

A dossier by League for Pastoral Peoples,
German Institute for Tropical and Subtropical Agriculture and
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With camelids into a sustainable future

Learning from pastoralist communities



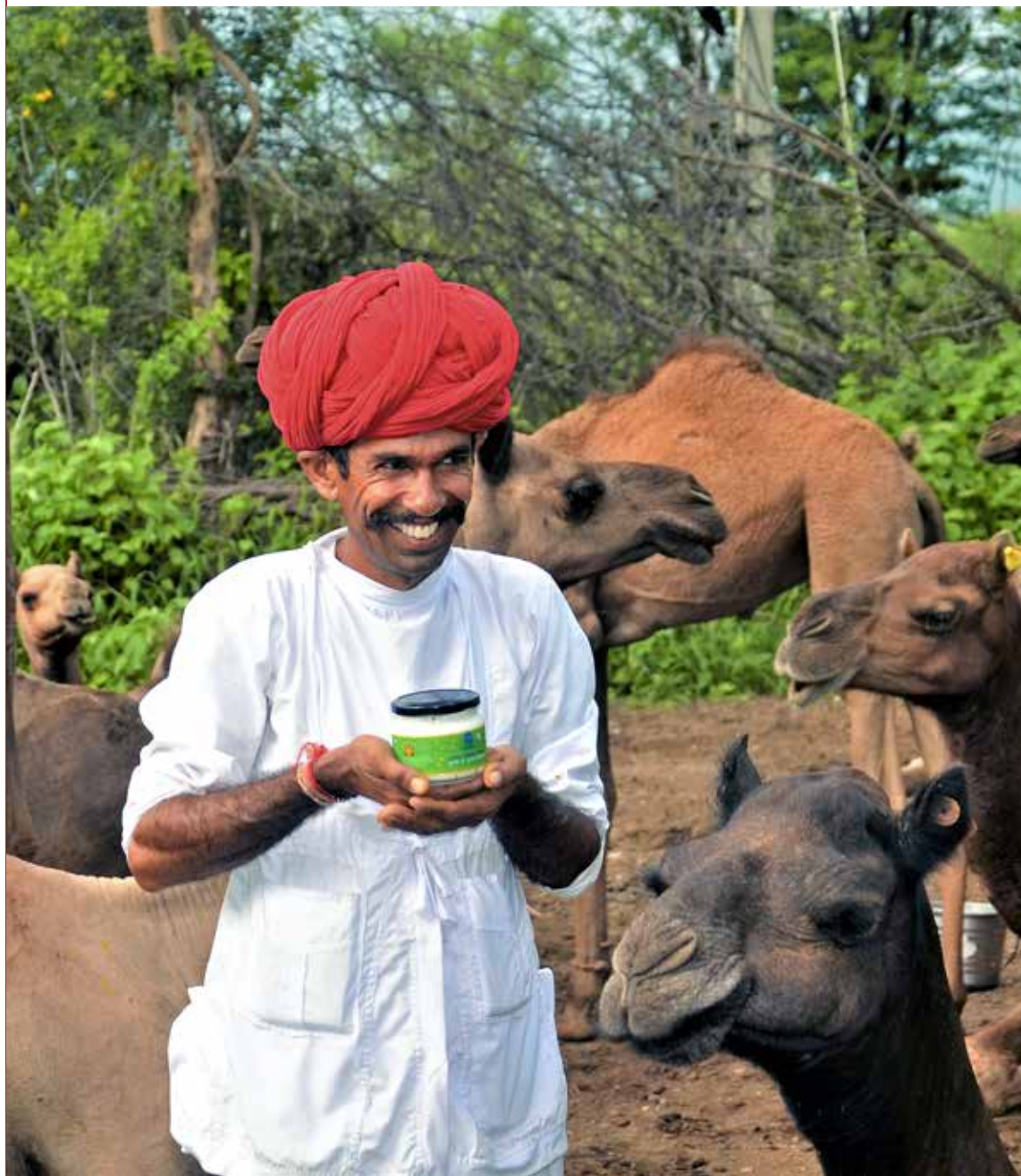
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Madhuram Raika in Rajasthan, India,
is proud of the cheese made from his
camels' milk. In his herd, the calves stay
with their mothers and suckle milk.

Photo: League for Pastoral Peoples



Editorial



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Dear reader,

Pastoral camelid husbandry is rapidly changing worldwide. Whether in the drylands of Asia and Africa (the “Old World”) or in the Andean highlands (the “New World”), camel herders face increasing challenges. All suffer from negative effects of climate change such as prolonged droughts, dwindling natural resources and reduced access to water. Many suffer from a weak market position and low product prices. Especially Andean camelid keepers grapple with lack of family labour from the youth and weakened social institutions. African camel herders increasingly compete for land with mining, green-energy parks, irrigated farming, conservancies and tourism, to which they are losing valuable grazing areas.

Nonetheless, camelid keepers supply wool, live animals and hides for national and international markets, and camel keepers have built value chains in response to growing urban markets for camel milk. Thus, they contribute substantially to their national economies.

This dossier “With camelids into a sustainable future” introduces you to the world of pastoral camelid keepers. Where are they? What characterises their livelihoods and husbandry systems? How do they adapt to changing contexts? What policies are needed to support camelid pastoralists? How can their ecosystem services be recognised?

The contributions to this dossier offer a differentiated picture of camelid pastoralists’ realities in the Old and New World. An introduction to the importance of pastoralism worldwide is followed by an analysis of how camelid husbandry has evolved over recent decades. In the second part, you can learn about pastoral camelid keepers in the Andean highlands, Eastern Africa and Mongolia. The third part of the dossier looks at the role of research on camelid pastoralism and discusses camelid policies that are needed for a resilient future.

We wish you inspiring reading!

Christian Hülsebusch
Pirmin Spiegel *Juliane Bräunig*

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Photo: Cecilia Turin

Pastoralists: allies for a green future

Pastoralism is a success story of adaptability and resilience

| Igshaan Samuels
and Maryam Niamir-Fuller

Pastoralists worldwide show us how animal husbandry could look like in the future: solar-powered and well adapted to the environment. However, how they contribute to ecosystem services such as biodiversity conservation and carbon sequestration has yet to be recognised.

The climates around the world differ considerably from the cold Arctic to the hot Sahara Desert to the more moderate Mediterranean area. Different climates create different ecological zones where different plant and animal communities are found. The type of agri-

culture practised in a locality is thus dictated by climate as well as by soils, topography and water availability. Water-limited landscapes are usually regarded as rangelands; these make up over half of the world's land surface and harbour one third of the global biodiversity hotspots.

| What are rangelands?

Rangelands are extensive areas of land dominated by indigenous vegetation including grasses, reeds, forbs, shrubs or scattered trees. These plants are grazed or browsed by livestock or wildlife as their main source of nutrition. Alien vegetation can also be found in rangelands, and many invasive tree species such as *Acacia* are browsed, as they are very nutritious.

Aymara woman in the southern highlands of Peru preparing for her daily grazing with her alpacas.

Rangelands are diverse and include grassland, savannah, shrubland, desert, woodland and dryland forest, steppe, tundra, cerrado, taiga or alpine vegetation communities or a mixture of these. Often, rangeland areas that are more fertile and flatter than the surroundings are modified, usually through ploughing and sowing, to grow supplementary feed for livestock. In some countries, such as in Lesotho, Turkmenistan and Uruguay, rangelands cover 98–100% of the land surface. Rangelands provide multiple benefits to humanity in terms of food security, water preservation, medicinal plants, tour-

ism, carbon sequestration, biodiversity conservation and safeguarding natural water towers such as mountainous areas.

| Why are pastoralists important?

