IGAD

ICPALD

2023 - 2032
CAMEL RESOURCES MANAGEMENT STRATEGY FOR THE IGAD REGION

Acknowledgement

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AU-IBAR

EUROPEAN UNION

Abbreviations and Acronyms

AU-IBAR	African Union Interafrican Bureau for Animal Resources
CSO	Civil Society Organization
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
IFAD	International Fund for Agricultural Development
IGAD	Intergovernmental Authority on Development
ILC	International Land Coalition
ILRI	International Livestock Research Institute
LPP	League for Pastoral Peoples
NGO	Non-Government Organization
OIE	World Organization for Animal Health
SWOT	Strength, Weaknesses, Opportunities, Threats
UCD	Unknown camel disease
GHC	Green House Gas
ICPALD	IGAD Centre for Pastoral Areas and Livestock Development

Executive Summary

Globally, the interest in camels is on the rise for their climate resilience, relatively lower Greenhouse Gas (GHG) emissions and as source of milk reputed to have therapeutic qualities. The IGAD region has the highest density of camels in the world and is already the largest producer of camel milk and meat, with export of live camels being of major economic importance. The region is in an excellent position to enhance productivity and further expand value chains for camel products such as milk, meat and other camel products to be recognized as the region's Unique Selling Point (USP) and region typical products. The camel sector makes a major contribution to rural livelihoods and traditionally herders manages their animals in tune with nature and in ways that conform with high standards of animal welfare. The purpose of this strategy is to guide development of regional camel sector in an equitable and climate resilient way so that it furthers strengthens rural livelihoods, enables regional food security and produces healthy and high-quality products in an animal welfare and environmentally friendly way.

While there is major potential, there are also daunting challenges, notably the increasing fragmentation of camel grazing and browsing areas and migratory corridors, as well as the lack of health services and supportive trade infrastructure and logistics.

This strategy is prepared based on an extensive literature review as well as interviews with experts, herders and other stakeholder groups. Five strategic priority areas for action were identified: (1) Camel herding, breeding and production, (2) Camel health and welfare, (3) Camel products value chains and food security (4) Camel advocacy and education, and (5) Camel research and extension.

IGAD Center for Pastoral Areas and Livestock Development (ICPALD) will be implementing the strategy and support domestication by the IGAD member States. The implementation of these priority areas will likely require consorted efforts of development partners, national governments, private sector and herders. It is a long-term proposition that needs to be looked at over periods of five to ten to twenty years, and activities need to be implemented in a phased manner, initially focusing on the most urgent issues that need to be resolved for IGAD's camel to thrive and develop.

Table of Contents

List of Tables and Figures

Introduction

1. Background Information and Situation Analysis

1.1. Global Context

Global interest in camels is increasing steeply, due to their climate resilience and ability to function well under harsh conditions, as well as their potential to provide food deemed healthy and even therapeutic for some human diseases. The global camel population has almost tripled over the last 60 years from around 13 million in 1961 to around 36 million camels in 2021. This growth is driven by factors that include (1) expansion of its distribution into previously cattle dominated countries in Africa, due to better drought adaptation, (2) increased demand for camel products and large investments in camel dairying and racing in selected Arab countries, (3) buzz about health enhancing properties of camel milk in parts of the Global North, and, arguably, (4) relative advances in camel disease management and control.

Camels are regularly making headlines and new ventures around camel products frequently feature in the news . There appears to be an especially high demand from China for camel milk powder, and possibly for meat. The IGAD countries are in a prime position to become the world's leading supplier of high-quality camel milk and already are the largest provider of live camels for meat. Demand for live camels is strong in Arab and North African countries.A strong argument from the climate change perspective is that camels appear to produce relatively less methane than true ruminants . Another competitive advantage of IGAD's camel sector is that globally, there is a growing demand for healthy livestock products and a backlash against industrial production, with high animal welfare standards becoming increasingly important. The nomadic systems in which most camels in the IGAD region are kept represent an ecological alternative to the industrial systems that would appeal to the growing number of health conscious and animal welfare concerned consumers.

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[1] FAOSTAT 2021; for weakness of actual data, see Faye, B. How many large camelids in the world? A synthetic analysis of the world camel demographic changes. Pastoralism 10, 25 (2020). https://doi.org/10.1186/s13570-020-00176-z

[2] For instance, see recent reports on CNN and BBC about camel dairy in Kenya: https://edition.cnn.com/videos/business/2021/09/27/marketplace-africa-kenya-camelccino-camels-milk-spc.cnn
https://www.youtube.com/watch?v= 6KPNxI- I4
https://www.bbc.com/news/av/world-africa-55846767

[3] Dittmann MT, Runge U, Lang RA, Moser D, Galeffi C, Kreuzer M, Clauss M: Methane emission by camelids. PLOS One, 9 April 2014. doi: 10.1371/journal.pone.0094363

1.2. Regional Context

The IGAD countries as a whole are already the world-leading producers of both camel milk and meat, with Kenya and Somalia being the two largest milk producers, according to FAO data (Figures 1, 2, 4, 5 and 6).

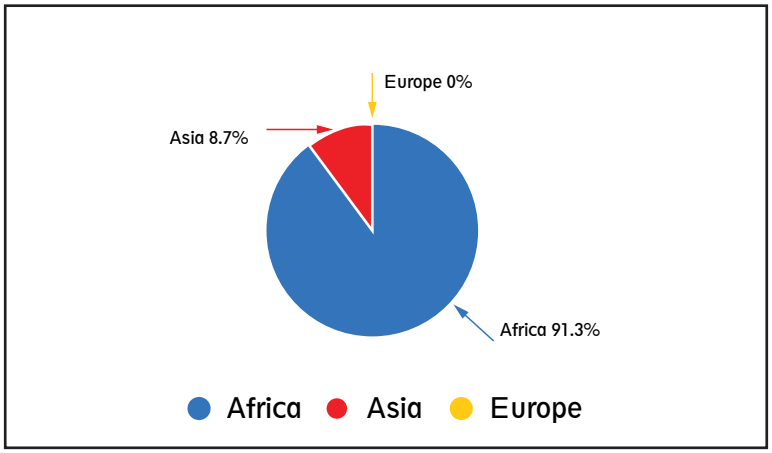


Figure 1: Production Share of Camel Milk by Region 2018 (Source: FAOSTAT)

Camels are owned and managed mainly by smallholder pastoral and agro-pastoral communities where they serve as an important livelihood asset. They are often kept as part of family holdings that also include other livestock, such as goats, cattle, sheep, and donkeys. Their feeding depends on perennial natural vegetation and/ native browse available in open areas . Due to progressive fragmentation of land, growing human population and diseases, camel pastoral systems are under increasing pressure.

