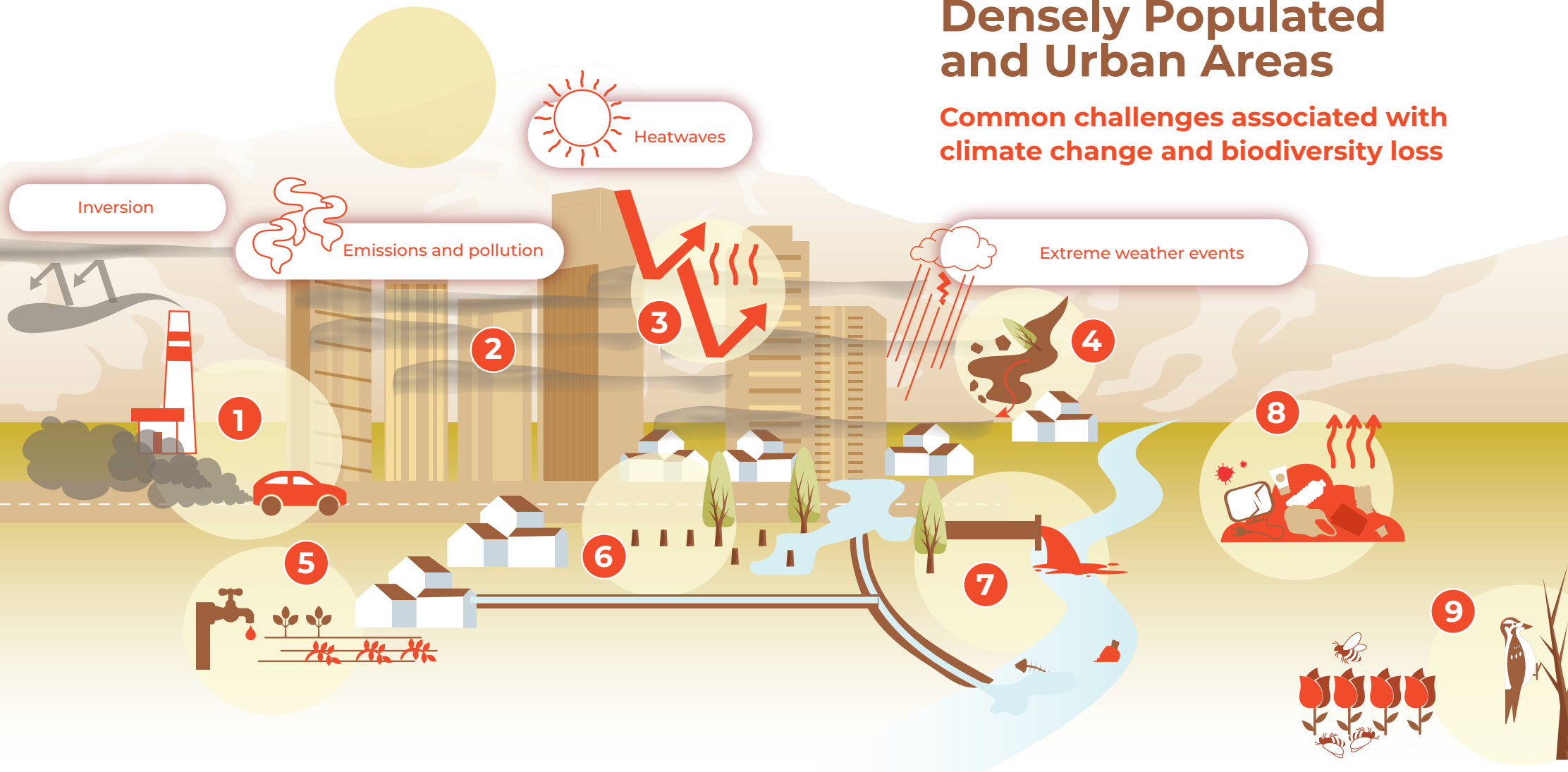
Mutual benefits and synergies of climate and biodiversity measures



