Past, Present and Future Challenges in Mountain Transhumance

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Chapter 2

Transhumances in Kazakhstan

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Abstract

Kazakhstan is a Central Asian country that was part of the Soviet Empire throughout the 20th century, gaining independence following the collapse of the Soviet Union in 1991. Prior to the Bolshevik Revolution, the majority of the population led a nomadic lifestyle, primarily herding horses, sheep, and camels—species more suited to mobility than cattle. Beginning in 1927, Stalinist policies—including the fight against the *kulaks*, the forced sedentarisation of nomads, and the collectivization of agriculture—completely dismantled this traditional way of life. These measures led to a devastating famine and a significant loss of livestock. Although this policy was somewhat relaxed after the Second World War, herd mobility remained severely restricted. Following independence, a rapid and harsh privatization process resulted in another dramatic decline in livestock populations and animal production, a trend that continued until the early 2000s. Since then, agricultural modernization policies have revitalized the livestock sector, encouraging a partial return to herd mobility. This renewed mobility is based on the seasonal availability of resources—either through longitudinal movements across the steppe or altitudinal transhumance in the foothills of the Alatau Mountains.

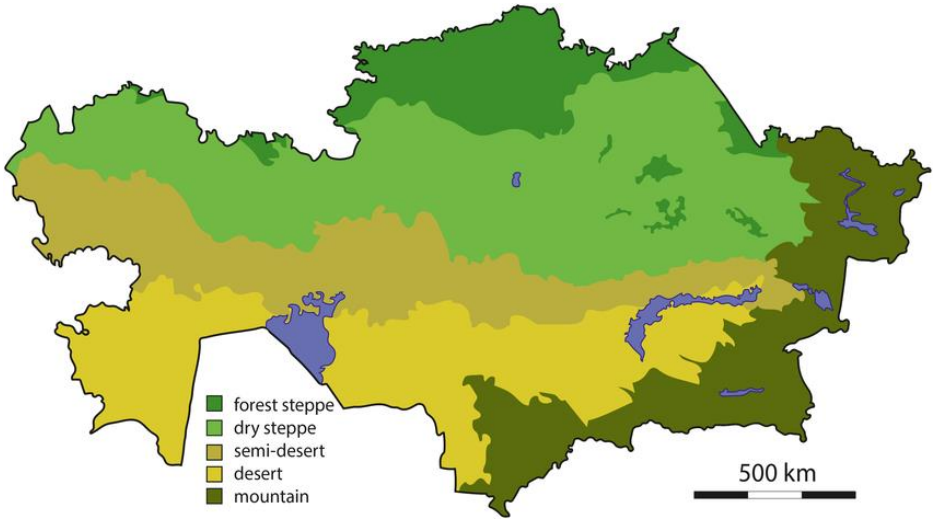
Keywords: Central Asia; Collectivization; Forced sedentarisation; Privatization; Mobility; Horse; Camel

Introduction

Kazakhstan, which spans 2,717,300 km² (ranking 9th largest in the world), is characterized by a wide range of ecosystems. These include icy deserts in winter and scorching deserts in summer in the central and eastern regions (such as the Kyzylkum and Muyunkum Deserts), some of which are located in depressions—like Karagiye, which lies at 132 meters below sea level. In contrast, the country is also home to several major mountain ranges (Altai, Sauyr, Tarbagatai, Dzungarian Alatau, and the Tian Shan Mountains), culminating in Mount Khan Tengri, which rises to 6,995 meters above sea level. Between these extremes, semi-arid steppe zones occupy more than a third of the country's central territory. Wetter regions lie in the north along the Russian border, while a quasi-Mediterranean zone is found in the south, along the borders with Kyrgyzstan and Uzbekistan. The steppes, deserts, and mountainous areas have historically supported livestock farming, particularly pastoral practices based on herd mobility. However, political transformations during and after the Bolshevik Revolution in the early 20th century profoundly altered the role and structure of the livestock sector in the country.

