

To adapt to a changing climate, Kyrgyzstan looks to the past

In Central Asia, a country's crisis prompts a revival of herding and farming practices.

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A prelude to the growing season, the last week of May usually marks the onset of summer in Kyrgyzstan, a mountainous Central Asian republic about the size of Nebraska. In preparation for the hotter months ahead, flock-owners gather their sheep and shave off their woolly winter fleeces. Farmers and herders make up a third of the country's labour force, and their seasonal rhythms are essential to the survival of millions of people — and their animals.

But this year, “after the sheep got sheared, the weather changed,” said 42-year-old Taalay Kozhomkulov, who relies on profits from his livestock to support his five children.

On the evening of May 23, an unexpected snowfall hit the pastures of Chon Kemin in northeastern Kyrgyzstan, near the snowcapped range of Tian Shan. The frost killed hundreds of animals overnight, including half of Kozhomkulov's four hundred sheep.

“It was a big shock. It was bad not only for the animals, but for the whole environment,” Kozhomkulov recalled. A harvest's worth of fruits and vegetables,

growing in the spring sun, also fell victim to freezing temperatures. Kozhomkulov's stoic outlook belied his family's heavy losses. "We can't change the weather," he said.

But we did change the weather. Kyrgyzstan, a country of only six million people and one of the world's [lowest contributors](#) to global greenhouse gas emissions, has been disproportionately impacted by climate change. And the effects are devastating some of the country's quietest corners, where human life is still intertwined with — and wholly dependent on — the natural world.

The litany of environmental changes — from desertification and diminishing biodiversity, to natural disasters and erratic bursts of weather — might recall a bleakly familiar narrative in many, if not most, parts of the globe. But they present a unique challenge to a country like Kyrgyzstan, flanked by the Central Asia steppe and the Tian Shan and Pamir mountain ranges and populated only a hundred years ago by nomadic tribes, who left a minimal ecological footprint.



Yurts set up for the summer season in Kyrgyzstan's Alai Valley. Many Kyrgyz are trying to revitalise their nomadic traditions in order to adapt to climate change.

That minimalism was lost for generations. During more than 70 years of Soviet rule, which ended in 1991, the state forcibly organised free-roaming pastoralist clans into collective farms. This meant all but the oldest Kyrgyz remain largely estranged from traditional knowledge systems and animist-influenced attitudes toward nature. Now, faced with a rapidly urbanising landscape and unseasonable weather bursts, many Kyrgyz are trying to revitalise their nomadic traditions in order to adapt. Their bespoke solutions have emerged as counter-narratives to the discourse on climate change as a global problem, emphasising the need for local interventions — especially in regions that have been the hardest hit.

“According to some estimations, we are the most landlocked region in the world. That makes us more vulnerable and the impact more pronounced,” said Kanat Sultanaliev, director of [the Tian Shan Policy Center](#), a think tank focused on human rights and sustainable development. “We can’t mitigate it, so we have to adapt to it.”

When the Russian Empire formally annexed Kyrgyzstan in 1876, the territory was sparsely populated with few settled communities. Nomadic pastoralist tribes migrated vertically, ascending into higher seasonal pastures during the warmest months, and to lower altitudes in the coolest. They camped in yurts — circular tents fashioned from felted wool — and roamed hundreds of miles with their livestock herds, beyond the borders of present-day Kazakhstan and China. Though the southern Fergana Valley was a hub of Islamic culture, northern tribes mostly followed Tengriism, a shamanist-influenced, Central Asian animist faith that revered the sky and the earth as dual deities, and looked to the natural world for hidden messages from the beyond.

Though there is a danger in romanticising the nomadic way of life — no doubt harshened by extreme temperatures and rough terrain — it was, from an ecological point of view, more sustainable than most sedentary communities. But in 1917, after the Bolshevik Revolution ended Czarist rule, Kyrgyzstan passed to a new ideological regime. Unlike the direct military campaigns that, for example, characterised French conquests in North Africa, Sovietisation was an “intellectual colonisation,” said Ruslan Rahimov, an anthropologist at the American University of Central Asia. Traditional clan leaders were derided as bourgeois. Collective farms, powered by husbandry techniques imported from Europe or Russia, supplanted nomadic herding.

Before Soviet rule, Kyrgyz nomads saw nature as “a parent, or as a partner, rather than something they could subordinate,” said Rahimov. But within the sprawling new economy “nomadism was considered backwards, and being nomadic was a shameful practice,” he added. “All property — like yurts, cattle, everything — was confiscated” and “traditional knowledge was almost completely replaced in all fields.”