- 1 Protective nets and tree cover can reduce the risk of rockfalls
- 2 Monitoring the cryosphere helps reduce disaster risk and assess changes in mountain ecosystems
- 3 Regulated grazing improves pasture conditions and reduces erosion
- 4 Early warning systems and technical solutions
- 5 Forests play a significant role in both reducing disaster risk and sequestering carbon
- 6 Soil restoration and crop rotation reduce the risk of erosion and loss of biodiversity
- 7 Shelterbelts reduce erosion and pollinators increase crop yields
- 8 Monitoring for forest and fire hazards
- 9 Planting nut and fruit trees provides both economic and environmental benefits

Densely Populated and Urban Areas

Common challenges associated with climate change and biodiversity loss



- 1 Poor air quality, especially during inversions
- 2 Dense urban development and climate-blind planning impede airflow
- 3 Heated roads, buildings, and poor air circulation create an urban heat island

- 4 Mudflows
- 5 Lack of water resources
- 6 Lack of green spaces

- 7 Poor sewage treatment and urban drainage
- 8 High temperatures worsen pollution, landfill fires
- 9 Reduction in the number of pollinators and birds that feed on insects

Densely Populated and Urban Areas

Mutual benefits and synergies of climate and biodiversity measures



1 Green belts around cities

2 Energy-efficient buildings and light facades with green architectural solutions

3 Green spaces using native species

4 Urban parks, lakes and fountains

5 Incentives and conditions for public and electric transportation

6 Renewable energy and gasification

7 Wastewater treatment

8 Monitoring of water and air quality

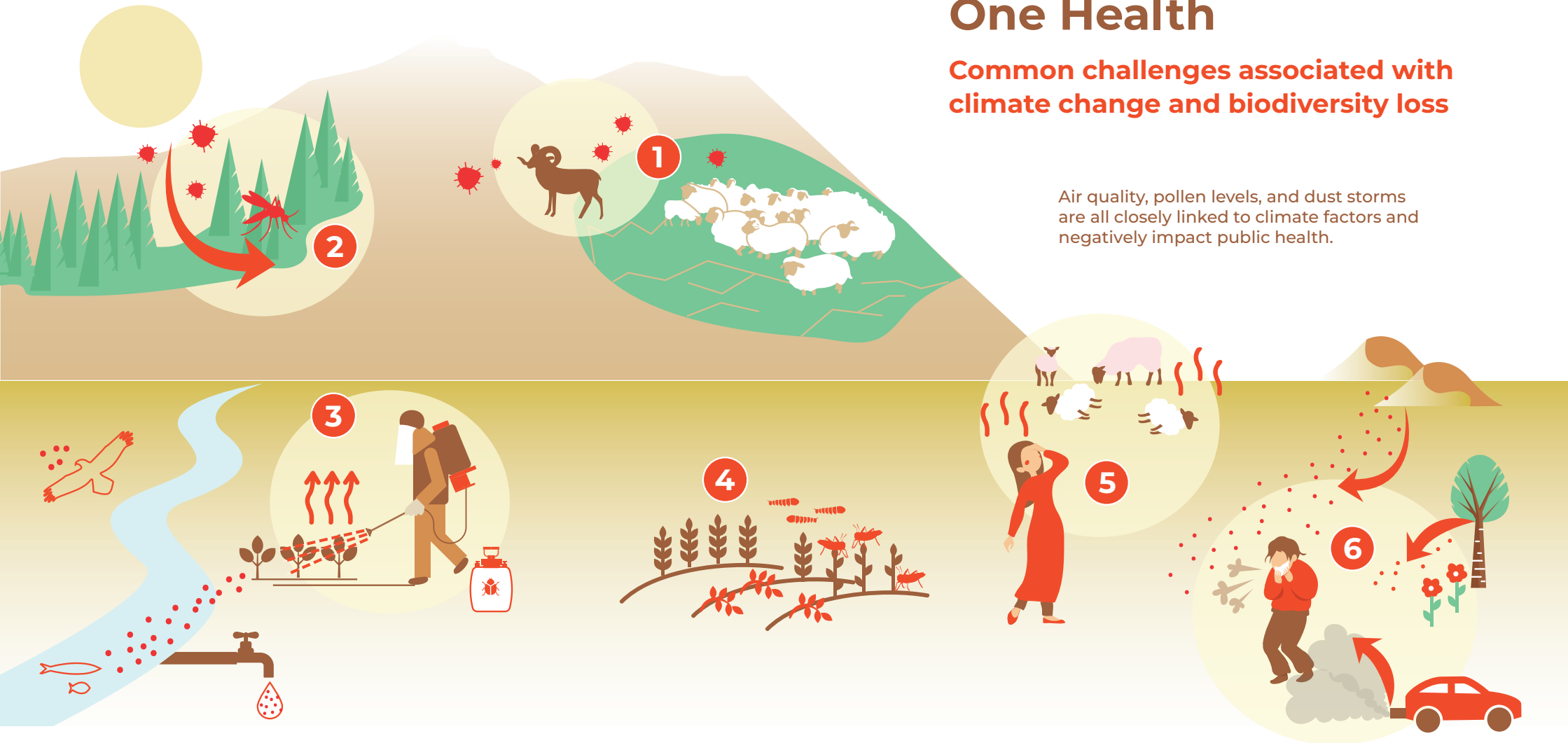
9 National parks and eco-tourism destinations near cities. Biodiversity awareness and clean-up campaigns