I. Kazakhstan, historically a country of nomads

Throughout its history, Kazakhstan has been a land of nomadism, particularly in the steppe and semi-arid zones, which together covered nearly 80% of its vast territory (Map 1).



Map 1. Ecosystems in Kazakhstan (©Ventresca Miller et al., 2020)

There is archaeological evidence that mountain agro-pastoral practices, including vertical transhumance, were already present during the Bronze Age and Early Iron Age (Ventresca-Miller et al., 2020). At that time, herds were relatively small, and the main domestic animals were small ruminants, especially sheep. Investigations conducted at various sites across the steppe, foothills, and mountains have shown that, even 2,500 years ago, sheep were fed with

valley-grown millet during the winter (in steppe sites) and fresh grasses from high-altitude pastures during the summer (in mountain sites).

Two large animal species have historically supported human mobility with their herds in Central Asia: horses and camels. The region was an important centre for horse domestication. One of the earliest archaeological evidences of horse domestication—specifically the ancestor of the modern Przewalski's horse (*Equus przewalskii*)—dates back to 3,500 BC in the northern Kazakh steppe (Outram et al., 2009). However, the domestic horse (*Equus caballus*) was introduced to Kazakhstan by early nomadic groups such as the Scythians and Sarmatians, between the 8th and 4th centuries BC. These people were exceptional horsemen, and their nomadic lifestyle greatly contributed to the cultural and practical importance of horses in Kazakh society.

Later, with the migration of Turko-Mongol groups—ancestors of today's Kazakh population—horses came to be used not only for transport, but also for meat and milk production, with the latter traditionally consumed in its fermented form, known as *qymyz* (Konuspayeva et al., 2023). This long-standing cohabitation between humans and horses has shaped the exceptional equestrian skills of Kazakh riders, still showcased today in traditional games like *Kokpar*, where two teams on horseback compete for control of a goat carcass.

The harsh conditions of the steppe—freezing winters and scorching summers—also explain why the ancestors of the Kazakh people adopted the double-humped camel (*Camelus bactrianus*). This species proved to be perfectly suited for the desert regions of the country, such as the Kyzylkum and Aral-Kum. Likely domesticated between the Caspian Sea and the Aral Sea around 3000 BC (Sala, 2022), the Bactrian camel was quickly integrated into pastoral practices. It was also widely used as a pack animal, contributing to the efficiency of the Silk Road trade routes that connected China to the West for centuries, spreading the Bactrian camel across Central Asia (Barisitz and Barisitz, 2017).

Like horses, camels were not only used for transport but also for meat, milk, and wool. Hybridization between the Bactrian camel and the dromedary began early on, especially in regions where their ranges overlapped along the Silk Road. Today in Kazakhstan, this crossbreeding is primarily aimed at improving milk yields (as the Bactrian camel is a relatively poor milk producer compared to the dromedary), while in Turkey, it is often used for camel wrestling festivals (Faye, 2022). As with horse milk, camel milk is traditionally consumed in fermented form, known as *shubat* (Konuspayeva et al., 2023).

Thus, until the end of the 19th century, Kazakh pastoralism was primarily based on the rearing of horses, camels, and sheep. Although goats and cattle were also present, they played a less central role in both cultural practices and production systems. Even today, in urban settings, horse meat and mutton are regarded as more prestigious than beef, while camel meat is consumed mainly in rural areas.

II. The pastoralism in Kazakhstan before the Bolshevik revolution

The management of pastoral spaces in Kazakhstan was traditionally based on tribal rules, where the wealth of families and tribes was measured by the number of livestock they owned. Tribal social organization operated under the traditional authority of a chief known as a *Bai*, typically designated through family or clan affiliations. Each tribe had its own defined territory, although conflicts over pasture could arise. The resolution of such conflicts, along with herd management, was overseen by a *Bek*, another figure of authority within the tribe.

Animal herding was primarily the responsibility of men, while women managed domestic tasks and processed dairy products (such as butter, cheese, and fermented milk). Although the nomadic lifestyle fostered a certain degree of household self-sufficiency, trade activities did exist. Surplus animals, wool, hides, and even dairy products were sold or exchanged, though dairy was largely consumed within the household or shared through a gift economy (Faye and Corniaux, 2024).