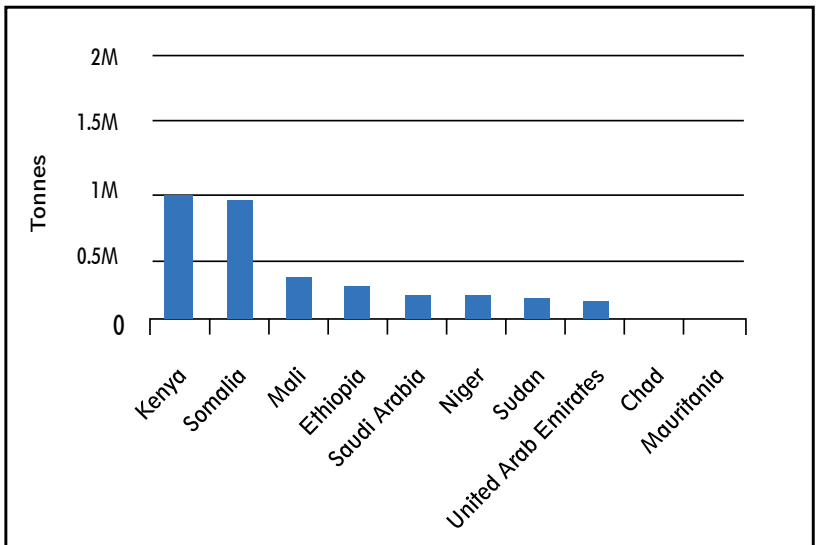


Figure 2: Top 10 Camel milk-producing countries, 2018 - 2019 Source FAOSTAT)

[4] For instance, see this recent publication on Ethiopia: Babegel et al. (2021): Potential of camel production and management Practices in Ethiopia: Review. Journal of Dryland Agriculture 7(5), pp. 67-76.

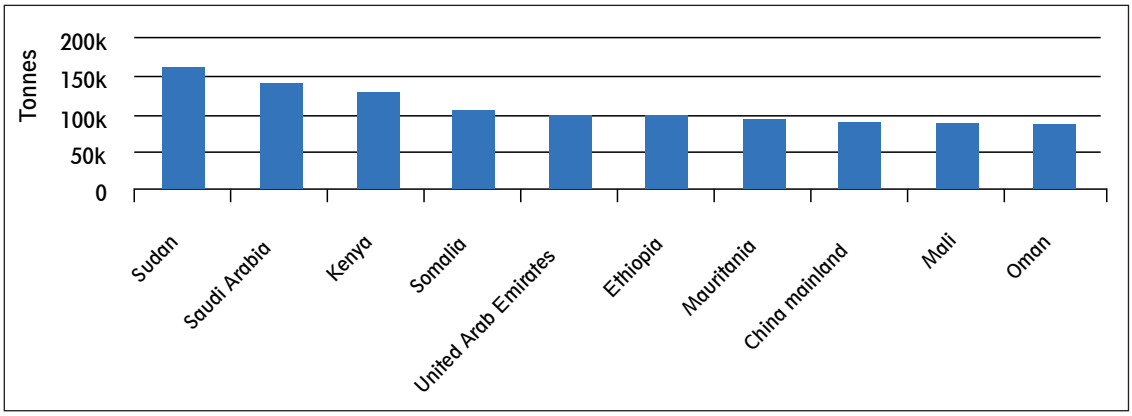


Figure 3: Top Camel Producers, 2018 - 2019 (FAOSTAT)

Camels are managed based on indigenous knowledge and in mobile extensive systems, which is the most efficient way of utilizing rangeland resources. In some places camel keeping is changing from the traditional extensive form to modern semi-intensive or even intensive forms. Peri-urban types of camel production systems have emerged in which camels are kept on farms or close to cities and towns to capitalize on markets for camel milk. This sedentary management with no or restricted foraging has implications for camel health and the nutritional composition of camel milk. These more intensified systems also depend on additional feed inputs and are often not very sustainable, both from an economic and ecological point of view.

Increasingly, traditionally non-camel keeping pastoral communities in Kenya and Ethiopia are adopting camel herding in order to become more resilient to the effects of climate change such as more frequent and severe droughts and floods. These include the Samburu and to some extent the Maasai in Kenya, the Karamojong in Uganda and the Borana in Ethiopia. Furthermore, through development projects, innovative systems of camel leasing are experimented within Somalia.

Box 1. Camel Leasing

Camel leasing is an informal arrangement between camel milk dairies and camel herding pastoralists. Dairies lease lactating camels from pastoralists for a specified period of time and with a clear expectation of compensation. During the period of the lease, dairies cover the management costs for leased animals (i.e., feed, water, and veterinary services), and pastoralists receive a monthly payment (cash or in kind) for their camel. Often, but not always, an oral or written lease is put in place with a witness observing the agreement. Camel leasing differs from the less formal practice of camel lending among family, friends, and clan members. Camel lending has been occurring in Somalia for generations. Source: USAID Feed the Future: Somalia Camel Leasing to Impact Resilience Activity, November 2020, Fiscal Year 2020 Annual Report https://pdf.usaid.gov/pdf docs/PA00X9GB.pdf

IGAD member countries are at different levels of formulating and implementing policies and programmes that support camel resource management. Most of these are not specific to camels, covering livestock in general. Some examples of such documents are the Livestock Master Plan and the Livestock Sector Analysis for Ethiopia and the National Strategy and Action Plan on Animal Genetic Resources for Kenya.

The IGAD region has witnessed a significant growth of its camel population due to dispersal into previous cattle raising areas as an adaptation to effect of climate change and strong demand for camel meat products, internally as well as for export. During the last ten years, from 2009 to 2019, numbers have grown from around 11 million (11,187,276) to more than 13 million (13,706,206) equivalent to a 22,5% increase (FAOSTAT 2021). Some of this increase may be due to a change in census technique (P. Simpkin, pers.com.).

Significant numbers of live male camels are exported from ports in Djibouti, Somaliland, Somalia and Sudan to Saudi-Arabia, Yemen, and Egypt. A new harbour is being built in Haidob, 60 kilometers south of Port Sudan, by China Harbour Engineering Co. to transport cattle, camels, and sheep for mainly Asian markets .