People who keep livestock on extensive rangelands are called pastoralists. They differ from people who practise intensive livestock farming, giving their animals mainly purchased feed and keeping them more or less stationary. The term “pastoralists” includes people who – as a major source of livelihood – care for livestock that obtain almost all of their nutrition from natural vegetation in the rangelands.

The origin of pastoralist societies can be traced back as far as 8500–6500 Before Common Era (BCE). There are different theories about the origins of pastoralism. One theory suggests that it evolved out of hunting and gathering, another that it emerged out of crop farming. The origins may differ from region to region. Today, diverse domesticated livestock species are kept throughout the world for specific animal products and the species and breeds are adapted to each region. Cattle, camelids, sheep and goats are widely kept in many parts of the world, providing meat as a staple protein source and milk for essential nutrients and liquid for pastoralists. Livestock are also kept for non-food reasons such as for fibre (wool, mohair, cashmere etc) and hides to manufacture clothes and shoes. Larger animals are used for draught power and transportation.

Worldwide, up to two billion people along the value chain including consumers in urban areas benefit from pastoralism for their livelihoods or for a constant supply of animal products. Pastoralists manage about one billion animals and contribute about 50% of global livestock production. They can be found in all continents. Some well-known pastoralist communities include the Maasai in East Africa, the Raikas in India, the Sámi in the Circumpolar North and the Bedouins in the Middle East.

| Mobility is key

Pastoral livestock management often involve pastoralist families moving around the landscape with their herds. These move-



Photo: Tom Dirven for VSFB

ments are synchronised with the variability in climate and natural resources, often making use of different agroecological zones to take advantage of the best opportunities to access pasture and water. Movements may also have to be made to access markets, to evade pests and diseases, and to avoid political conflicts and clashes with other users of land and water.

In Spain, for example, transhumance is still practised by herders who keep about 1 million livestock and move their animals around with trucks for distances up to 800km or make shorter-range movements on foot. In periods of feed shortage, pastoralists in Australia move their herds to areas with better grazing, using agistment agreements with other landholders. In Eurasia, about two million reindeer are still herded by 20 indigenous groups involving 100,000 people.

Other pastoralists practise transhumance by moving more or less regularly between seasonal pastures, such as between summer and winter zones or from lowlands to highlands in mountainous areas, where pasture quality is often better during vegetation growth but cold conditions or snow at high altitudes in winter oblige the herders to move back to the lowlands. Transhumance may also involve long-distance movements crossing national borders. In the case of West Africa, herders can obtain special permits to bring their herds temporarily into other countries, as they moved in the past before administrative borders were enforced.

Pastoralists select grazing areas using their local knowledge and skills, and consider specific indicators such as animal behaviour, plant condition, plant nutritive value and abundance, soil characteristics and weather patterns to decide when and where to move or also how to plan their daily grazing routes. Water availability in natural pools and rivers or constructed waterpoints is also key in planning the movements of the herds.

When livestock herds are mobile, the land they graze can be a mixture of communal, tribal, leased, private or state land, as they move over long distances. Research in several regions around the world has shown that mobile pastoralists are better able to adapt to extreme climate variability than can their sedentary counterparts, because of various long-standing pastoral practices, such as diversifying animal species, pasture resting, rotational grazing and herd splitting in times of drought.

| Experts in managing diversity

Pastoralists may change their herds in size or in species and breed composition because of a need to build resilience and adapt to a changing environment or because of changes in market availability and demand. The different traditions in pastoral areas can also determine what type of livestock is kept, as certain species or breeds may be culturally symbolic. In South America, camelids such

Camel herders in Mauritania cover long distances in desert areas.

as alpacas and llamas are characteristic of the pastoral system; in Africa and the Middle East, cattle, dromedary camels, goats and sheep are kept; and in Central Asia, horses, Bactrian camels and yaks are popular. In Europe, sheep and cattle are the preferred species.

The number of animals being kept must be in accordance with the resources that are available and the timing when they are available. While overgrazing can have negative effects on ecosystems, so too can undergrazing or the complete absence of grazing livestock. Rangelands have evolved with herbivores over millennia and depend on the disturbances caused by grazing and trampling to reduce fire loads, to disperse seeds, to improve water infiltration, to prevent certain plants from outcompeting others and thereby reducing biodiversity, and for many other benefits. Removing livestock, for example for conservation or rewilding measures, can have a negative impact on ecosystems such as bush encroachment that favours ecologically damaging wildfires and facilitates invasion by alien plant species. Grasslands store about 34% of the global carbon stock in land ecosystems, and the conversion of grasslands into other land uses, such as for cultivation, will result in the loss of this storage potential and further increase in global CO₂ levels.

Pastoralists split their herds according to different pressures. For example, young and milking animals may be kept close to the camp or settlement, while the rest of the herd may be taken to graze in more distant rangelands. Pastoralists have many different strategies for water use and storage, including small dams, or shallow wells in riverbeds that are deepened as the groundwater level falls. In the Sahara, pastoralists may plant wild watermelon, which acts as both water and nutritional supplement in the long dry season.

Scientific studies and traditional knowledge have shown that pastoralism is the most rational and sustainable land use in

rangelands not only for its contribution to biodiversity conservation and carbon sequestration, but also because it produces food and other products that make a major contribution to the agricultural gross domestic product (GDP) of many countries. For example, the contribution of pastoralism to agricultural GDP is about 50% in Algeria, 80% in Sudan and 88% in Mongolia.

Despite this, pastoralist communities continue to be politically and economically marginalised and ignored. Yet some of the most evident lessons for producing healthy food sustainably by working with nature are found in pastoral systems operating under extreme, variable and uncertain environmental, political and security conditions. Herders move their livestock along expertly managed grazing itineraries and apply their traditional knowledge, skills and technologies, using very low levels of external inputs based on fossil fuels.

| Policies to promote pastoralism

If we underestimate the contribution of pastoralism to society, then government policies and other development programmes might not provide these usually marginalised communities with adequate services such as formal and vocational education, healthcare, youth development and women's empowerment programmes. If policies do not support pastoralism, the pastoralists have no security of tenure against other encroaching and competing land users who are engaged in irrigated cultivation, wildlife ranching, conservation, afforestation, infrastructure development, large-scale renewable energy production and urbanisation, which all lead to rangeland conversion.

To benefit from the vast rangelands throughout the world and to achieve many of the Sustainable Development Goals (SDGs), degraded landscapes need to be restored or maintained so that they can deliver ecosystem services. Pastoralism has been shown to aid in rangeland restoration through mobility and nutrient deposition accompanied by short-term trampling. Confined grazing using fences is not an option for pastoralists living in variable and uncer-

“Pastoralism is the most rational and sustainable land use in rangelands.”

tain environments. Fencing will have negative impacts on the environment and destroy traditional systems of managing livestock.

There is an urgent need to stop the haphazard conversion of rangelands into other, less sustainable land uses and to increase investment in pastoral development through evidence-based policies. Pastoral livestock mobility should be recognised as a viable climate-smart management practice that maintains healthy rangelands and sustainable livelihoods; to this end, transhumance routes and corridors need to be recognised and protected and appropriate services provided.