The region’s practices took a backseat to Soviet prowess. Authorities kept a tight watch on agricultural production and outsourced livestock duties to salaried herders. Kyrgyzstan became one of the largest meat and wool producers in the Soviet Union and the number of sheep in the country grew from three million in 1940 to [as many as 10 million](#) by the late 1980s. The state held to firm schedules. “They were very strict about following the timeline of seeding and irrigating and watering,” says Azamat Isakov, director of Camp Alatoo, a Central Asian NGO which focuses on sustainable agriculture.

“After the collapse of the Soviet Union in 1991,” Isakov added, “there was drama.”

Deprived of state oversight and generations removed from traditional techniques, Kyrgyz communities struggled. Water use increased by half while the crop yield plummeted. Even today, 25 years later, a knowledge gap remains — with lasting ecological impact.

“The low yield of crops is 100% human[-caused]. You just didn’t follow agriculture techniques. You didn’t seed in time. You didn’t water in time,” said Isakov. “By cutting the trees and over-grazing we’re hastening the process of climate change.”

The impacts of rising temperatures — a 0.072 degree Celsius increase per year in Kyrgyzstan over the last two decades, [according to the United Nations Development Program](#) — have intensified thanks to regional activity. Hillsides, stripped of trees for logging and pelted by out-of-season rains, now [suffer landslides](#). The landslide risk is made worse by pasture misuse: Overgrazing livestock have stripped the grasslands, which span 45% of the country. Soviet authorities regulated pasture field rotation, but independent herders now stick closer to their villages. And they’ve also lost the nomadic herding patterns: rather than heading up and down the mountains with the season, they mostly bring their flocks to feed along thronged roadsides and venture to the highlands only in summer.



Participants re-enact “The Golden Age of Nomads” as part of a biennial celebration of nomadic life.

These ecological disasters have also coincided with the disappearance of 20% of the glaciers in some areas of the Tian Shan mountain range — nicknamed Central Asia’s “water tower.” In other parts of the world, receding glaciers serve as concerning, but distant shorthand for a planet in peril. In a country with over 5000 glaciers under threat, it is a frightening everyday reality.

Along with changes to the landscape, weather disruptions — like May’s deadly frost, which took out so many of Kozhomkulov’s naked sheep — have alarmed herders and farmers. There isn’t a way to change the weather back. But traditional ecological knowledge could help communities forestall, or at least foresee, graver threats.

When Karim-Aly Kassam, an environmental and indigenous studies professor at Cornell University, arrived in Central Asia 12 years ago, he wasn't looking for climate change solutions. But then he began fieldwork in the Pamirs, a mountain range that intersects with the Tian Shan and extends down toward the western Himalayas, and started interviewing locals. The same theme kept coming up. "There was this fundamental anxiety of not being able to anticipate" the changing climate, said Kassam. "The entire socio-cultural system is out of whack with the ecological system."

In high energy-consuming countries, like the United States, people with the resources to do so have developed instant adaptation strategies: They find comfort in climate-controlled homes or cars, cranking the air conditioning or the heat to soften the blow of unexpected weather. Inside an office or supermarket, a rainy day looks much like a sun-soaked one.

But in Central Asia, adaptation has historically been on a larger timescale, to match seasons. When weather patterns started to change, it threw off these seasonal calendars. "We used to always start cutting grass on the 10th or 15th of August. Now we already start from the 1st," said Anarbai Harbykov, a 60-year-old farmer living in the village of Kara Kabak, one of Kyrgyzstan's southernmost settlements in Alai Valley. Once traversed by Silk Road caravans, the border area, near both China and Tajikistan, marks the union of the Tian Shan and Pamir range. Summers in the mountain-flanked region, Harbykov said, have gotten unseasonably chilly.

"The weather is always changing," he added. "Now it's colder in summer and warmer in winter."

As a researcher, Kassam embedded in mountain communities. Soon, he saw an opportunity to revitalise traditional ecological calendars, which, before the industrialisation of agriculture ushered in by Soviet rule, delineated time between sowing, sprouting, and harvesting. Now, these calendars exist only "in parts," he said. That's changing soon: Kassam is helping to build an ecological calendar, which will launch around 2020. The new calendar, adjusted for climate change, uses regional timekeeping methods, including Silk Road-era systems. Kassam hopes the calendar will help communities track, and ultimately better prepare for, fluctuating weather phenomena.

"Any adaptation strategy has to be grounded in the ecology and the culture where that adaptation strategy is being proposed," Kassam said. That means recognising the resources that already exist.

In preparation, Kassam and his team have reanimated another neglected pre-Soviet pastime: Keeping ecological diaries. The researchers have asked residents in the Alai Valley and the Pamirs to add their own detailed observations to the data collected by three on-site climate monitoring stations, which track moisture and temperature levels. "That's a tradition that they have had," said Kassam, "and we've built upon that."