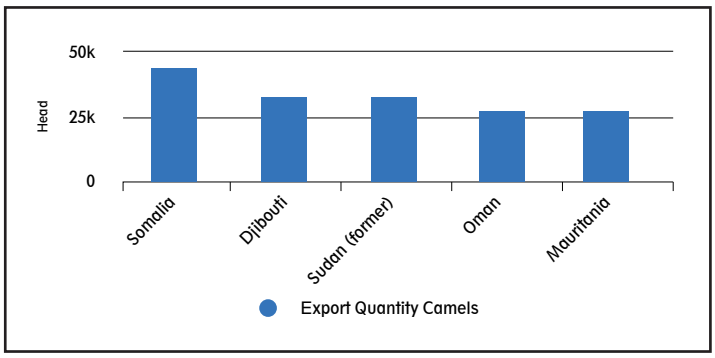


Figure 4: Top five Camel exporters, 2018 - 2019 (FAOSTAT)

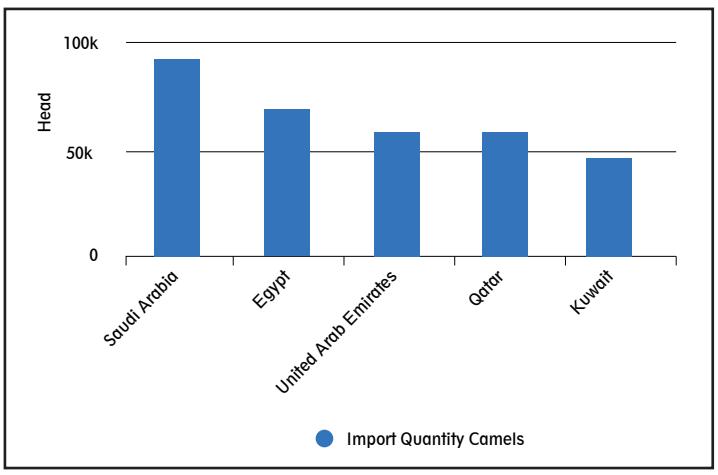


Figure 5: Top live camel importers 2018 - 2019 (FAOSTAT)

[5] https://www.bloomberg.com/news/articles/2020-11-06/shipping-camels-to-china-is-goal-of-sudan-s-140-million-port

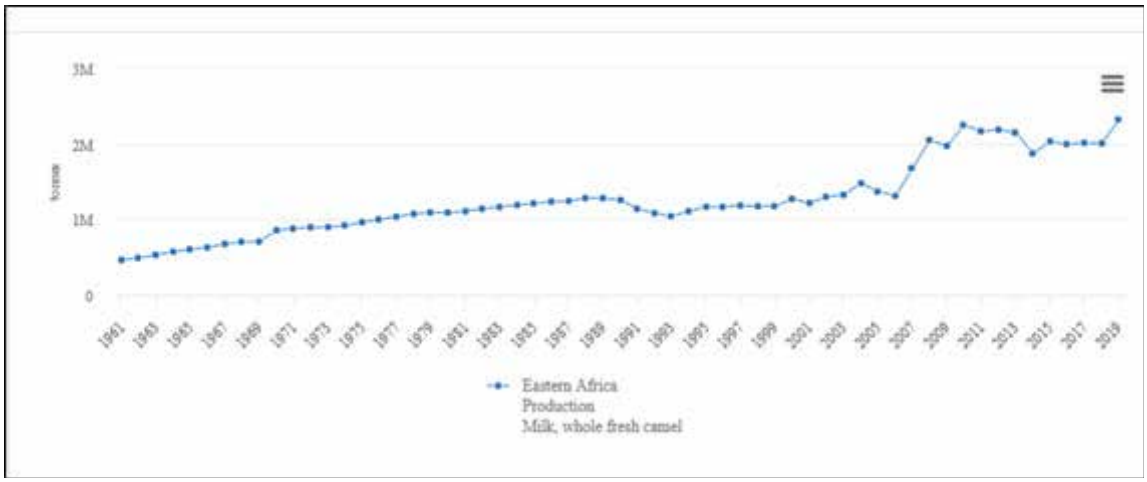


Figure 6: Camel Milk Production in Eastern Africa, 1961 - 2019 (FAOSTAT)

Throughout the region, there is strong demand for camel milk especially by Somali people who have a deep cultural connection to camels and their milk, and who reside not only in Somalia but also in adjoining countries. In urban areas, the milk is supplied mostly by networks of Somali women who act as retailers and agents between producers and customers. In Addis Ababa, small entrepreneurs who source the milk from Afar and Fentale camel herders supply the camel milk demand. This is a good example for the importance of informal markets driven by local entrepreneurial spirit. Projects financed and implemented by donors and aid agencies often fail because they underestimate the power and importance of informal markets.

In Kenya, a couple of modern camel dairies have been set up but are requiring outside investment to scale up. In 2014, USAID invested USD 350,000 into a large-scale camel dairy owned by a private entrepreneur in Jigjiga, but this suspended operations after having problems with milk supply as well as facing hygienic issues. In early 2021, Khelif Milk Processing Industry (KMPI) invested 70 million Br (USD 1.6 million), almost half it obtained as a loan from the state-owned Development Bank of Ethiopia (DBE) to install machinery and equipment at a plant in Fafen, 30Km from Jigjiga, that has the capacity to process 16,000 litres a day.

Other significant products include racing camels from Sudan that are exported to Saudi-Arabia, and camel urine which is bottled and sold in supermarkets in Sudan for cosmetic and therapeutic purposes. Camels continue to be used as beasts of burden and have also proven their value for the tourist industry.

A major threat to the continuation and expansion of camel husbandry is competition for land by farmers and industries, and the associated fragmentation of grazing areas. Keeping them on farms and in peri-urban settings distracts from their health and the quality of their products, according to both camel breeders and consumers.

[6] https://et.usembassy.gov/pr-11182014/

[7] https://addisfortune.news/local-investors-open-camel-milk-processing-plant/

Undiagnosed diseases are a major problem, as is lack of professional animal health care, so that camel keepers are often left to their own devices.

Communities with a long heritage of breeding camels have detailed knowledge about camel breeding and management. They select animals for a range of criteria and aim for a mixture of resilience and productivity in their herds. By means of traditional knowledge, they have created a diversity of distinct breeds, and there is no indication that they practice inbreeding, although there may be some unintended selection against high milk yields.

For communities who are new to camel breeding, such as the Samburu, Maasai and Karamajong there is a lack of extension facilities and it may be important to remedy this.

1.3. SWOT Analysis of IGAD Camel Sector

The following is an analysis of the strengths, weaknesses, opportunities and threats (SWOT) of the camel sector in the IGAD region. The SWOT analysis is a framework used to evaluate internal and external factors influencing and organization or system current and its potential (Ref: https://www.investopedia.com/terms/s/swot.asp)

Strengths

- Climate change resilience such as drought
- Camel milk centered cultures
- Huge body of traditional knowledge
- Largest population of camels in the region
- Entrepreneurial spirit by women milk sellers, traders and producers of high-quality products

Weaknesses

- Logistical challenges, especially for milk, but also for meat
- Lack of infrastructure (such as proper transport, loading facilities) and cold chains
- Problems of hygienic production
- Animal welfare issues with respect to slaughter and transport of animals
- Dependence on exports for meat animals
- Lack of data on population and milk including supply and demand for products
- Dairy sector policies and standards excludes camel milk and mainly oriented to cow milk. Cow dairy is the default model for government officials and donors

Opportunities

- Global interest in camel milk for its health enhancing qualities
- Strong demand for camel meat in Saudi-Arabia, Yemen, emerging in China
- Opportunities for tourism