Pastoralism is a success story of adaptation and resilience, where the interdependence between humans and nature can be seen and from which many unique cultural heritages emerged. Policies in support of pastoralism need to be shaped carefully with pastoralists' involvement for the world to continue to benefit from this dynamic livestock-management system and – in so doing – to achieve many of the SDGs. It is therefore crucial that we support the International Year of Camelids in 2024 and the International Year of Rangelands and Pastoralists (IYRP) in 2026, both designated by the United Nations. | |



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Camelid husbandry worldwide:

its importance and evolving dynamics

| Bernard Faye

Camelid-rearing systems have evolved quickly in recent decades mainly driven by a dynamic market demand for milk and fibre. The pastoralists are, however, threatened by negative effects of climate change and pressures on grazing areas.

Members of the Camelidae family, which includes New World camelids in the Andes (domestic as alpacas and llamas, wild as guanacos and vicuñas) and larger Old World camelids originally from Arabia (dromedaries) and Central Asia (Bactrian camels), are well adapted to difficult climatic and geographic conditions such as the Andean highlands and hot or cold deserts.

It is difficult to know how many camelids there are in the world, partly because camelids are seldom recorded in national censuses. According to the only official source (FAOstat database), the camel population was 39.3 million and small camelids 8.6 million in 2021. As these figures exclude camelids in Western countries, the true number is probably underestimated. In Sahelian countries, recent censuses have revealed up to five times as many camels as estimated.

In the past 60 years, the number of camels has risen strongly compared to other domestic herbivores worldwide; only the goat population is growing faster. The camel population has tripled since 1961, with particularly strong increases in the last ten years after censuses in Chad, Ethiopia and Kenya led to statistical readjustments.

This increase is accompanied by an expansion of camelid breeding in latitudes and continents other than those where camelids originated. Andean camelids are now widely kept in Western countries as pets, and large camelid farms can be found in Europe, the USA and Australia, not only for tourism or sport but also for dairy production.

Production of camel milk and meat has grown even more quickly than camel numbers. This is due to higher slaughter rates (7%



Photo: Kalyan Varma

of all camels are slaughtered each year instead of 5% 60 years ago) and a higher proportion of milked females in the herds (risen from 15 to 21% in the same period), rather than higher production per animal. In the case of New World camelids, in contrast, the slaughter rate decreased from 14 to 11%, possibly due to the growing interest in fibre.

| More intensive production and reduced herd mobility

Camel-keeping systems are roughly classified into “pastoralist nomadic”, “semi-intensive” and “modern intensive”. This typology is no longer sufficient to describe the current changes and additional complexities in the face of climate change, greater market integration and growth of peri-urban camel dairying – changes that led to settlement of some pastoralists or to constraints to livestock mobility, also linked to political insecurity.

The development of peri-urban dairy farms is linked to the growing demand for camel milk on urban markets. The milk is sold directly to consumers, private shops or new dairy enterprises specialised in processing camel milk. The associated settlement of pastoralists on the edge of towns may be permanent (Mauritania) or temporary (Chad). It may involve only part of the herd – the lactating camels – while the rest of the herd is kept

Camel herder on the Deccan Plateau in India

by relatives or hired herders in more distant pastoral areas.

Specialised and intensive dairy camel farms are sometimes set up in rural areas when dairy factories can organise collection of camel milk further away from towns. Sedentary feedlot systems for fattening young male camels to produce meat are implemented in some countries, encouraging pastoralists to produce young animals for the feedlots.

In contrast, the situation of Andean camelids has not changed significantly. Most alpacas and llamas are managed by indigenous Aymara and Quechua communities. Alpacas are bred mainly to produce fibre for the export-oriented textile industry and llamas are bred to produce meat. Raising small camelids is strongly rooted in the cultural identity of the indigenous peoples in the High Andes. Fine fibres of vicuña and guanaco are also exploited in conservation programmes, but the limited monitoring and evaluation of these programmes may be undermining the health and sustainability of these populations.

Women jointly market camel milk in Isiolo, northern Kenya.



Photo: Tom Martin

In the past, camel pastoralists either moved with their herds without having a home territory (true nomadism) or made regular movements between two or more customary territories (transhumance). Recently, however, these movements have been impacted by three main factors: increasing pressure on the pastoral resources; growing integration of camelid products (milk, meat, fibre) into local, national or international markets; and climate change with increasing frequency and intensity of droughts and melting of glaciers. Such factors are obliging the herders to intensify their husbandry systems and to modify herd mobility.

The relationship between humans and camelids

Profound changes in camelid husbandry systems are changing the relationships between humans and camelids. Once the idealised virtuous animal – the “ship of the desert” among African and Asian nomads and the centre of culture in Andean communities, all of whom shared harsh environments of deserts and high mountains – the camelid is becoming only one cog in settled and intensified production systems, where it needs to better express its production potential to avoid being marginalised. Under these pressures, the camelid’s utilitarian function is becoming predominant. However, in the African and Asian drylands and the Andes, the camelids remain emblematic animals that can be found on banknotes, in advertising and as toys. Yet even if camelids are being incorporated into a certain vision of “modernity”, the urbanised people (such as in the Middle East) like to remember the ancient virtues of the animal. Thus, the stressed city dwellers can briefly experience for a weekend this emotional proximity lost with their animals, rather than only considering the economic benefits of its products.

| Global boom in camelid products

While the camel meat market based on live animal trade has been fairly well known for over a century, the rapid growth in the international camel milk market is a recent phenomenon, especially with the availability of camel milk powder. According to recent market studies, sales of camel milk powder are growing annually at a rate of about 4% a year and still rising, driven primarily by demand from China and Europe. In several Mediterranean countries, camel milk is at least twice as expensive as cow milk. In the USA, where camel milk is thought to have medicinal value although without scientific evidence, it costs 20 times more than cow milk.

The recent growth in enterprises to process camel milk and meat led to the marketing of more diverse camel dairy (different kinds of cheese, fermented or flavoured milk, ice cream, etc.) and meat products (corned camel, “camelburger”, etc.). Because camel meat has a low cholesterol content and high content in essential amino acids, it is regarded as a highly valuable dietetic food.

Camelid fibres are known for protecting against ultraviolet radiation, reducing heat transfer, providing thermal insulation and being air permeable. They are experiencing a growing interest on the luxury international market, especially fibres from Bactrian camels. In the last 20 years, textiles made from New World camelid fibres have been refined and oriented toward an exclusive export market, where it is offered not only as a luxury product but also with the concept of a fine fibre coming from ecological production and an ancient culture.

| Camelids and sustainable development

The current changes in the camelid sector (reduced herd mobility, geographical expan-

sion, market integration, more intensive production) have implications for the sustainability of camelid-keeping. Camels are ideal for dry areas, while the smaller New World camelids are ideal for the Andes mountains, but the animals face major challenges because these areas are “hot spots” with respect to livestock–environment interactions and climate change: desertification in the case of camels and land degradation with melting of glaciers in the case of small camelids.

Camelids that are managed mainly by pastoralist communities in highly mobile and low-external-input systems are ecologically benign and there are no issues with camel welfare. However, commercialisation of milk is leading to large concentrations of camels around dairies in peri-urban areas, and large-scale stall-feeding of camels is spreading, also to produce meat. This is altering the balance between animals, people and the environment. This trend threatens biodiversity and creates problems in managing feed and water, while disadvantaging pastoralists, diminishing the previous social and cultural importance of camelids and compromising camel welfare. ||



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Where in the world are camelids?

Andes



Photo: Adam Jones (cc by sa)



Llamas are still used as pack animals in the Andes. In North America they are used to guard sheep from predators.

Canary Islands



Photo: userpablo/pixabay



Dromedaries were introduced from mainland Africa in the 15th century. They are now used for tourism.