Unlike neighbouring regions inhabited by Uzbeks and Turkmens, Kazakhstan lacked large oases, which limited the development of crop-livestock systems. As a result, urbanization remained low, and nomadism and transhumance continued to dominate Kazakh society throughout its history until the radical transformations brought by the Bolshevik revolution (Konuspayeva and Faye, 2020).

This nomadic lifestyle was reflected in both the traditional diet—largely based on meat and dairy products—and in the portable dwellings used by pastoralists: yurts made of felt and removable wooden frames (Vuillemenot, 2009). In near-constant motion, herds were fed exclusively on natural grasses of the steppe or desert, without supplementation—even during winter.

Several types of mobility could be observed (Ferret, 2018):

- **Strict nomadism**, where the entire group moved year-round along established routes, rarely staying in one place for more than three months and covering distances of several hundred to over a thousand kilometres.

- **Quasi-nomadism**, where the group maintained a fixed settlement for at least one season (often winter), with or without permanent structures.

- **Semi-nomadism**, where part of the group remained in a permanent location year-round while others moved with the livestock.

- **Semi-sedentarism**, essentially transhumance, in which the group alternated between two seasonal settlements — one for winter and one for summer. Movements could be longitudinal (within the steppe for horses and sheep, or the desert for camels) or altitudinal (between the steppe and mountain zones for horses, sheep, and cattle) (Kerven et al., 2009).

- **Quasi-sedentarism**, where most of the group stayed in the village year-round with a small number of productive animals (especially lactating ones), while a minority of families moved seasonally with the herds.

- **Sedentarism**, in which the entire group remained in a single location year-round, although herders still accompanied the livestock during transhumance.

Under Tsarist administration at the end of the 19th century, increased Russian pressure—such as the imposition of taxes on pastoral activities—pushed Kazakh communities toward more sedentary livelihoods. Additionally, Russian colonization led to the appropriation of the most fertile pastures for cattle farming (Olcott, 1981). Russian settlers also introduced forage crops, which increased pressure on pastoral resources, although this impact was geographically limited to the northern regions of the country.

At the beginning of the 20th century, the Stolypin agrarian reforms, aimed at “modernizing” agriculture and integrating Kazakhs into a sedentary farming economy, caused significant tensions and disrupted the traditional pastoral system. These tensions culminated in the 1916 uprising, which was violently suppressed and marked a pivotal moment in Kazakhstan’s history (Pallot, 1999). Nonetheless, on the eve of the Bolshevik Revolution, nearly 70% of the population across the territory still practiced nomadism (Kerven et al., 2009).

III. Upheaval of the Bolshevik revolution

At its outset, the Bolshevik Revolution initially appeared beneficial to Kazakh herders, who regained some of the land previously occupied by Russian settlers. Support from the new state even enabled them to establish small agricultural enterprises. However, this positive trend was short-lived. Stalin's ideology, which viewed the nomadic way of life as incompatible with the modernization of the rural economy in a socialist society, led to the complete dismantling of pastoralism based on herd mobility and tribal organization.

This eradication was implemented in three major phases (Ohayon, 2006):

- The "dekulakization" of society, i.e., the elimination of traditional tribal authority, particularly targeting the *Bai*, who were equated with wealthy landowners or "kulaks", even though their livestock wealth varied widely. This policy led to the arrest, deportation, or even execution of many *Bai*, while others fled to neighbouring countries, notably China and Afghanistan.

- The forced settlement of the nomadic population, which included the banning of seasonal herd movements — despite the fact that this policy ran counter to ecological realities and was later partially reversed due to environmental constraints.

- The collectivization of production systems, carried out with extreme violence, echoing the previous phases.