- Expansion of income and livelihood opportunities for rural and remote communities and women
- Continued use in fossil fuel free transportation
- Use for orphanages and food relief
- Supporting resilience of small ruminants
- Growing media and policy interest in camel milk & products
- Regional Cities such as Nairobi can be used for information dissemination on camel; it is the regional UN and donor capital and also the regional and global media capital for Africa

Threats

- Land alienation, disappearance and fragmentation of grazing/browsing areas
- Removal of browsing Acacia and other trees for fuel/charcoal
- Blockage of migratory corridors
- Conflict with farmers and other land users during seasonal mobility
- Herding unattractive to young people and loss of traditional ecological knowledge
- Frequent emergence of Diseases of unknown etiology,
- Problems of milk hygiene aggravated by high temperatures, long distances and lack of infrastructure
- Poor institutional and infrastructure development to support camel dairy

1.4. The Process of Preparing the IGAD Strategy and Action Plans

The consultant team carried out the assignment in a number of steps that included literature review, preparing an inception report, identification of stakeholders and strategic actors in the IGAD region, conducting a series of consultations with the identified stakeholders, drafting the strategy, validating and finalizing the strategy and drafting of a generic resource mobilization proposal.

During the literature review, the existing literature was accessed through internet searches and requesting the consulted stakeholders to provide and point out sources of relevant and current data and documents. The findings from the literature review were drafted into an inception report, which was submitted for review and consensus building with IGAD and African Union Interafrican Bureau for Animal Resources (AU-IBAR) experts.

1.5. Stakeholders' Participation and Consultation Process

The stakeholders were identified by both consultants' own networks and knowledge in the region as well as by consulting the IGAD team. They were categorized into camel experts, camel breeders, processor companies (camel dairy, meat processors etc.), camel associations/groups, research institutions/researchers, Non-Governmental Organization NGOs) or Civil Society Organization (CSOs) working with camel keepers, camel traders, international/regional development organization, government departments/institutions (national and regional). At least one representative from each of the categories was targeted.

Consultation with the stakeholders was done virtually through one-on-one and focus group discussions using the pre-prepared question guide. In some cases, the interviews were recorded. The consultation focused on the management of camel-resources and key priorities in Djibouti, Ethiopia, Kenya, Somalia, Sudan. The information so generated formed the basis for drafting the strategy.

The draft strategy was then shared with the IGAD team for review and inputs followed by presentation in a validation workshop in which many of the stakeholders participated.

2. Regional Strategy

2.1. Vision

The IGAD countries are the recognized global leaders in camel husbandry and have developed exemplary value chain, for a diversity of products that satisfy both local and international quality standards. Camel milk is recognized as the region's Unique Selling Point (USP) and is a region typical product. The camel sector makes a major contribution to rural livelihoods and has adopted high standards of animal health and welfare.

2.2. Mission

The mission is to support IGAD countries' camel sector development, aligned with projected and emerging global priorities, in an equitable and climate resilient way so that it strengthens rural livelihoods. Enhancing healthy and high-quality camel products in an animal welfare friendly way.

2.3. Objectives

The IGAD Camel Resources Management Strategy has the following objectives:

- Enhance economic returns from camel herding for pastoral and agro-pastoral producers,
- Enhance contribution of camel in food security, climate resilience and drought preparedness of the IGAD region,
- Facilitate and enhance trade in camels and camel products between IGAD and the rest of the world,
- Ensure sustainable and resilient camel production/husbandry in the region,
- Catalyse development of new value chains and strengthen the existing ones,
- Support applied and problem-solving research that benefits producers and consumers.

3. Strategic Priorities

1. Camel herding, breeding and production
2. Camel health and welfare
3. Strengthening camel value chains and marketing
4. Camel advocacy; education and extension
5. Camel data, information, research and innovations

3.1. Camel Herding, Breeding and Production

The largest threat to the continued thriving and intended expansion of the camel sector in IGAD countries is the alienation of customary grazing areas, for instance for wildlife conservation, and depletion of their forage base due to competing interests, such as settlements, charcoal production, and many others. This scenario was referred to and was prioritized as a problem by almost all of the interviewees and mentioned for all IGAD countries. It is the most urgent issue that needs to be addressed to ensure the future viability of camel herding, but in an integrated way that does not proceed at the expense of other urgent needs, such as wildlife conservation and providing for energy needs of the growing population.

While there is a trend towards peri-urban dairying in some locations, notably in Somaliland, this has trade-offs with both camel health and milk quality. Keeping camels near towns and feeding them instead of keeping them in extensive systems undermines their nutritional status and the nutritional quality of the milk, according to both camel herders and veterinary experts . While in certain pockets, such as river valleys in Somalia and Ethiopia, water availability makes it possible to cultivate feed for camels , this is not the general situation and the strength of camels lies in being able to forage on drought resistant vegetation in arid and semi-arid areas.

The answer to this threat of camels losing their forage base, and of herders their livelihoods, is to develop a regional spatial plan that identifies and maps major camel grazing areas as well as migratory corridors and seeks to put them under legal protection to prevent their alienation and the squeezing out of camel pastoralists. Grazing associations, such as they have been developed in Sudan, and herding organizations as promoted in Chad and the Central African Republic provide a model that could be transferred to all the countries participating in this strategy.

In terms of camel breeding, the region owns a significant number of camel breeds developed by, and named after, different ethnic groups, such as Somali, Turkana, Bishareen, Rendille, etc. Indigenous camel breeding strategies are elaborate, which have resulted in breeds adapted to their respective eco-systems and reflecting usage priorities, such as for milk (Somali). The Rendille, Gabbra and Somalis use them for transport. Ranchers, safari operators and a few individual pastoralists use them for tourism; increasingly Kenyans use them as entertainment and riding at shows, birthdays etc.

There have been attempts to increase the performance of dairy camels by importing high yielding camels from Pakistan; improvements were observed across some rangeland areas, but very high performing camels are unlikely to thrive in the parts of the IGAD rangelands that are very arid. The first importation of camels was small-

[8] Interview with Tumal Orto (Kenya)

[9] Interview with Getachew Gebru (Ethiopia)

scale and has had limited benefits. Importing more carefully selected high-yielding Pakistan camels, and selection of local high yielding individuals or camels showing the locally desired traits, may provide benefits that are more lasting. Establishing studbooks for camels has been suggested for Kenya and may bring rewards eventually.

Often there are allegations that pastoralists practice inbreeding or have harmful practices, such as restricting use of colostrum; however, these are unlikely to be justified and traditional practices should be studied in more detail before condemning them. Previous studies have shown that pastoralists' breeding goals are geared towards strengthening resilience against shocks. In an effort to be prepared for all eventualities, herders seek to establish and own holdings that are genetically diverse instead of uniform. They conceive their herds as being composed of maternal lines with different characteristics and seek to conserve this diversity instead of focusing only on the most productive animals, as these may be the ones to also be the most vulnerable during droughts . This approach to breeding has many merits as a way of coping with the increasing variability brought on by climate change and deserve better understanding.