Middle East



Photo: © Ilse Köhler-Rollefson



Dromedaries traditionally carried loads across the desert. Many have now been replaced by trucks.

Andes



Photo: Marshallhenrie (cc by sa)



The fine wool of the vicuña is highly prized. The wild animals can be rounded up for shearing only every 3 years.



Andes – Altiplano



Photo: © Cecilia Turin



Herders on the Altiplano have created and extended wetlands to serve as a source of forage for their alpacas.

Andes – Atacama Desert



Photo: Georgibulgaro (cc by sa)



Wild guanacos live in the Andes, Patagonia and in the Atacama Desert, where it almost never rains.

Sahel





Photo: © Tim Dirven/VSF Belgium



Peul herders move their livestock north towards the Sahara in the rainy season, and to the south in the dry season.

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 Based on the World Map of Pastoralists, www.pastoralpeoples.org/pastoralist-map/



supports the



The Gulf

Photo: Lars Plougmann (cc by sa)

Wealthy city-dwellers keep dromedary herds in the desert, cared for by paid staff. Camel racing is a popular sport.

Mongolia

Photo: Erdenebayar/pixabay

Bactrian camels are well adapted to the huge range of temperatures in the Gobi Desert.

Mongolia – West China

Photo: John Hill (cc by sa)

Critically endangered wild Bactrian camels in Mongolia and West China are now recognised as a separate species.



Central Australia

Photo: Tenniscourtisland (cc by sa)

Dromedaries introduced from South Asia for transport are now feral. Ranchers muster them to sell for meat.

Camelid species

	Alpaca	domesticated
	Bactrian camel	domesticated
	Dromedary	domesticated or feral
	Llama	domesticated
	Guanaco	wild
	Vicuña	wild
	Wild Bactrian	wild

Sudan

Photo: anmede (cc by sa)

Dromedary camel herders in Kordofan are known as Abbala. Herders near the Red Sea export racing camels to the Gulf.

Somalia

Photo: © Wolfgang Bayer

The world's largest number of dromedaries (7 million). A vital part of the economy, used for milk, meat and transport.

North India

Photo: © Ilse Köhler-Rolle

Raika herders in Rajasthan graze their dromedaries, goats and sheep on fallow fields, in the desert and in forests.

New market opportunities in the Andes

Old herding practices disappear and new ones emerge

| Cecilia Turin
and Mariana Quiroga Mendiola

Camelid-keeping communities in the Andes are experiencing increasing pressures and profound transformation. Yet there is economic potential for environmentally friendly forms of production that improve the livelihoods and honour the cultural identity of the indigenous peoples.

Most South American camelids are found in Peru, Bolivia, Chile and Argentina in the Andean Plateau over 3900 m above sea level. They are distributed according to puna (montane grassland) ecosystem types: the more humid Peruvian puna to the north has more alpacas and vicuñas; the drier Argentinean puna to the south has more llamas and guanacos. Alpacas and llamas are domesticated while vicuñas and guanacos are wild camelids. Alpacas are raised mainly for fibre and llamas for meat. Vicuñas and guanacos are not raised for production, but national governments – in line with the Convention on International Trade in Endangered Species of Wild Fauna and Flora – allow indigenous communities to collect and trade the fine fibre as a strategy to conserve these species.

| Pastoralist families and the role of camelids

Alpacas and llamas are managed in a similar way by indigenous ethnic groups throughout the Andes. Living in communities, families manage their land and herds within a large territory, using solely own labour and their ancestral knowledge. They produce organic fibre and meat while maintaining vegetation cover and handling livestock genetics, reproduction and health. They transform animal fibres into textiles and make salted meat known as charki.

In a typical household, women, older people and young children care for a mixed herd of 100–300 alpacas, llamas and sheep on dry grasslands and bofedales (peatbogs) at different altitudes. Climatic conditions (wet and dry seasons) determine herd movements up

and down the slopes (vertical transhumance), combined with daily horizontal mobility (pasture rotation). This mobility is key for healthy puna ecosystems as it maintains biodiversity, ensures water availability for irrigation, prevents soil erosion, regenerates soil health and conserves soil carbon stocks. Rangelands and camelids co-evolved in the high Andes and are interdependent: the camelids need the rangelands for forage, and the rangelands need transhumant grazing by camelids for regeneration, otherwise, tall dry grasses would favour wildfires.

Alpacas and llamas are raised not only for family subsistence and for commerce but also as part of a cultural and spiritual legacy linked to Pachamama (Mother Earth in the Andean cosmovision). The animals are treated with great affection as family members, fulfilling the mandate of the gods to do so to avoid great misfortune. Camelid pastoralists represent the most ancient reserve of Andean identity and play a key role in maintaining the cultural roots.

| Recent changes and challenges

In the last 30 years, camelid pastoralists have faced climatic and social changes that challenge their livelihoods but have adapted their practices and strategies. Climate change has reduced water availability in the ecosystem: water sources do not recharge and bofedales shrink. Some seasonal mountain pastures traditionally used for vertical transhumance now have insufficient water for grazing.

High rates of outmigration from herding communities have led to an aged population, reduced family size and depopulation of the puna. Because young people left, many herding families now lack a physically strong labour source. They shorten their grazing routes, abandon rangeland-conservation practices such as irrigation to expand wetland pastures, and delay key livestock-management activities such as shearing. This endangers the continuation of transhumance and other practices needed for sustainable camelid husbandry. Knowledge transfer between generations is interrupted, leading to a

loss of herding skills and cultural values. The pastoralists are also losing their artisanal techniques for spinning and dyeing fibres and weaving garments.

Also the use of camelids in the Andes has changed. Llamas served for centuries as pack animals for transporting goods on the rugged mountain tracks but have now been replaced by motorised vehicles. As a result, the population of llamas has decreased; they are now kept mainly for meat production, rituals, tourism and live-animal exports.

Traditionally, grazing land was distributed in each community by the communal assembly, based on customary inheritance rights and dynamically adapted to new contexts. However, the herding communities are undergoing great transformation. Many families now have private land that they pass on to their children. Because of this inheritance-related land division as well as labour shortage, increased road building, urbanisation and fencing, herders are more constrained in moving their animals. Some families have decreased their herd size to a point where they can no longer live solely from their animals and must seek complementary incomes, including remittances from family members who migrated to towns. Llama keepers can adapt their management systems to this change, as llamas do not need constant supervision, but alpaca keepers face a challenge because alpacas need fulltime herding.

In the face of labour and land shortage, camelid pastoralists have started erecting fences to facilitate livestock management, but this encourages settlement and leads to weakening or abandonment of traditional pastoral systems and to less sustainable use of the rangelands. The few young people still wanting to raise camelids do so only with fences. Herding in shifts and hiring herders are other adaptations to labour and land scarcity, but these may lead to overgrazing, since rules are not clearly defined. Herd composition is also being changed. The mixed herd is itself an adaptation to labour shortage; in the past, when more labour was available, large herds were subdivided by species, sex and age. Labour shortage also affects the governance of these socio-ecological systems. Com-



Photo: Cecilia Turin

Aymara woman checks the weight of the fleece she sells to a trader at an alpaca fibre market in the southern highlands of Peru.

munity leaders' authority to enforce the rules is weakened, and traditional values such as solidarity and reciprocity become lost.

Today, the diverse modes of being a camelid pastoralist include herders living in the puna, people living in nearby towns who return weekly to check on their herds, and people who live in distant cities who hire herders and monitor their herds remotely. Although this means that migrants remain connected to their culture and that the herders in the high Andes are linked with the outside world, indigenous communities will need to review their existing practices with regard to migrants if sustainable land management through transhumance is to be continued.