10 Waste reduction and recycling

One Health

Common challenges associated with climate change and biodiversity loss

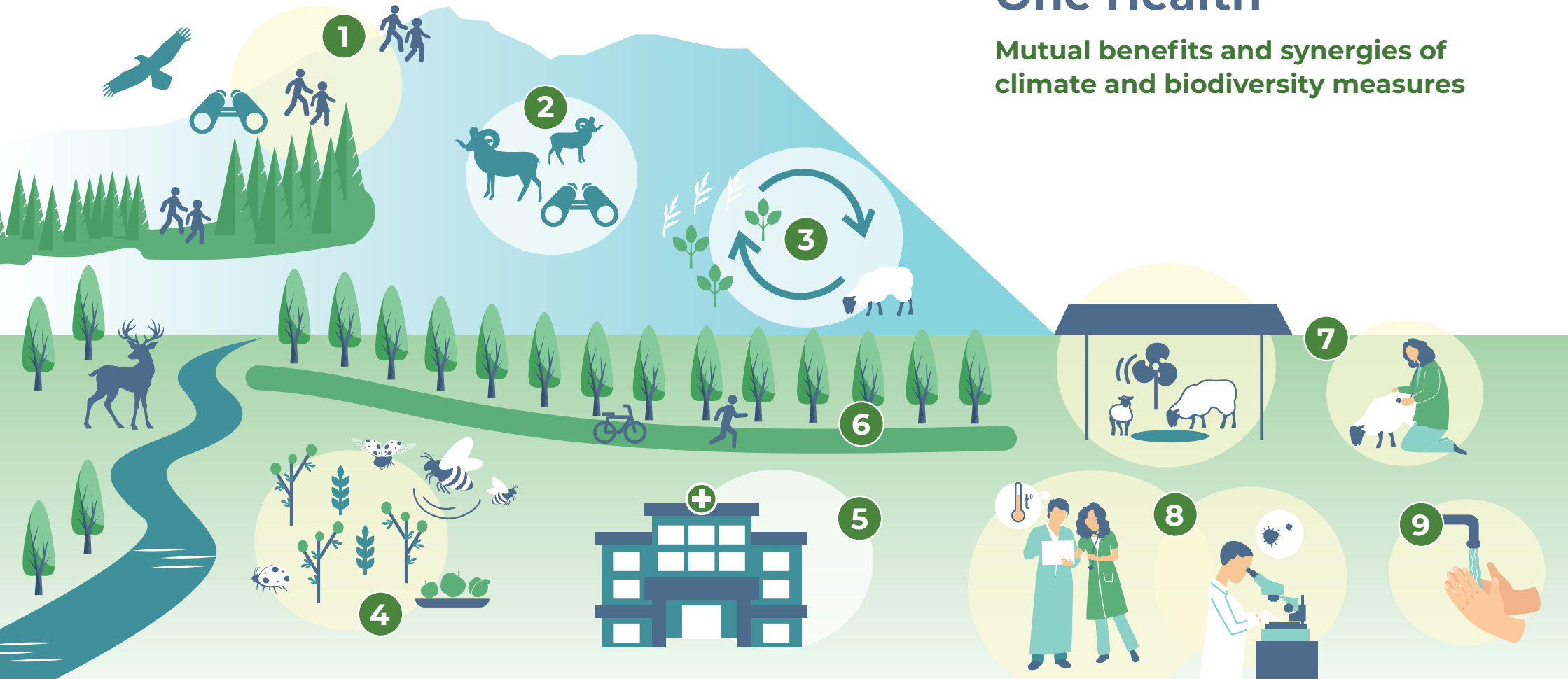
Air quality, pollen levels, and dust storms are all closely linked to climate factors and negatively impact public health.