Priority Actions

Herding

- Identify the most important and crucial camel grazing/browsing territories as well as migratory corridors of the region in a bottom-up and participatory process to map them out and protect them under national law against alienation and subversion for other purposes as community owned land. The legal approach would differ from country to country; in Kenya the devolution of government and administrative responsibilities to district/ county level provides an important entry-point.
- Analyse the experience with grazing associations in Sudan and herders' associations in Chad and the Central African Republic and pilot the approach in IGAD countries.
- Enhance the capacity of herders in grazing resource assessment, governance (for example through pastoralist associations and unions) and management as well as conflict resolution.

Breeding

- Encourage and support participatory research and the documentation of community based camel breeding strategies, including community priorities and perspectives, as well as resilience strategies. This could be in the form of Community Protocols as mandated by the UN-Convention on

[10] Hülsebusch, Christian G.; Kaufmann, B., Adams, M. 2002. Camel breeds and breeding in Northern Kenya. KARI, Nairobi.
[11] Example from Darfur – Per Com with Piers Simpkin

Biological Diversity (CBD) and its Nagoya Protocol for Accessing Genetic Resources and the Equitable Sharing of Benefits arising of their Utilization.

- Identify, document and disseminate good practices in community-based camel breeding with the aim of supporting camel keepers' own breeding priorities and goals.
- Encourage record keeping at the level of camel breeders with regard to growth, milk, and feed and water consumption.
- Support countries to establish camel breeding and multiplication centres in order to enhance camel production and productivity of small holders

3.2. Camel Health and Welfare

Camel diseases are a major constraint to camel production and for the livelihoods of their herders. The two most important camel diseases are trypanosomiasis and mange, both of which are challenging to deal with at herd level. In addition, Middle Eastern Respiratory Syndrome MERS) and Rift Valley Fever (RVF) are causes for concern, as is the possible presence of tuberculosis and brucellosis, especially when camel milk is marketed . In the past, outbreaks of undiagnosed 'mystery diseases' have been reported including death of large number of camels . This appears to be a recurrent issue. Camel diseases are a major factor undermining economic returns, food security and livelihoods, so efforts to improve diagnosis and treatment are of high priority. Priority diseases for diagnosis and control include unknown camel disease (UCD) , trypanosomiasis and mange.

Access to animal health services remains a major problem especially with some member countries either privatizing or decentralizing animal health provision without adequate resource allocation. A number of countries have experimented with a community-based extension services with varying success.

Priority Actions

1. Establish and capacitate a Regional Camel Disease Diagnostic and Reference Centre
2. Improve disease surveillance and service delivery, possibly through Community-Based Animal Health Workers or Disease Reporters,
3. Document and disseminate of ethno-veterinary knowledge and practices.
4. Support countries to invest in decentralized animal health service with greater emphasis on camel owners' disease reporting and transmission of advisory messages.
5. Investigate the etiology of generally high infant mortality of camels.

[12] Khalafalla A.I. (2017) Emerging Infectious Diseases in Camelids. In: Bayry J. (eds) Emerging and Re-emerging Infectious Diseases of Livestock. Springer, Cham. https://doi.org/10.1007/978-3-319-47426-7-20

[13] https://www.aa.com.tr/en/africa/dozens-of-camels-fall-prey-to-mystery-ailment-in-kenya/1866859

[14] In 2021,there were reports of an unknown camel disease in Oromo and Somali region of Ethiopia which was suspected to have a link to infections in humans according to World Health Organization.

Animal welfare is a significant issue, which is becoming increasingly prominent, especially in the minds of consumers in Western societies, and has led to a global backlash in the form of vegan and vegetarian food preferences. Since camels in the IGAD region are largely kept in mobile systems, there are few animal welfare issues at that point, but they do arise when camels have to be transported over long distances, by walking, or in trucks, trains and ships, and when they have to spend weeks in quarantine. The virtual absence of local slaughterhouses should be remedied to decrease the need for transportation over long distances.

For the sustainability of the export market, it is urgent to ensure that camels are treated well throughout their lives – including good husbandry, transportation to market and slaughter. It is important to make the necessary investments such as better lorries designed for camels and training of handlers in managing camels, as well as the development of camel welfare standards, taking OIE standards on animal welfare as example - which were first published in the Terrestrial Code in 2004 and in the Aquatic Code in 2008, respectively

Priority Actions

- Work with animal welfare experts, camel breeders and processors to develop forward looking camel welfare standards and establish a system for monitoring them.
- Invest in local slaughterhouses equipped with humane slaughtering facilities.
- Investigate current conditions of long-distance transportation in trucks, trains and the vessels carrying camels to the Arabian Peninsula and systematically set about to improve them.
- Ensure adequate provision of feed and water in quarantine facilities.
- Educate herders to abstain from painful traditional practices such as camel nose pegs and rectum twitching.

3.3. Camel Value Chain Development for Food Security and Resilience

Camels are vital for the region's food security and resilience, especially in the regularly occurring droughts, which affect camels much less than other types of livestock. However, this function depends on continued access of camel pastoralists to their customary grazing areas and water, which cannot be taken for granted. With increased frequency of droughts, donors and development agencies are often called upon to provide emergency food items to save lives. Camel milk is very high in iron and Vitamin C, which is known to strengthen the immune system and therefore constitutes an ideal nutritional supplement for children as well as for pregnant and lactating women. Relief and donor agencies should be encouraged to provide it as a source of protein for malnourished children and undernourished women. Instead of

[15] https://www.oie.int/en/what-we-do/animal-health-and-welfare/animal-welfare/development-of-animal-welfare-standards /

distributing imported food aid, they could invest in setting up a network of facilities where camel milk is processed into products with longer shelf lives, such as milk powder, condensed milk, toffees, etc. In this way, excess milk that is available in times of plenty could be absorbed and stored for times of need. This could become an important source of income for camel herders and prevent stunting and other consequences of malnourishment.

The role of the camel as a tool enhancing resilience for pastoralists should also be supported by taking some strategic steps to encourage innovative practices by pastoralists such as using milk of their camels to feed their small ruminants as emergency supplementation, which is being practiced by some camel herders in Northern Kenya .

Priority Actions

1. Inspire and encourage national governments, private sector and donor agencies to invest in processing facilities that increase the shelf life of camel milk to manage fluctuating camel milk availability between surplus and deficiency and combine drought relief and humanitarian aid with income generation for pastoralists.
2. Document and conduct further research on innovative use of camels by pastoralists for their own resilience.

Apart from being crucial at subsistence level, camels are also a significant source of income which can be further expanded. Historically, the camel was important as a means of transportation, but this function is becoming increasingly redundant, despite being fossil fuel free, although the use in entertainment and as a riding animal is increasing. Currently, the main value chains are related to milk, meat and live animals.