There are also country-specific challenges. Based on ecological conditions and cultural traditions, Peru became a centre for camelid-fibre industrialisation because it has the largest alpaca population and the highest alpaca fibre production worldwide. Although the textile industry prospers, producing exclusively luxury garments for export, the alpaca herders benefit little, as they supply only crude fibre to the powerful textile industry that sets the prices. Bolivia is a major producer of llama meat; this plays an important role in national food security, but policies and infrastructure for the meat sector need to be improved. Argentina, Bolivia and Chile have only a poorly developed camelid-fibre industry.

In all Andean countries, camelid pastoral-

ists have no bargaining power in a market where the very low prices do not give value to the considerable labour invested and the ecological contributions of mobile camelid husbandry. There is limited government support to camelid pastoralism, as academia and industry focus on genetic improvement to refine the fibre for export markets.

| Fair-trade certification provides opportunities

The indigenous communities raising camelids in the Andes share many similar challenges, but their specific country contexts also offer opportunities. In Peru, after several failed attempts to strengthen their market position, alpaca fibre producers – supported by international cooperation – organised themselves successfully in a collective called Coopecan Peru. This gives hope to other fibre producers wanting to access fair-trade markets.

In Bolivia and Chile, international cooperation projects helped set up meat- and fibre-processing plants to add value and increase producers' income. Producer and civil-society organisations in Chile recently registered camelid herding as an intangible heritage in the Ministry of Culture, in order to position llama and alpaca products in specialised markets that pay for protecting cultural practices and ecological services.

In Argentina's puna, there has been a boom in llama meat consumption, which has been re-valued through tourism development. Fi-

bre obtained from guanacos in semi-captive conditions is used for sustainable conservation and handcrafted textiles as a source of income for local indigenous people.

The growing demand for environmentally friendly products with fair-trade certification provides opportunities to show how governments, academia, civil society and industry could change their development paradigm towards inclusive sustainable development of camelids and pastoralists based on their cultural identity and their economic and ecological potential. | |



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Camels as far as the eye can see

History and expansion of camel keeping in Eastern Africa

| Piers Simpkin and Jacob Wanyama

More and more Eastern African pastoralists are changing their herd composition and starting to keep dromedaries – a trend driven by climate change and market demand.

The dromedary (one-humped camel) probably came from southern Arabia into the Horn of Africa over 1000 years ago. According to FAO estimates, there are now about 17.5 million camels in Eastern Africa, including the Horn of Africa, accounting for about half of all camels in the world. Most are found in Somalia, Kenya, Sudan, Ethiopia and Djibouti, with a small but growing number in Uganda and Tanzania. The fact that camels can also produce milk in dry periods is a big incentive to keep them.

Major changes have taken place in camel keeping in Eastern Africa over recent decades. Camel keeping in the early 1980s was mainly for the subsistence of families in certain ethnic groups living in dry areas. Initially, there was limited knowledge and interest in camel keeping among so-called cattle pastoralists such as the Borana and Samburu.

Camel production used to be characterised by high herd mobility, which is the most efficient way of using rangeland resources. As the frequency and severity of droughts increased in the 1980s and 1990s, more and more cattle herders recognised the outstanding hardiness of the camel that enabled camel-keeping families to survive the droughts better than could cattle-keeping families. The Samburu, Borana and some Maasai slowly started to acquire camels from the neighbouring Rendille and Somali, mostly as gifts and dowry but also as purchases.

The resilience of the camel to drought also started being noticed by research and development organisations from the late 1980s onwards. Some government and donor-supported projects were dedicated to studying and promoting camels in Eastern Africa. This increased interest and uptake of camel keeping by many cattle-keeping groups that sought greater livelihood resilience, such as the Samburu, Turkana, Pokot and Sakuye in Kenya; the Borana in northern Kenya and



Photo: Mali Ole Kaunga

southern Ethiopia; the Guji in Ethiopia; and the Maasai in southern Kenya and northern Tanzania.

| New trends in using and breeding camels

A few ranchers in northern Kenya started to stock camels on their ranches for tourism, transport, and commercial milk production, and some universities initiated camel research programmes. The tourist and hospitality industry also jumped on the bandwagon.

From the year 2000, there was an increase in value chains and commercialisation of camel products, especially milk. Some camel keepers started more intensive peri-urban production systems targeting the urban milk market. There was increased investment in the camel-milk value chain and marketing. In 2015, the first camel-milk dairy was set up in Nanyuki, Kenya; it continues to buy and process milk from nearby herders and ranchers to this day. There were similar initiatives in Ethiopia (e.g. Jigjiga Camel Dairy) although with variable success. Meanwhile, several networks of women in Kenya, Somalia and Ethio-

pia started bulking and retailing fresh camel milk in urban centres, and an increasing number of private individuals and companies started to offer camel safaris.

With the emergence of camel-milk processing plants, there was a need to develop standards for processed camel milk, as the existing ones were modelled on cow milk. The Kenya Bureau of Standards first developed standards for raw whole camel milk in 2006 and made specifications for pasteurised camel milk in 2017. The Intergovernmental Authority on Development (IGAD), a regional organisation of countries in northeast Africa, facilitated a stakeholders' review of camel production and marketing in Eastern Africa, which culminated in the 2022 IGAD Camel Resources Management Strategy.

| Challenges in camel husbandry

Camel keeping in Eastern Africa faces many challenges. Increasing privatisation and fragmentation of land makes it more difficult to find forage and water resources. This often leads to resource conflict that can easily escalate because laws are not enforced. Poverty, combined with a lack of clear control of land management, has led to massive

Pastoralist communities in Eastern Africa increasingly appreciate camels because they are resistant to drought and disease and provide a secure milk supply; here a herd of Rendille camels in northern Kenya.



charcoal burning across the Eastern African rangelands, which has especially damaged the woody plant species on which the camels feed.

The remoteness, long distances to government and private services, and poor infrastructure make it difficult and costly to obtain animal health and production advice and other services as well as veterinary or feed inputs. Consequently, camel diseases are often poorly managed; many have not been studied or cannot be treated. Camel pastoralists have a wealth of traditional and local knowledge, but most of them have problems in accessing formal research results and new knowledge. This combined with the innate slow herd growth and the dispersed nature of camel keeping often makes the returns and profit margins from camels low for producers. A family with an average-sized camel herd (10–15 head in Eastern Africa) finds it difficult to succeed commercially; this requires large camel herds.

| Even camels suffer from climate change

Although the camel is well adapted to climatic extremes, the ongoing climate change in Eastern Africa is a challenge as rainfall intensifies and more pests and diseases affect the camels. Many pastoralists are losing large numbers of their cattle, sheep and goats to droughts or floods, putting more pressure on the remaining camels to sustain their lives and livelihoods – which has led them to increase milk offtake or to sell camels to sustain their families. In the last two years in Eastern Africa, even many camels have succumbed to drought.

One major challenge is to know how best to boost production – should one concentrate on low-cost ways of meeting local demand or should one strive to meet global standards and look at external markets? Should producers “stay green” or “go intensive”? A major opportunity is that camels are adapted to dry climates and may be more “green” than some other local livestock species. Recent research¹ suggests that reducing dairy cattle numbers and increasing the numbers of dairy camels and goats could lead to higher milk production, lower use of water and feed, and lower carbon emissions in sub-Saharan Africa.