- 1** Expansion of pastures, intensive grazing, and large numbers of livestock lead to increased contact with wild animals, which increases the risk of zoonotic diseases
- 2** Climate change and the shrinking of natural spaces are causing new disease carriers and types of diseases to emerge
- 3** The intense use of agrichemicals and mineral fertilizers leads to emissions, water pollution, and the poisoning of wildlife
- 4** Climate warming creates favorable conditions for the spread of agricultural pests and diseases
- 5** Heat and drought negatively impact human and livestock health
- 6** Air pollution and air quality, pollen levels, and dust storms are all closely linked to climate factors and negatively impact public health

One Health

Mutual benefits and synergies of climate and biodiversity measures

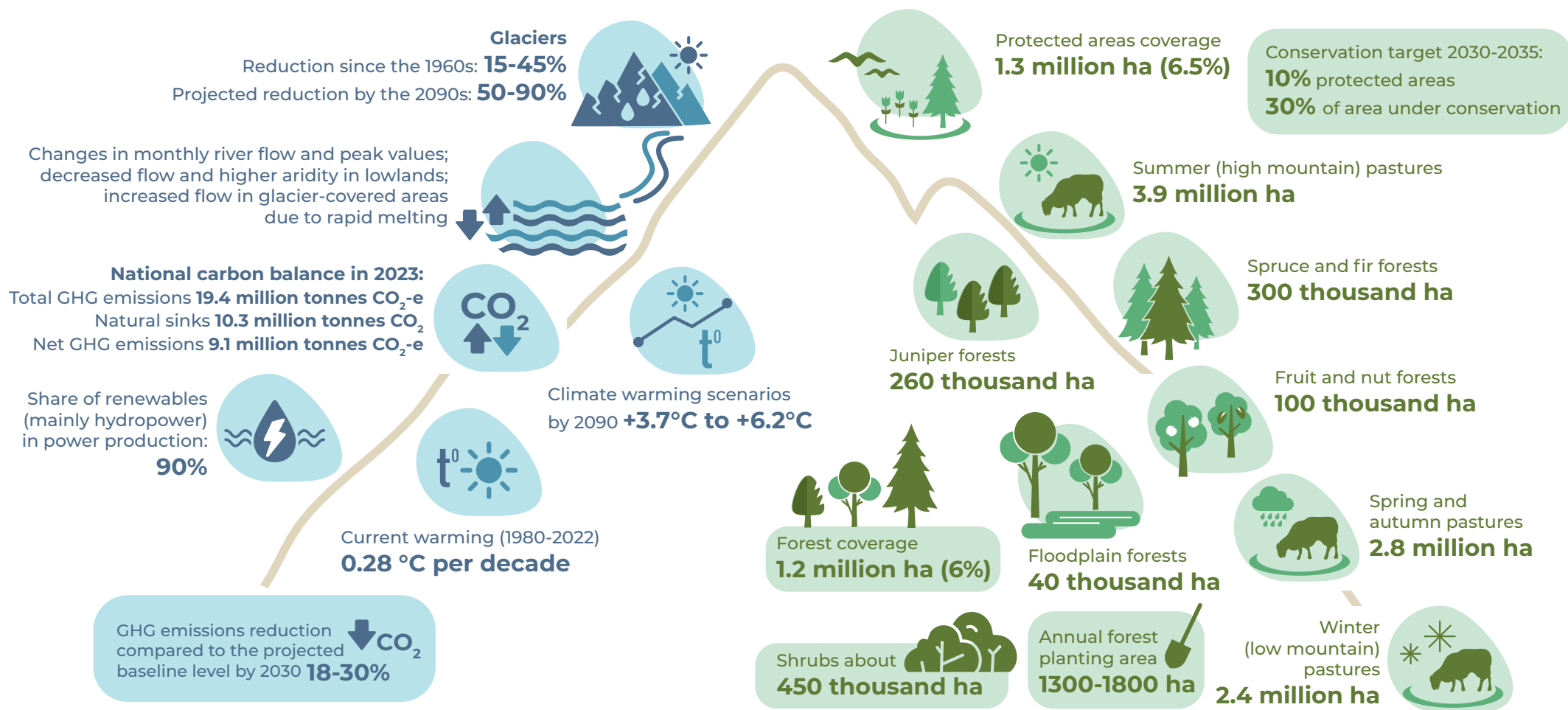


- 1 Study of population health by altitude zones
- 2 Monitoring wildlife and expanding protected areas reduces the risk of zoonotic diseases and enhances resilience to climate change
- 3 Rotation and restoration of pastures promote nature conservation and carbon sequestration

- 4 Biological methods of crop protection and organic farming benefit the climate and nature while providing healthy food
- 5 Improving the health system while considering the impacts of climate change
- 6 Promoting a healthy lifestyle that includes open air sports and recreation in green areas and parks

- 7 Improving veterinary services and conditions for livestock helps reduce disease and heat stress
- 8 Improving epidemiological control and training for farmers and medical staff help reduce diseases and the impact of climate factors on people's and animals' health
- 9 Improving water supply and sanitation

Key Facts on Climate Change and Biodiversity in Kyrgyzstan



Recommendations

for synergistic actions across nature and climate agendas

- ▶ Integrate biodiversity safeguards into environmental impact assessments at both strategic and project levels, ensuring renewable energy and infrastructure development protect sensitive mountain and river ecosystems.
- ▶ Assess cumulative impacts of climate mitigation and adaptation actions on water, riverine, forest, and mountain systems to prevent trade-offs and maladaptation.
- ▶ Scale up nature-based solutions such as afforestation, reforestation, and pasture restoration focusing on native species, supported by community stewardship and traditional knowledge.