Between 1927 and 1932, this policy not only caused the death of nearly one-third of the Kazakh population and a total dismantling of traditional spatial organization, but also led to a catastrophic drop in livestock numbers — particularly among the species most associated with nomadic life: sheep, horses, and camels. In a society heavily dependent on animal products, this inevitably resulted in a famine worsened by collectivization. More than 1.3 million people, primarily from the steppe regions, perished during this dark period (Konuspayeva and Faye, 2020).

In terms of livestock:

- The sheep population dropped from 18 million to 12 million;
- Horses declined from 3.5 million to just 800,000;
- Camels suffered the most, losing 90% of their population — from 1.2 million in 1927 to only 120,000 in 1940 (Faye and Konuspayeva, 2020).

Camels, seen as relics of the past in contrast to cows — considered symbols of socialist modernity — were especially impacted by the constraints on mobility. Although some adjustments were introduced as early as the 1930s and intensified after World War II (such as partial restoration of seasonal movement, pasture regeneration, and forage storage for winter), the devastating effects of Stalin's policies persisted throughout the Soviet period, despite significant growth in agronomic research.

However, Soviet agronomy followed a strictly top-down model, where science was tasked with applying solutions formulated in laboratories or administrative offices, with little input from the field. Livestock management under the Soviet system took two main institutional forms:

- The **sovkhoz** (state farm), where all peasants were salaried workers and agriculture was meant to reflect a proletarian ideal;
- The **kolkhoz** (collective farm), a peasant cooperative in which members shared profits and could retain a private plot of 4,000 m² for household use.

Although presented as modern versions of the traditional Russian *Mir*, these new structures were ill-suited to mobile livestock systems. While such collectivization occasionally coincided with real productivity gains —especially in Russia (Grigg, 1985)—in Kazakhstan, it deeply disrupted traditional pastoral structures and led to long-term declines in livestock productivity, with lasting effects even after independence.

Notable consequences include:

- The Taylorisation of agricultural work, which created highly specialized roles (e.g., tractor driver, milker, harvester) but eliminated the multi-functional nature of the traditional peasant role;

- A centrally administered management system, driven more by five-year planning targets than by local needs;

- The degradation of pastoral resources—initially through overgrazing caused by restrictions on herd movement, and later (between 1960–1980) through large-scale conversion of pastures into cropland under the ambitious *Virgin Lands Campaign* launched in 1953, which aimed to turn Kazakhstan into the Soviet Union's wheat granary.

This environmental degradation was further exacerbated by falling groundwater levels and, in some areas, complete depletion—especially near rivers and streams feeding into the Aral Sea. Large-scale irrigation projects, particularly for cotton along the Syr Darya River, led to a drastic reduction in water flow, contributing to desertification and soil salinization. These areas became increasingly unsuitable for pastoralism.

The reduction in the scale and seasonal rhythm of traditional mobility fragmented the pastoral landscape (Kerven et al., 2006), concentrating livestock around limited resources such as watering points, and increasing pressure on those areas. By the time of the Soviet Union's collapse and Kazakhstan's independence, pastoral systems were not only ecologically degraded (Schillhorn van Veen, 1995), but also suffering from industrial and agricultural pollution (Kenesariyev, 2008; Konuspayeva et al., 2011).

IV. Upheaval of Soviet Union collapse

The independence of the Republic of Kazakhstan following the collapse of the Soviet Union in 1991 once again profoundly transformed the country's agricultural landscape, particularly the livestock sector. Three key factors played a pivotal role in this restructuring: privatization, the fragmentation of large collective structures, and the emergence of large-scale agricultural enterprises in the context of modernization.

The dismantling of collective farms was triggered by the land reform initiated in 1991, which led to the privatization of land, equipment, and livestock. These assets were redistributed to cooperative members. In practice, however, the process was marked by significant inequalities and regional disparities. In many cases, it resulted in the looting of former collective assets—including infrastructure such as schools, health clinics, and cultural centres—since cooperatives and state farms had functioned as integrated systems. Livestock privatization followed the same path as other assets, contributing to a dramatic reduction in animal numbers reminiscent of the decline witnessed during the forced collectivization of the 1930s.