Increasing urbanisation across Eastern Africa and the strong cultural ties to camels and camel products of the growing number of a middle-class urbanised consumers are creating a growing demand for camel products. Climate change itself is increasing the demand for camels, as other livestock species die in greater numbers than do camels during the increasingly frequent droughts. Globally, too, there is a growing market in China and the Middle East for camel meat and milk products.

| The future for camels in Eastern Africa

The role of the camel in Eastern Africa will continue to change. Similar to what has been seen in Australia, the camel’s role as a transport and draft animal will diminish as it is replaced by motorbikes, ambulances, combustion engines and agricultural machinery. However, its role as a milk animal will in-

crease. This will lead to changing management practices – possibly more intensification – and an urgent need for research into the advantages and disadvantages of giving different feeds and the effects on production costs in financial, social and environmental terms (e.g. in greenhouse gas emissions). Niche markets and opportunities for products and services (ecotourism, entertainment) will emerge, and there will be a need for innovation and value addition by the camel keepers themselves.

There will increasingly be a need to improve herding, breeding and production techniques and also the advisory and other services for camel keepers. More research is needed on what is fact and what is fiction or myth related to camels: there are many unproven claims about the benefits of camel products and treatments. With changes in the environment and in access to rangeland, studies will have to be made on the impact of increased camel numbers and concentration of herds.

In a modern and globalised world, local and international quality standards of management, production, food safety and animal welfare will need to be met. This will require more research and advisory services and the commitment and cohesion of camel-keepers to ensure a bright future not only for the camels but also for the families keeping them in Eastern Africa. | |



Piers Simpkin lives in Kenya and manages a free-ranging breeding herd of 120 camels for milk production.



Jacob Wanyama is a Kenyan veterinarian who has spent over 30 years working with camel-keeping pastoralists in the Horn of Africa.

1 Rahimi J, Fillol E, Mutua JY, Cinardi G, Robinson TP, Notenbaert AMO, Ericksen PJ, Graham MW & Butterbach-Bahl K. 2022. A shift from cattle to camel and goat farming can sustain milk production with lower inputs and emissions in north sub-Saharan Africa’s drylands. *Nature Food* 3: 523–531.

Proud to be a camel herder

Keeping Bactrian camels in Mongolia's Gobi Desert

Shariin Juul talks about how he herds Bactrian camels in the Gobi Desert. During the interview, he introduces his 17-year-old son Khadchuluun, who just finished college training as an automotive mechanic, so that he can maintain the family's vehicles: a truck, a jeep and a motorbike. His compulsory military service starts soon; then he wants to be a camel herder.

How long has your family been keeping camels?

I'm a third-generation camel herder. My grandfather Surmaagiin Tudev kept camels, and my father Tudeviiin Shar was a skilful camel herder who worked for the Jargalant Cooperative of Tsogt-Ovoo Soum in the socialist time. In the 1980s, he was identified as having the largest two-humped camel herd in the world, so some people from an international organisation visited us, I remember as a kid. My uncle Tuulaikhuu influenced me most; he taught me all essential skills of camel herding and made me feel proud to be a camel herder. I owe him all the achievements I enjoy these days. I started herding camels in 1997.

Are camels and Gobi inseparable?

Camels are the most divine animals in the Gobi. They are the livestock species best suited to the Gobi. They are hardy. They are also very gentle and soft-hearted. Gobi people are famous for their tolerance and peacefulness, possibly influenced by camels. Camels differ from other livestock in how they respond to the loss of a newborn calf. They grieve much longer, cry a lot and return to where the body is to mourn. Female camels easily take back babies they rejected right after birth or adopt orphans when we use our unique custom "khuuslukh". Then the camels cry with large tears and accept the babies and let them suck milk.

Are there seasonal specifics in camel herding?

Camels are very attached to their pastures; they know the grazing areas and water spots, and keep rotating between seasonal pastures without going beyond these



Photo: B. Munkhjargal

boundaries. Autumn and winter are the seasons when camels are most majestic. The fall, when they are fat and their humps are standing, is a moment of pride for me. Summer is the time for milking and making dairy products. We can milk camels year-round. Camels give birth every other year.

Why do you herd camels?

All five livestock species have their benefits and bless our lives (Mongolians usually refer to five types of livestock: cattle including yaks, sheep, goats, camels and horses). But I like camels. Right now, I am herding the "Khaniin khets brown" breed. These days, camel wool has become expensive, which is good for us. We use camels as a means of transport. We also make many useful herding items, such as ropes, from camel hair. During dzud and drought, camels survive better than other livestock.

I see your family is now shearing camel wool. Why are the animals braying?

Every spring, when we shear the female camels, it confuses the baby calves because they can't immediately recognise their moms. That's why they keep braying until they finally accept their moms' new look.

Shariin Juul keeps Bactrian camels in the Tsogt-Ovoo District of Mongolia's South Gobi Province.

Tell me about your family members who also herd camels

My wife also comes from a camel-herding family since several generations. We have been married for over 20 years and have three boys and a girl. My daughter finished school. One son will be a camel herder. When we married, we had 10 camels and over 200 goats and sheep; now after 20 years, we have almost 600 camels, including over 100 baby camels. We hope our son continues our heritage.

What changes have you seen in recent years for camel herding and how do you respond to them?

The most challenging thing is climate change. It has become drier; the rains are less frequent. Most wells constructed during the cooperative time have dried up. The riparian areas called Naimad and Dolood have all become dry these days. Even recently dug boreholes have water shortages. People say it may be related to mining, which uses too much groundwater. Herders have to bring in water from 10 km away, spending a lot

on fuel. Forage for camels is usually shrubs; saltwort and saxaul trees, the camel's main diet, are getting scarce. Camels need less additional feed than other animals, but we sometimes have to feed young camels when there's not enough natural forage.

After livestock were privatised, their numbers grew greatly, so pasture is becoming poorer with so many animals. I think there is an ongoing selection process among herders depending on how skilful they are and how they address the new challenges; only a few will remain in the herding business. In the long run, more intensified livestock farming may emerge with higher-quality and higher-value herds.

I see you use a trailer for moving. Is the ger no longer convenient?

We have petrol these days, and moving over 100 km is easier with the trailer, as we carry necessary things like a generator, solar panels, freezer and Internet device. We have access to the cellphone network to get information and communicate. I like watching the two national TV channels and the two provincial ones. The weather forecast is

Mongolian terms

dzud – natural disaster arising from summer drought followed by heavy snowfall and extreme cold, resulting in insufficient pasture and livestock mortality, usually in the period February–April

ger – traditional round dwelling made of felt over a wooden framework

khuuslukh – ritual chant to coax a mother to accept a newborn calf

otor – migration



Photo: B. Munkhjargal

the key information I follow daily. We use solar energy to pump water from our wells. This way, we try to be in the flow of modern development. So the rain is the key factor to make us happy but something we cannot make happen.

Does the Mongolian Government support camel keeping in the Gobi? If so, how?

Of course, we benefit from government support in times of disaster and for well construction; the state provides water in our otor areas and brings veterinary services. Herders say our retirement age is too high, as herding is hard work, so life expectancy is short. It is common that, 4–5 years after retiring, it is time for herders to go to God. It is desirable to lower the retirement age for herders.

Nowadays, the Government organises the annual Camel Festival to promote camel herding. We like these festivals, which

Shariin's wife Aldartsetseg (on the right) was named the top milkwoman in South Gobi Province.

include a camel race, a camel beauty contest and a contest for best-dressed couples. This encourages us to revive our customs, wear traditional dress and show our camel-riding skills. Some years ago, there was a big gathering of herders in South Gobi Province to register a "1000 camels race" in the Guinness World Records.