- ▶ Expand and connect protected areas and ecological corridors and improve monitoring to enhance ecosystem and species resilience, prevent zoonotic risks, and support climate adaptation.
- ▶ Promote sustainable agriculture by reducing pesticide and chemical use, fostering soil restoration, and encouraging gender-inclusive, ecosystem-based approaches to farming.
- ▶ Address waste and pollution in urban and tourism areas, such as Issyk-Kul, through circular economy approaches creating green employment opportunities for women and youth.
- ▶ Increase climate resilience of natural ecosystems through early warning systems, climate-informed species monitoring, and gender-responsive community adaptation planning.
- ▶ Enhance green and blue spaces in urban areas to improve local climate regulation, wellbeing, and biodiversity awareness.
- ▶ Institutionalize cross-sectoral coordination between climate, environment, agriculture, and gender agencies to ensure coherent implementation of NDC, NAP, and NBSAP priorities.

Selected references

- ▶ A checklist for national policymakers: Effectively Delivering on Climate and Nature: NDCs, NAPs and NBSAPs Synergies. A joint publication of GIZ, IISD, WWF (2024): <https://www.adaptationcommunity.net/publications/effectively-delivering-on-climate-and-nature-checklist>
- ▶ Global biodiversity framework: <https://www.cbd.int/gbf>
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- ▶ Ministry of natural resources, ecology and technical supervision of the Kyrgyz Republic, GHG emissions: <https://mnr.gov.kg/ru/page/vybrosy-kadastr>
- ▶ UNFCCC NDC registry: <https://unfccc.int/NDCREG> and NDC 3.0 of the Kyrgyz Republic: https://unfccc.int/sites/default/files/2025-10/NDC3.0_Kyrgyzstan_English_30-09-2025%20%282%29.pdf
- ▶ ISO standards on climate change: <https://www.iso.org/sectors/environment/climate-change>
- ▶ ISO standards on biodiversity: <https://www.iso.org/biodiversity>
- ▶ de Silva, S., Jacewicz, N., Kovaka, K. et al. Navigating synergies vs. trade-offs between climate mitigation and biodiversity conservation. NATURE 4, 22 (2025). <https://doi.org/10.1038/s44185-025-00092-8> and <https://www.nature.com/articles/s44185-025-00092-8>
- ▶ The concept of biotic regulation: <https://www.bioticregulation.ru/pubs> and BIOM posters and publications on this topic: <https://next.biom.kg/activities/biodiversity>