While part of this decline can be attributed to statistical distortions—exaggerated livestock counts during Soviet times to meet state planning targets, followed by underreporting after independence to avoid taxation on privately owned animals—the primary causes were economic. Breeders, now responsible for covering input costs themselves, were compelled to reduce herd sizes. Moreover, former specialists had to assume the diverse responsibilities of a traditional peasant, often without the necessary skills. This led to widespread management

errors, with serious consequences for animal health and nutrition, resulting in increased mortality rates (Delehanty and Rasmussen, 1995).

The lack of cash flow further accelerated the reduction in herd size, with sheep—once a staple of Kazakh pastoralism—often used as a currency for barter. Between 1991 and 1996, the sheep population declined from 33 million to 13 million head. Cattle numbers fell from 9 million to under 5 million by 1997. The decline was somewhat less pronounced for horses (from 1.6 million to 1.3 million) and camels (from 145,000 to 111,000) over the same period. By 2014, only camels and horses had surpassed their 1991 population levels.

Between 1992 and 1997–1998, the livestock population decreased by 53% for cattle, 60% for small ruminants, 46% for horses, and 44% for camels. This decline, coupled with a drop in productivity—for instance, the average bovine carcass weight fell from 185 kg in 1992 to 150 kg in 1997—led to a marked decrease in output: beef production declined by over 50%, mutton by 36%, and cow milk by 40%. Agricultural production reached its lowest levels since independence in 2001.

During this period, the economic downturn also caused a significant drop in consumer demand due to falling living standards. Meat consumption declined by 14%, and milk consumption by 12%.

V. The changes in farming systems and pastoralism

A major consequence of the dismantling of collective structures was the transformation in farm sizes, leading to a significant increase in the number of agricultural production units. From approximately 5,000 farms in 1990, the number had risen to 188,616 by 2012 (OECD, 2013). However, this “atomization” of farm structures resulted in an unstable status for many of the “new” farmers, particularly small family-based farms, which were more prevalent in the southern regions of the country. A significant proportion of these farms failed to achieve profitability and were subsequently purchased by investors. These investors established larger operations with varying legal statuses and degrees of specialization, often by consolidating bankrupt family farms.

Additionally, some large enterprises were directly inherited from Soviet-era collective farms and maintained under the form of private cooperatives. These operations, however, were generally less specialized, engaging in the rearing of multiple livestock species, crop cultivation, and, in some cases, product processing. In 2014, such large-scale structures accounted for only 7.6% of the national cattle population and 4.3% of small ruminants. Conversely, they were significantly more dominant in pig farming (29.6%) and poultry production (65.2%).

Aside from the poultry sector, small family farms remained the primary holders of livestock. Despite limited investment—both public and private—these farms were responsible for more than 80% of milk production and 67% of total meat output (across all species). They played a critical role in ensuring the supply of animal protein to the broader population, and were especially important for food security in rural areas, where self-consumption still accounted for a considerable portion of production.

These family farms operated within short, often unstructured supply chains, relying primarily on direct sales to consumers or through local bazaars. As a result, product quality—especially in the camel and horse sectors—was highly variable. Productivity in these small-scale enterprises was also lower compared to large operations, which benefited from more substantial public support. For instance, in 2014, the average annual milk yield per dairy cow in family farms did not exceed 1,770 liters, compared to 4,250 liters in large farms equipped with imported high-genetic-merit breeds such as Holsteins, and supported by improved feeding regimes and veterinary services.

Moreover, research institutions and technical support services were ill-equipped to respond to the needs of these small-scale enterprises. These institutions were historically oriented toward top-down approaches tailored to large-scale operations, leaving a gap in appropriate technical assistance for the dominant segment of Kazakhstan's livestock sector.

VI. The modernization policy of the agriculture

With the improvement of living standards—particularly two decades after independence, driven by rising global oil and gas prices, in which Kazakhstan plays a major producing role—the population's demand for a more diversified and higher-quality diet increased significantly. This shift in consumption patterns contributed to a decline in the country's self-sufficiency in food production. For instance, the export-import balance for beef remained negative (with the exception of 2022); for sheep meat, a positive trade balance was only achieved starting in 2016; and for cow milk, the trade balance remained negative, except for a brief period between 2018 and 2021 (Figure 1).