The interview was conducted by Khishigbayariin Suvd-Erdene and Batmunkhiin Munkhjargal, both staff members of the South Gobi Public Communication Division, and Nyamtserengiin Adiyatseren of the Gobi Newspaper. Translation into English by Tungaa Ulambayar of the Zoological Society of London.

Participatory research for diversity

What research is working on and what research is needed

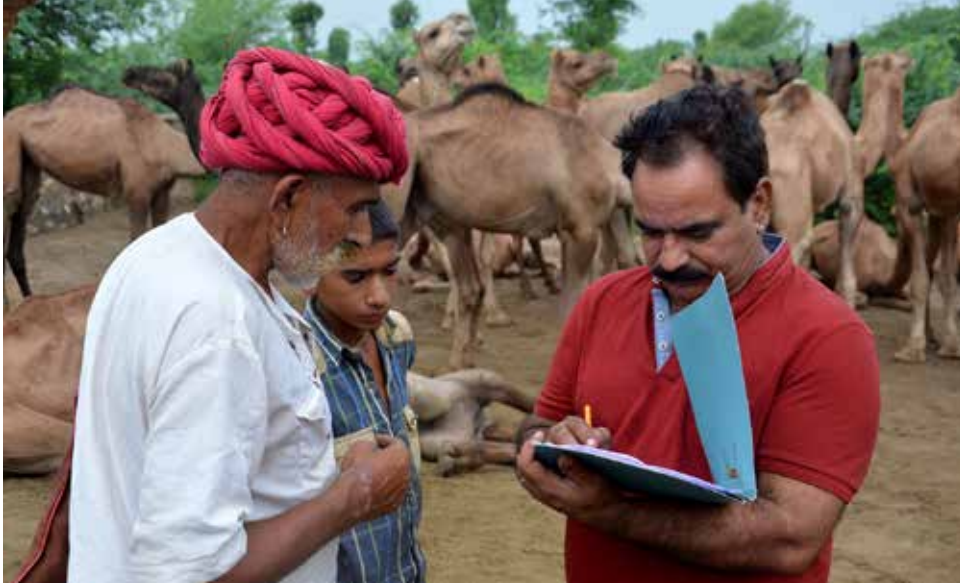


Photo: Lokhit Pashu-Palak Sansthan

The Lokhit Pashu-Palak Sansthan NGO is helping Raika herders set up a value chain for camel milk; here, the herds are being registered for this.

els now kept in the industrial dairies in UAE were imported by plane loads from Pakistan, where pastoralist Baluch women bred them.

FAO has registered 89 breeds of dromedary (one-humped) camels and 14 of Bactrian (two-humped) camels in its Domestic Animal Diversity Information System. Of the dromedary breeds, 47 are at home in Africa, 14 in Asia and 23 in the Middle East. Domestic South American camelids include two alpaca breeds and two llama breeds, whose diversity lies in the fibre colours. Alpacas have 22 natural colours, from black through variations of greys and browns to white, but industrial demand for white fibre in Peru led to drastic reduction of herds with coloured fibre. Only recently has research begun to conserve the colour diversity of alpaca fibre.

Otherwise, the limited research efforts in South America seek mainly genetic improvement to produce finer fibre through advanced high-cost techniques such as embryo transfer. The textile industry, which dominates the alpaca fibre value chain, aims for finer fibre – and can count on support from governments, academia and most development agencies.

Because of the biological diversity created by pastoralists over centuries in response to different local ecological conditions, camels were renowned as valuable assets for sustainable food production and nutrition security in arid and semi-arid areas. South American camelids were valued for sustainable production of fibre to withstand extremely cold conditions at high altitudes. However, most current research, such as on embryo transfer focussed on improving animal performance or uniformity, is eroding this valuable diversity.

Much more research is needed that supports a genuinely sustainable development of the communities raising the camelids. Many of these communities are coming under growing pressure, losing pastureland and the holistic knowledge systems that

| Ilse Köhler-Rollefson and Cecilia Turin

Research into Old World camels has surged recently, producing more than 200 scientific publications a year. This heightened interest in camel research is laudable, but how useful is it for practical application by herders?

The key value of camelids for humanity and for the planet lies in the fact that they convert sparse, thorny, fibrous and salty shrub and tree vegetation into milk, meat, fibre, manure and physical power. They produce high-value protein in areas where crops cannot be grown sustainably and where other livestock fail to survive and thrive.

Professor Reuven Yagil in Israel was perhaps the first scientist to strongly promote the camel as a solution to famine in Africa's drought-stricken areas. He also drew attention to the therapeutic effects of camel milk for autism, allergies and diseases. This was in the 1980s and '90s, at the time of the first international camel conferences and several field research projects, such as in Somalia and Kenya. This camel research sought to un-

derstand the value of camels, herders' perspectives and how to improve processing of camel products. The pastoralists were regarded as equal research partners from whom scientists could learn. The studies revealed that pastoralists deliberately bred for diversity within a herd, rather than only for higher production. It is exactly this practice that ensures the much-touted resilience in farming systems that development agencies now aim to achieve.

| “Modern” research is actually a step backwards

In recent decades, however, research has become dominated by the preferences of the rich Arab countries, where camels are symbols of national identities and objects of leisure for competition in races and beauty contests. The economic interest lies in dairy camels kept in quasi-industrial settings. Most related research focuses on improving production in a narrow sense. In the United Arab Emirates (UAE), it is routine practice to impregnate camels with embryos deemed of higher genetic potential for milk production, and significant resources are spent to improve the success rate of cloning. Yet few people are aware that the world's best dairy cam-

once enabled them to inhabit areas that are marginal or completely unsuitable for other forms of agriculture. Pastoral camelid systems provide important ecosystem services, such as conserving plant diversity, regenerating denuded land, maintaining soil carbon stocks, and preventing soil erosion and desertification. These services are tied to highly mobile herd management and are rooted in indigenous knowledge and husbandry systems. Science must therefore gain a better understanding of the roles and value of these mobile pastoral systems.

| The Raika themselves identify the problems they face

An example of the type of research that addresses pastoralist communities' concerns – particularly with respect to their rights to land, water and other natural resources – is the participatory research involved in co-developing Biocultural Community Protocols (BCPs). The BCP is a legal tool under the Convention on Biological Diversity. The bottom-up research applied in the process provides an official means for pastoralists to articulate their perspectives. Several camel pastoralist communities, including the Raika and other groups in Rajasthan, India, have developed BCPs, usually in a process facilitated by NGOs or scientists. In their BCPs, the Raika identified the range of problems they are facing, one of them being the absence of a value chain for camel milk.

Camel milk is much hailed as a health food, which is why demand for it from China has skyrocketed. In the Muslim world, there is also a belief that camel urine combined with camel milk can treat cancer and other diseases. In Kazakhstan, thousands of people with health problems go to sanatoriums to be treated with fermented camel milk (shubat) and camel urine. But because medical monitoring is lacking, it is difficult to evaluate the effect of these treatments.

Similarly, in India, the NGO Lokhit Pashu-Palak Sansthan has been providing camel milk for free to poor people with health problems and to undernourished children. They have compiled case studies of patients with tuberculosis, diabetes gangrene and cancer,



Photo: Michele Nori

Somali women traders respond to the high demand for camel milk.

who have benefitted from regularly taking camel milk. This anecdotal evidence does not carry the weight of double-blind studies but does suggest that camel milk has some medicinal value. More research is needed into this.