Camels for export are walked and trucked from Kenya, Ethiopia and Sudan to ports in Djibouti and in Berbera. In Somaliland, camel milk is sourced from Ethiopia. Many of these value chains have been developed by entrepreneurial Somali women who act as agents in the thriving camel dairy sector and some of whom also are key actors in the international meat trade. Entrepreneurs who seek to build up modern value chains for high quality dairy products for an upscale market complement them.

Most of the camel milk is traded and consumed raw with no or very limited processing due to the unavailability of infrastructure. The value chain involves small-scale traders (mostly women) acting as conduits between producers, bulking agents, retailers and consumers. In Kenya, Somalia and Ethiopia, women milk traders collect milk from villages; sell to bulkers in urban centers who in turn sell it to consumers or retailers.

[16] Interview with Tumal Orto – Camel herder in Northern Kenya

Recently there is an emergence of formal milk processors and marketers especially in Kenya (Nanyuki) and Ethiopia (Jigjiga and Afar) who collect milk from pastoralists or have their own dairy units, pasteurize and package branded camel milk in a limited number of high-end supermarkets and maintain cold storage and distribution. Others in Somaliland and Ethiopia collect, boil, and avail the milk directly to retailers and consumers

Some of these traders started privately without external funding while others have received support from international development agencies with the latter showing little success. An example of those that received international support but failed is the large investment by the United States Agency for International Development USAID in Jigjiga, the venture that closed down, because camels seasonally migrated away and because of problems in the hygienic quality of the products. There have also been attempts by development projects for example in Somaliland and Kenya to formalize the predominantly informal milk market by investing in value addition infrastructure and addressing milk hygiene problems with limited success.

The majority of live camel trade in the region is for export to Middle East Countries, including Saudi Arabia, United Arab Emirates (UAE), Yemen, and Oman. A large proportion of camels sourced from IGAD member countries passes through Djibouti port and Berbera Port, to where it transported by truck or by railway. Djibouti port provides quarantine devices. Camels are also shipped directly on Yemenite boats without using the quarantine or veterinary services in Djibouti. The animal welfare situation on the boats is a cause for concern (Tobias Feldt, pers. comm). The camel meat trade is especially important for Somalia and camels are shipped out from its ports in Mogadishu, Bosaso and Berbera. In Sudan, male camels are regularly driven on hoof to meat markets in Egypt and Libya, while Lamu port in Kenya is also planned to be used for the export of camels and other livestock. Camel meat is traded and consumed locally but few data are available to measure the extent of this. The live camel trade is based on long-standing trust and kinship relationships and only insufficiently captured by official data .

Box 2: Unique taste of Somali camel meat

PETALING JAYA: Malaysians may get to savour the flavour of camel meat soon, now that Somalia, home to a third of the world's camels, is looking to export the live animals to Malaysia.

In an article on Bloomberg, Mohamed Omar, director-general of the Ministry of Livestock, said the traditional "organic" methods used by Somali camel herders gave the meat "a unique taste", a selling proposition the ministry was hoping to zero-in on when marketing the meat to our shores.

Source: https://www.freemalaysiatoday.com/category/nation/2016/11/23/somalia-to-export-live-camels-to-msia-soon (2016).

[17] Alary, V, and B. Faye. 2016. The camel chains in East Africa- Importance of gaps between the data and the apparent reality. Journal of Camelid Science 2016, 9: 1–22. https://agritrop.cirad.fr/582767/1/FayealaryfayeJCS.pdf

Sudan is an important source of racing camels, which are bred by the Rashaida tribe and exported, from there to the UAE and Saudi Arabia. Some activities around camel racing are also taking place in Kenya, but have not led to export opportunities.

Box 3: Export of racing camels from Sudan
Buyers from the United Arab Emirates buy every year 100 to 300 young camels from the small village of Abu Talha. Some sell for as much as $80,000. Sudan's exports more than tripled between 2010 and 2013 to $670 million, when the last World Bank data was available.

Source: https://borgenproject.org/camel-trade/

There is also limited data of other camel products in the region such as tourism, skins, and an array of traditional products such as bone trinkets, tallow (used in laundry soap), *nyirinyiri* (dried meat).
Other products mentioned by key informants:

- Camel urine is packaged and available in supermarkets in Sudan for use as medicine and beauty treatment.
- Camel safaris are popular in Kenya.
- Cosmetics, skin creams, and shampoos can be made with camel milk.
- Dried meat and sausages are virtually unexplored, although the camel ranch Ol Maisor in Kenya has experimented with this, and camel sausages are made in Isiolo.
- Camel milk can be processed into gourmet cheeses for upscale markets but also into products for schoolchildren, such as condensed milk and toffees.

Finally, yet importantly, camels are still valued as transport animals in the Danakil, Somalia, Northern Kenya and elsewhere. Camel blood is a traditional source of nutrition during droughts when milk is no longer available.

Priority Actions

1. Invest in infrastructure to transport camels to ports, keeping in mind the need for high standards camel welfare.
2. Facilitate Public-Private-Producer Partnerships (PPPPs) to establish value chains and enterprises.
3. Establish a competitive grant fund for start-ups developing camel value chains.
4. Support applied research and development of innovative camel products.
5. Build the capacity of self-initiated informal milk value chains for hygienic production and marketing of milk as well as small-scale value addition focusing on women. The capacity building should include business and entrepreneurship skills for milk producers and sellers and support to cold chain infrastructure.

3.4. Camel Advocacy and Education

The value of the camel is still underestimated; donors, mainstream scientists and bureaucrats regard is as a marginal kind of livestock, while for media it is an

exoticism. In reality, the camel is central to the economy and resilience of the IGAD region and will gain even more significance as global warming intensifies. In these circles, it is key to raise awareness has to be raised about the benefits of camels to adapt to climate change and to reduce GHG emissions and about the nutritional qualities of its milk and its status as a major export item. To ensure decision makers and media better understand its centrality to the region's development challenge, it is essential to invest in producing materials that showcase the qualities and advantages of camels in times of global warming and as a region-specific asset. At local and national levels, awareness among non-camel keepers and non-camel product consumers can be raised through such events like livestock trade shows as well as by a broader advocacy and media awareness raising and positioning campaign.

For any advocacy, awareness raising or lobbying to be successful, it will be essential to first get agreement and understanding of the priorities, objectives and overall messages shared between camel associations, camel milk producers, cooperatives and experts, all of whom may have different views or priorities. This initial brainstorming and hammering out the top three priorities is key to any campaign or interest group, particularly at the start, to get everyone on the same page. This is what the cow dairy lobby does on a regular basis, to calibrate consumer and producer understanding and interests.