In response to this situation and in an effort to meet the growing domestic demand, the government implemented a policy aimed at modernizing the agricultural sector—including livestock production—with the objectives of increasing both output and productivity, and ultimately achieving national self-sufficiency.

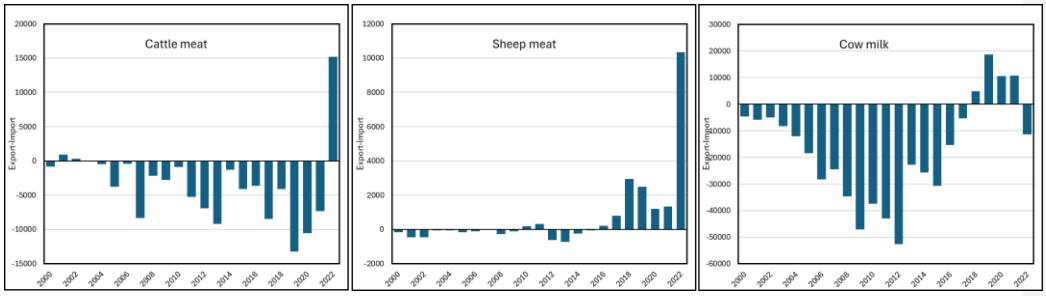


Figure 1. Balance (in volume) Export-Import of cattle meat, sheep meat and cow milk in Kazakhstan from 2000 (source FAOSTAT, 2024).

To address the challenges facing the livestock sector, the State allocated 600 billion tenge (KZT)—equivalent to approximately 4.6 billion USD at the time—for the years 2003 to 2005. This investment marked the beginning of a broader effort toward sustainable agricultural development, formalized through the 2005–2010 development program (Act No. 184-185 of 12 July 2005). Agriculture was identified as a key priority under the government's "Kazakhstan 2030" strategy, which aimed to reduce the country's dependency on oil and to diversify its export base. In the years that followed, annual state aid to agriculture averaged 200 billion KZT (around 1.36 billion USD), amounting to approximately 11% of farmers' gross revenues. This level of support was relatively modest compared to the average of 21% provided to farmers in OECD countries (OECD, 2013).

However, 82% of these public subsidies were directed toward measures linked to production and prices, which created a disconnect between producers and market signals, potentially distorting production decisions (OECD, 2013). Moreover, the distribution of support was unequal. Despite their predominance, family farms received comparatively little assistance and remained largely excluded from technical innovation.

In an effort to modernize the agricultural sector, public investment was also channelled into agronomic research, stakeholder training, technical innovation, transport infrastructure, and protective systems. Nonetheless,

producers—particularly in remote areas of Kazakhstan, a vast and sparsely populated country with only 20 million inhabitants—continue to face significant challenges. The geographic dispersion and remoteness from major consumption centres contribute to high transaction costs and limit agricultural development. Consequently, the government prioritized the construction of rural roads, infrastructure, and logistics systems to support the cold chain and enhance market access.

VII. Back to transhumances?

In this context, sedentary pastoralism remains the dominant mode of livestock management throughout Kazakhstan. However, despite the twentieth-century crises that led to a shift from quasi-nomadism to quasi-sedentarism, systems of seasonal pasture use have persisted in certain regions. In particular, the Almaty Province, characterized partly by mountainous terrain, continues to practice vertical transhumance, capitalizing on the altitudinal variations in vegetation and climate. While historically only the coercive policies of the Stalinist era succeeded in enforcing the sedentarisation of traditionally nomadic populations, the catastrophic famine that followed prompted a partial policy reversal in the 1940s. Since Kazakhstan's independence in 1991, there has been a resurgence—not of full nomadism, but of mobility practices that emphasize transhumance as a central component of livestock management.