Another important research question would be to look at how the composition of camel milk changes under different diets. There is good reason to believe that the healing effect of camel milk differs, depending on whether camels browse on biodiverse diets in mobile pastoral systems or are fed with alfalfa in an industrial set-up. Confirmation of this would provide a powerful argument for pastoral camel-husbandry systems.

When Professor Yagil first attempted to convince donors of the camel's potential to support food security by providing large amounts of milk in arid zones, he was famously told: 'My dear Sir, you cannot turn the camel into a cow! The camel is a camel and the cow is a cow', to which he replied: 'The camel is the cow of the desert'. Yes, the camel is the equivalent of the cow in the desert, but it does not mean that, in the case of Old World camels, we should follow in the tracks of the cow dairy sector that has made so many errors. Here, the cows produce enormous amounts of milk but at the expense of their health and the environment and also to the detriment of dairy farmers – who may have the high-

est-yielding stock but still go out of business because they are caught between high expenses for feed and low milk prices.

| Seeing camelids as co-creatures

The International Year of Camelids now being celebrated in 2024 offers a great opportunity for bringing the brightest economic and other minds together to chalk out a strategy to ensure that the same does not happen in the emerging camel dairy sector, that camel herders retain their agency instead of drifting into corporate bondage, and that camels continue to be managed in mobile pastoral systems. Only in this way can these animals realise their full potential of turning dispersed 'waste' into food while also providing ecological services and livelihoods for marginalised communities.

We need to regard camelids as co-creatures with their own intelligence, ancestral legacy and individual personalities, not as machines. This is where the strength of pastoral systems lies, where the herders attribute personhood to their camelids. We need to leave behind Western perceptions of animals as input-output models and take a more holistic view, seeing camelids as part of their eco-systems and local cultural identity. Research to enhance camelid pastoral systems should focus on understanding and learning from indigenous knowledge that is holistic and appreciates all components of husbandry systems – people, animals and nature



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The future of camelid husbandry

Mobile pastoralism must be supported because it is sustainable

| Ilse Köhler-Rollefson,
Ann Waters-Bayer,
Sabine Dorlöchter-Sulser
and Cecilia Turin

Providing glimpses into different parts of the camelid universe, the articles in this dossier underline how rapidly this is undergoing change. They demonstrate how crucial it is to steer the future of camelid keeping and breeding in a direction that avoids repeating the same mistakes.

Today's global industrial meat industry is based on conventional farm animals, where animals are regarded as mere input-output models. For camelid-based societies, whether in the Old World or the New World, their animals were not just a means of production, but rather are central to their cosmologies, and many of them perceive a divine duty to care well for their animals.

Until the late 20th century, camelids provided sustenance to people living in harsh and marginal environments: the Old World drylands and the New World highlands. Camelids enabled people to live in and travel through difficult landscapes. By virtue of their exceptional mobility and ability to endure long intervals between drinking, Old World camelids allowed people to access grazing areas far away from watering sources and out of the reach of any other pastoral livestock. Herd management entailed movement and dispersal over large areas to 'harvest' sparse vegetation and convert it into food, fibre and physical energy.

In such systems, camel numbers were attuned to the availability of forage resources. As Bernard Faye put it, 'there was a balance between people, camels, and the environment' in dynamics that are characteristic of pastoral systems, in which livestock numbers continuously adjust to the availability of forage resources.

| Unsustainable change

But today, with camel milk, meat and fibre being increasingly commodified, this balance is being upended. Large numbers of



Photo: Petra Dilthey

camels are concentrated around peri-urban dairies, as is happening in many African countries, or are stall-fed in industrial-scale holdings. This runs counter to the ecological advantage of camels. It means importing feed from elsewhere, often from other countries, where it is grown using irrigation, fossil fuels and chemical inputs that carry a huge ecological footprint.

In order to unfold their ecological and food potential – and also for their own wellbeing – camels need to be kept in mobile pastoral systems where they can function as solar-powered harvesters of desert or highland vegetation. In times when it is urgent to reduce the world's dependence on fossil fuels and chemical fertilisers, pastoralism makes utter ecological sense.

However, this is easier said than done. As the articles from Eastern Africa and Latin America point out, ancestral grazing lands are increasingly being converted to other uses, and permanent fences make livestock movement almost impossible. Pastoralism is still widely deemed backward, and many young people are reluctant to continue their pastoralist tradition: managing animals in mobile systems in remote areas is not only hard, round-the-clock work exposed to the natural elements, but also requires skills and dedication. It is neither properly remunerated nor given the respect it deserves. On one hand, many pastoralists are not linked to (good) markets; on the other hand, those with such market links are often exploited by actors higher up in the value chain.



The camels of Rendille herders in northern Kenya seek a mobile future.

| Enabling policies

Yet, without any doubt, camelid pastoralism is a way of combining food production with biodiversity conservation, as well as managing animals in an ethical and humane way. It corresponds to many of the world's sustainable development goals, and the world and its decision makers must therefore become acutely aware of this and make it a priority to put supportive policy frameworks in place.

These must aim to make mobile livestock husbandry easier and more attractive as a professional option. This would involve protection of ancestral grazing areas and, in the case of Old World camels, investment in decentralised dairy infrastructure, i.e. networks of mini-dairies, rather than centralised mega-dairies. This capital is well spent, as it

would improve food security and rural livelihoods, and significantly reduce the carbon emissions from food production. It would also provide a means to adapt to climate change. Efforts must also be made to strengthen herder agency and voice by supporting cooperatives and producer unions as well as pastoralist advocacy organisations.

Consumers, too, have a major role to play. A scenario could be envisioned where they would pay a premium for agroecological and high-animal-welfare products from camels kept in mobile pastoral systems rather than in confined animal-production systems using imported feed.

| Paradigm change in the livestock sector

The International Year of Camelids provides the world with a unique window of opportunity to analyse and reflect upon a desirable future for these remarkable animals that have given humanity so much and whose welfare is paramount to the pastoralist communities that keep them. It is the wisdom and holistic perspective of these people – rather than the bottom lines in accounting books and quarterly corporate reports – that should guide the rest of the world to secure a more humane and ecologically sustainable future for camelids and for camelid keepers.

In recent years, herding communities have become more active on both national and international level in sharing their local knowledge and advocating for their rights. They have issued declarations calling for policymakers to listen to them so as to better understand their way of life and to design policies, provide services and address their needs in order to reverse the current threats to herders' livelihoods. Examples are the global Mera Declaration of Women Pastoralists in 2010, the global Kiserian pastoralist declaration in 2013, the Lukenya Pastoralist Declaration in Eastern and Southern Africa in 2016, the Hammamat declaration in North Africa and the Middle East in 2016 and the global Dana Declaration+20 in 2022.

Listening to and learning from pastoralist communities would benefit livelihoods, animal welfare, biodiversity and the environment. But if humankind follows the false development trajectory witnessed in the global

dairy and meat sectors, with production as the only yardstick, then unique opportunities for setting things right will be lost. Moreover, the world would lose the environmental, economic, social and cultural benefits that pastoralists – both camelid herders and others – have provided for centuries.

Would it not be an almost magical achievement if, for once, development was not guided by the bottom line of business but rather by social and ecological considerations? This is why the International Year of Camelids in 2024 and the International Year of Rangelands and Pastoralists that follows on its heels in 2026 are so important. These offer the world some hope for building a resilient future, working together with the pastoralist guardians of the earth. | |



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Support pastoralist communities in securing their land and grazing rights

While land grabbing and lack of water and veterinary services are making pastoralists' life increasingly difficult, our partner organisation IMPACT in Kenya is helping them to solve their problems.

The organisation stands by their side and raises their prospects for a better future.