Priority Actions

1. Launch a camel milk campaign by engaging a professional communication expert or agency to work with country level camel advocacy forums where they exist (such as the Kenya Camel Association and the Ethiopian Camel Forum), the camel milk producers and experts to prioritize objectives and messages. Then package and disseminate appropriate messages to policy makers, donors, human and veterinary doctors and the public about the benefits of camels and camel milk and about what is needed to lessen waste and to improve access to fresh, healthy camel milk and products.
2. Advocate and lobby member countries to formulate and implement harmonized policies and programmes that specifically support the camel resource sector. The policies should be producer and grass roots driven to ensure that they address the needs at this level. They should support investment in economically and environmentally viable production systems.
3. Link the Regional Camel Resource Management Strategy to the One Health Agenda that is a multi-sectoral, and transdisciplinary approach aimed at achieving optimal health outcomes by recognizing the interconnection between people, animals, plants, and their shared environment.
4. Raise consumer awareness about the benefits of camel products, including through the inclusion of camel and camel products in the normal trade shows.
5. Strengthen existing camel related platforms and support the development of new ones for disseminating best practices and exchanging information.

6. Ensure that training of animal scientists and related professions includes information about camels in the curriculum.
7. Make use of new communication strategies to attract youth to engage in camel based enterprises.

3.5. Camel Research and Extension

Already universities in the region are conducting a significant amount of camel related research. However, not much of it is of applied value or contributes to solving the problems as experienced by camel herders or by processors. A bottom-up process needs to be developed to ensure that research needs of all value chain actors are addressed and the results fed back to the community. Notably, the International Livestock Research Institute (ILRI) seems to have no camel specific projects, which is a situation that must change.

Priority Actions

1. Identify and establish a center of excellence for camel research on different thematic areas hosted in different countries of the region.
2. Identify research needs in a bottom-up process that involves both herders and value chain actors, as well as other stakeholders.
3. Invest in researching systems and approaches that make traditional rural camel production competitive, including technological innovations for decentralized processing of camel products.
4. Support and improve research-extension (herders) linkage at national levels
5. Advance research on key priorities areas 1) Documentation of traditional knowledge, 2) identification the various camel genotype, 3) Developing camel data bank in the region such as population, milk and meat production and other by products, 4) Milk component composition in free range versus peri-urban camel keeping.

4. Action Plan

The action plan organizes the priority actions into five Strategic Priority Areas (SPAs). It likely that because of the wide scope of the SPAs, different funding partners will need to be approached for financial support towards implementation of the strategy. Donor conference should be organized to gauge interest and develop a coordinated approach to funding and implementing the strategic priority actions.

In this context it is opportune that the United Nations (UN) have designated 2024 as International Year of Camelids, noting that camels are an important livelihood for millions of poor families that live in some of the most hostile ecosystems of the earth. It is also helpful that an International Year of Rangelands and Pastoralism (IYRP) envisioned for 2026 is declared by the UN General Assembly. This focus on both camels and rangelands at the highest level should motivate international agencies to adopt and own IGAD's Camel Resources Management Strategy.

The timeframe for the various actions to be implemented is a minimum of ten years, divided into two five year periods.

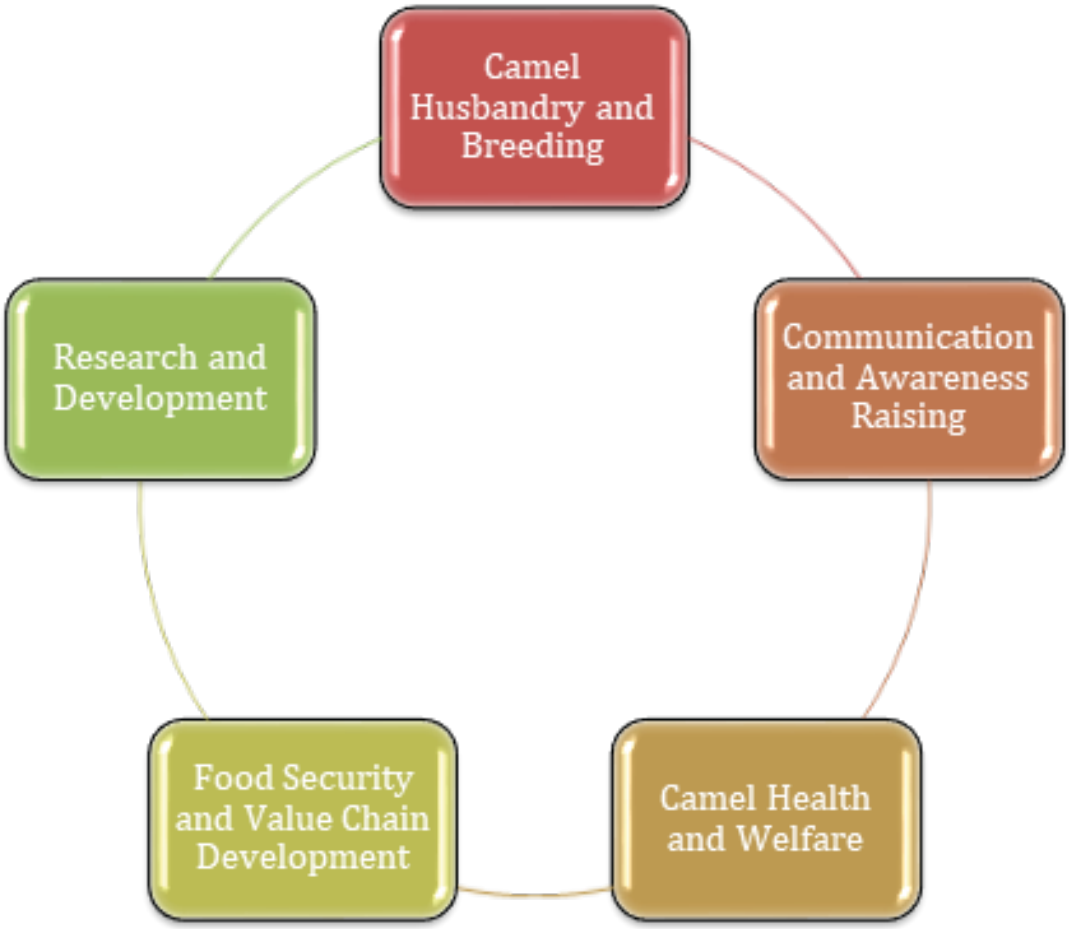


Figure 7: The Five Strategic Priority Areas

4.1. Strategic Priority Area 1: Camel Herding, Breeding and Production

The most urgent and a very challenging part of the strategy is to secure the customary camel grazing areas and migration corridors to ensure that camel breeders continue to invest into this livelihood option. Fortunately, it ties well into the upcoming IYRP for which it has the potential to become a Flagship Project. Its funding requirements would be reasonable, so it is strongly suggested to absolutely prioritize this SAP.
Its two activity areas include:

- Mapping the most important and crucial camel grazing areas as well as migratory corridors of the region in a bottom-up and participatory process, tagging them as community owned/conserved areas with the aim of eventually protecting them under national law against alienation and subversion for other purposes as community owned land.