Local farmers and herders are already monitoring the landscape. An hour's uphill drive from the village of Kara Kabak, a dozen yurts sat scattered beyond the looming white rock of an adjacent glacier. Every summer in the "*jailoo*", or highland pasture,

eight or so herding families spend the grazing season with their flocks. The ecological changes are evident. “Every year we come here, because our fathers did. And our fathers’ fathers,” said 49-year-old Sofia Tashanova. “There used to be little red flowers growing all over the hills,” she added. “But this summer, there were no flowers.”



As a shepherd, Halnazar Turduev, bundled in winter clothes, remembers warmer days as a boy in the Alai Valley.

From afar, the pasture is deceptively plush and velvety. But up close, the vegetation is parched and nubby. “This year, grass hasn’t grown much,” said 62-year-old Halnazar Turduev. “I’m already wearing my winter clothes. In the past, I only needed one or two layers.” The shepherd, who was born in the *jailoo*, remembered thicker fields as a boy: “The lambs would sleep and we couldn’t even see them.”

The recollections and observations, more than just rehabilitating a lost practice, have also acted as context-specific correctives to national climate monitoring stations, which tend to be underfunded and incomplete in scope.

“The [regional] projection models are not relevant to the places we’re working in. Statements like, ‘one degree temperature change,’ or ‘this much rain,’ are not accurate to the context of the valley,” said Kassam. As Kozhomkulov learned with his sheep, rising temperatures might also mean unexpected snow — even at the end of shearing season.



Turduev's grandson, 15-year-old Yhalbek Baktybekuulu, herds a flock in a high pasture.

“Context is everything,” Kassam added, and “climate change is arguing just that.”

Local context has also grounded conservation strategies, revitalising not only practices but also long-discarded cultural attitudes. In the small village of Shabdan, close to the pasture hit by the late spring frost in Chom Kemin, 59-year-old Emil Iymanaliev, a former hunter, now leads a campaign to protect the country’s natural resources. Beyond the forested hills — home to lynx, snow leopards, and the fabled Marco Polo sheep — a low mountain range looms, barren save for a slim halo of ice.

In animist belief, natural signs were powerful harbingers of fortune or doom. Taboos and superstitions stopped people from ravaging nature’s bounty, preventing deforestation or over-hunting. Working with regional NGOs, Iymanaliev invokes the heroes of ancient Kyrgyz epics in his outreach — like Kozhozhash, a mythic hunter whose bloodlust for deer ultimately leads to his own death. “When hunters go through bad luck, I think of the epic,” Iymanaliev said. “Kozhozhash was also cursed by wild goats, same as the villagers.”

The renewed interest in older practices is also part of the broader search for identity that has shadowed post-independence Kyrgyzstan — including not only pre-Soviet, but also pre-Islamic culture. “In all nomadic societies, eco-centrism used to be at the centre of our worldview,” said Sultan Sarygulov, a certified beekeeper and director of [Bio KG](#), an agriculture NGO that runs organic farming trainings in Kyrgyz villages. “What we’re doing in these projects is return[ing] to those laws of nature.”

Iymanaliev and Sarygulov are not alone. [Aigine](#), a Bishkek-based research centre, catalogues Kyrgyzstan’s sacred geography to reform attitudes toward nature using

revived cultural forms. Other groups, like [Rural Development Fund](#), another research centre, document traditional grazing methods from village elders, teaching shepherds to assess the health of grass as their nomadic ancestors did. Still others have tried to get herders to migrate their flocks vertically again, away from over-grazed lower pastures and into the high mountains.

“It’s a reaction to processes that seem outside of Kyrgyzstan’s control,” said Amanda Wooden, an environmental studies professor at Bucknell University in Pennsylvania. “People are going to search for alternatives. And people are going to think, ‘Maybe our way worked.’”

Earlier this year, Wooden delivered a talk inside a yurt in verdant Kyrchyn Valley, one of the sites for [the World Nomad Games](#), the bi-yearly event in the province of Issyk-Kul that is part cultural showcase, part competitive sports tournament — and Kyrgyzstan’s ultimate nomadic celebration. Over the course of a week, teams slug it out in traditional pastimes like “*kok boru*”, the Central Asian version of polo, which uses a goat carcass in lieu of a ball. Hundreds of performers take part in dance-filled, nostalgia-fuelled shows, like the pyrotechnic “Golden Age of Nomads.” This year, a symbol of the games — dubbed the Nomad Olympics — was not an Olympic torch but a blue, ornately decorated jar of glacial meltwater.

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