Currently, two main forms of transhumance can be observed, varying by ecosystem and the species involved (Vuillemenot, 2009). These are:

- Altitudinal transhumance, which typically involves seasonal movements between the foothills or steppe and the mountain pastures (locally referred to as *jalaw*), situated above 2000 meters in elevation. This traditional mobility system—where herds winter in the lowlands, which are more climatically stable, and migrate to mountain pastures between June and September—primarily involves dairy mares, as well as sheep, and to a lesser extent, cows (Ferret, 2018). The mares are milked five to six times per day (Photos 1 & 2), being tethered during milking and allowed to graze freely nearby the yurts where the herders reside.

Photos *1 & 2. Milking mare in Jalaw close to Almaty (left), dairy mares and sheep in Jalaw above Almaty (right), (© B. Faye)*

Sheep are kept in pens overnight and grazed during the day under the supervision of mounted shepherds accompanied by dogs. Cattle, mainly beef breeds, are less common and usually graze freely. It is also typical to find a few goats mixed into sheep herds. Although yaks are rare in Kazakhstan, the neighbouring country of Kyrgyzstan sees widespread yak transhumance under similar practices (Faye, 2010).

Since the independence of Kazakhstan and the dissolution of the Soviet Union, the privatization of land and its redistribution to former collective farm workers have significantly altered the dynamics of transhumance. In the post-Soviet context, seasonal mobility now requires specific agreements between landowners and mobile livestock keepers, unless the *jalaw* (summer pasture) lands are directly owned by the herders themselves. In peri-urban areas, particularly around major cities such as Almaty, tourism-related developments—most notably ski resorts—have contributed to a reduction in available grazing land. Nonetheless, arrangements are sometimes made with sheep owners to use these slopes for grazing during the summer months, thereby maintaining the vegetation and reducing fire risks.

- Longitudinal transhumance, primarily practiced in the steppe regions (Yespolov et al., 2018), involves horizontal seasonal movements and mainly concerns horses, which hold significant cultural and nutritional value in Kazakhstan. Mare's milk is widely consumed, and horse meat is considered the finest red meat. In southern regions bordering desert zones, this form of transhumance also includes camels (see photo 3). Kazakhstan is unique in hosting both Bactrian (two-humped) and dromedary (one-humped) camels, which may be managed together within the same farming systems. While the precise distribution between the two species is not well documented, it is estimated that dromedaries make up approximately 15% of the national camel population. Crossbreeding between the two species is common, aimed at enhancing the milk yield of the typically hardier Bactrian camels.

Transhumant movements often span several hundred kilometres, typically involving shifts from winter pastures near villages—where animals are kept in enclosed barns to withstand the extreme cold—to summer pastures characterized by open grazing and traditional yurt-based herder accommodation. These migrations may also include spring and autumn intermediate grazing grounds. In the Caspian Sea region, shorter transhumance routes for camels (Photo 3) are often prompted by the need to escape seasonal mosquito infestations near the coast. In large-scale camel enterprises, comprising several thousand head, seasonal movement typically occurs entirely within the vast landholdings of a single owner, which can span thousands of hectares. In contrast, cattle—especially prevalent in the more humid northern regions—tend to follow sedentary systems. Similarly, sheep raised in steppe environments are subject to more limited mobility and are generally moved over shorter distances.

Photo 3. Departure in summer transhumance of camel herd around Caspian Sea, Kazakhstan (© B.Faye)

Conclusion

The mobility of livestock in Kazakhstan underwent profound transformations throughout the 20th century, shifting from widespread nomadism to a near-total cessation of herd movements under Soviet rule. However, since the country's independence and the privatization of land, a cautious revival of pendular mobility has emerged, particularly in mountainous regions of the south and in the arid zones of the steppe. This partial return to seasonal movement reflects both a cultural resurgence and an ecological necessity. Moreover, the state's broader agricultural modernization policies appear increasingly compatible with this renewed mobility, especially in light of heightened seasonal variability and the growing need to optimize the use of limited and fragmented pastoral resources.

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