- Encouraging and supporting participatory research and documentation of traditional knowledge and community camel breeding and management strategies to better understand community priorities and perspectives. This could be in the form of Community Protocols as mandated by the United Nation Convention of Biological Diversity (UN-CBD) and its Nagoya Protocol for Accessing Genetic Resources and the Equitable Sharing of Benefits arising of their Utilization.

4.2. Strategic Priority Area 2: Communication and Awareness Raising about the Role and Value of the Camel during climate change and the importance for the IGAD region

To put the IGAD Camel Resource Management Strategy into action and to mobilize the necessary funding resources, it would be wise to immediately invest in communication and media support, as well as in materials such as real, inspiring stories in the form of brochures, videos and expert and consumer testimonies. This will make funders and the public at large aware of the enormous significance of the camel in the future and of the IGAD region's leadership in the camel sector.

- Engage a communication expert or agency to package and disseminate appropriate messages to policy makers, donors, doctors and the public about the benefits of camels and camel milk.
- Link the Regional Camel Resource Management Strategy to the One Health Agenda that is a global development priority and understands the connections between healthy lands, animals and people.
- Support the formation of camel development and advocacy forums at different levels from professionals to producers/keepers.

4.3. Strategic Priority Area 3: Ensure regional camel health and welfare to the highest standards

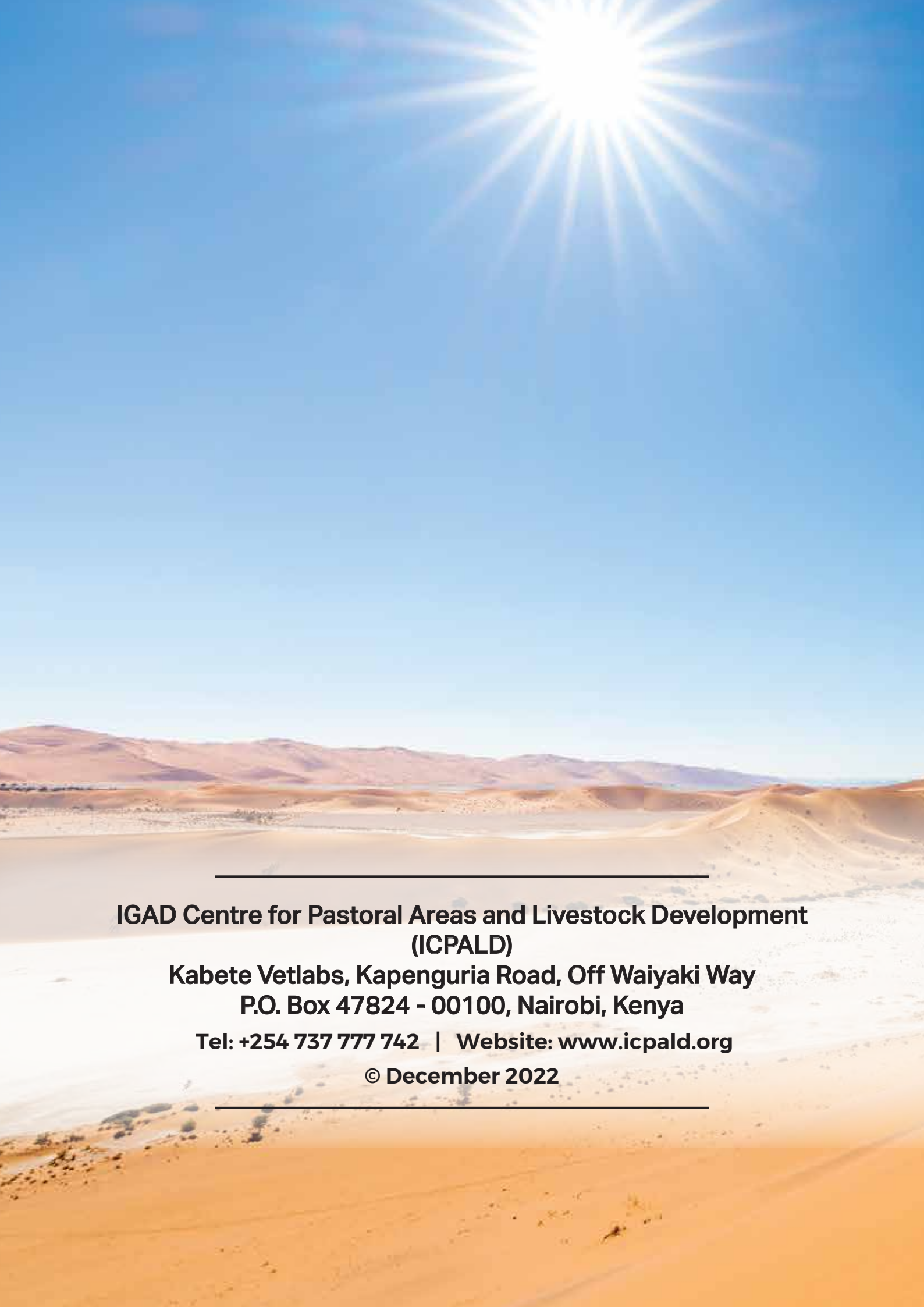
- The establishment of a Regional Camel Disease Diagnostic Centre and Reference Lab is in order.
- In addition, there must be a broad effort to improve service delivery, possibly through Community Based Animal Health Workers/ and documentation/ dissemination of ethno-veterinary knowledge and practices.
- Work with animal welfare experts, camel breeders and processors to develop forward looking camel welfare standards, focusing especially on long distance transportation in lorries as well as local slaughterhouses.

4.4. Strategic Priority Area 4: Invest in food security and fair and equitable value chains to produce high quality products

- Support for Public-Private Partnerships to combine entrepreneurial spirit with public financing.
- Investment in decentralized infrastructure for processing and storage of camel milk to balance out seasonal abundance and lack.
- Invest in capacity building especially of women in the informal camel milk trade.
- Establish a separate marketing board/export facilitating agency for camel milk and meat/live animals.
- Inspire and encourage donor agencies to invest in the formation of producer associations and in processing facilities that increase the shelf life of camel milk to manage fluctuating camel milk availability between surplus and deficiency and combine drought relief and humanitarian aid with income generation for pastoralists.'
- Document and encourage innovative use of camels by pastoralists for their own resilience. For instance, some herders feed camel milk to their sheep and goats during droughts.

4.5. Strategic Priority Area 5: Building cross-sectoral institutions for establishing camel products as IGAD countries' USP and empowering producers

- A regional centre of excellence for Camel Research, in combination with a regional camel disease and reference centre, should be established, possibly in Jigjiga (Ethiopia) where there are already initiatives in this direction.
- The organisation of the different camel herders' groups must be strengthened, so that there can be a bottom-up monitoring mechanism for the success of the interventions.



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