

CAMEL VALUE ADDITION

A TOOL FOR SUSTAINABLE RURAL DEVELOPMENT IN RAJASTHAN



A REPORT BY

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FEBRUARY, 2010



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SUMMARY OF SALIENT POINTS






-  The Camel has enormous but untapped potential to provide primary and secondary livelihoods in Rajasthan's desert areas through **development and value addition of a range of up-market products**, ranging from milk and milk products to wool, leather and dung. Processing of these products could provide income especially for women from isolated and marginal communities.
-  Availing of these opportunities requires investment in processing infrastructure as well as in design, marketing and advertising. A ***Camel Development Board*** should be instituted.
-  The camel population is suffering from drastic decline, mainly due to shrinking of grazing areas. Strong support measures need to be implemented to reverse this trend. These include securing of camel grazing areas (***camel sanctuaries***), prevention of camel theft (for the meat market) and accidents, as well as systematic camel health care.
-  The only district in which camel numbers increased during the last census period was Jaisalmer. This may be linked to the efforts of the on-going project of LPPS to provide camel breeders with new economic perspectives, making low cost animal health care available and pursuing thieves.
-  Similar measures should therefore be implemented in other parts of Rajasthan as well.

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INTRODUCTION

The camel is symbolic for Rajasthan and is an inextricable part of the identity of this desert state. Historically, this animal was essential for the development of the Thar Desert. Without the camel, settlement, transportation, trade and communication would not have been possible. The role of the camel for the rural population is expressed in the local proverb “Marry me into a village with many camels”. The rulers of the desert kingdoms all maintained camel mounted armies. Without camels, Jaisalmer could never have developed as a trade centre, and its famous architecture would not be there.

The Rajasthan Tourism Department has a camel as its logo and for the Incredible India campaign romantic images of camels with their keepers among sand dunes were frequently deployed. The Rajasthan Tourism Department also organizes a Camel Festival and various camel related shows – camel races, camel dancing, camel polo - define the programmes of the Desert Festival in Jaisalmer as well as the Marwar Festival in Jodhpur. The National Research Centre on Camel in Bikaner prides itself as a major tourist destination.

In stark contrast to the frequent use of camel images for branding Rajasthan and India as exotic tourist destinations is the actual situation of both the camel and its traditional keepers and breeders. The camel as part of the local dryland economy and livestock production has been entirely ignored and neglected by state agencies and received no support or public investment. As a consequence, the camel population of Rajasthan has experienced a drastic decline over the last couple of decades. A large number of female camels are sold for slaughter not only from the Pushkar Fair but also from other livestock fairs, due to high meat

prices. Unless concerted action is taken, the camel will soon become the dinosaur of Rajasthan, observable only in zoos and mentioned in text books.

Population decline

According to official Livestock Census Data, there were 668,000 camels in 1997 and only 498,000 camels in 2003, amounting to a 24% decrease in five years. By 2008, the number of camels had further decreased to 430426, a further 13.5% decrease. **The only district in which camel numbers increased during the period from 2003-2008 was Jaisalmer. Possibly this can be linked to the efforts of the LPP project to provide camel breeders with new economic perspectives and with making low cost animal health treatment available.**

This situation is a tragedy for the animal, for its keepers, for the environment, for the identity and economy of Rajasthan and, ultimately, also for humanity at large. Disappearance of the camel from rural life is on a par with the loss of the tiger and requires an equally strong response from the government and concerned authorities.

Equally tragic is the lost opportunity for creating rural incomes and enhancing the attraction of Rajasthan as a tourist destination!



THE UNIQUE SELLING POINTS OF THE CAMEL

The camel has enormous potential for making sustainable use of drylands and carries a great promise for revitalizing the rural economy of the Thar Desert.

1. The camel is independent of groundwater resources. This is of enormous significance with irrigation agriculture reaching its limits and the fight for water from Indira Gandhi Canal set to intensify.
2. The camel can utilize desert vegetation in a sustainable manner, an Sustainable Use of Desert Vegetation
3. The camel is a silent and non-polluting source of alternative non-fossil energy.
4. Rajasthan is home to one of the most elaborate and intricate camel cultures of the world that has become world-famous.
5. The camel has the potential for generating a variety of products that appeal to modern consumers, especially those that are health and environment conscious. Arab countries are already capitalizing on this, for instance by generating camel milk products on an industrial scale and marketing them as health food.

THE ECOLOGY OF THE CAMEL IN THE THAR DESERT

Camels can utilize Rajasthan's native trees and shrubs, such as khejri (*Prosopis cineraria*), jal (*Salvadora oleoides*), mithi jal (*Salvadora persica*), babul (*Acacia arabica*), kumtia (*Acacia senegal*), bor (*Zizyphus nummularia*), neem (*Azadirachta indica*), and many other plants. Because of their great height, camels can feed on trees up to about 2.5 m. The food intake of camels is low in relationship to their bodyweight. About 5-10 kg of dry matter is sufficient for them to perform a day's work, and camels are much more efficient than cows in converting vegetation into milk. While cattle require 9.1 kg of dry matter to produce one liter of milk, camels need only 1.9kg to produce the same amount; they are thus almost five times more efficient.

Camels have the added advantage of being able to make use of vegetation with a high salt content that develops when soils become salinized in the wake of irrigation projects. This factor is of great significance to Rajasthan where water-logging is a great problem along the Indira Gandhi Canal.

Camels are primarily browsers, with shrubs and forbs composing about 90% of their diet. One third of their food intake must be from halophytes (salt-loving plants). The grazing behaviour of camels is ideally adapted to desert vegetation. Grazing by camels is regarded as exerting minimal pressure on the vegetation or even as stimulating plant growth. This is because camel herds disperse over huge areas and never eat up plants completely, but take only one or two bites before wandering to the next one. Their flat padded feet do not carve up the surface and therefore do not cause erosion.



ECONOMIC RESOURCE FOR DESERT COMMUNITIES

PRIMARY BENEFICIARIES

CAMEL BREEDERS

These are the people who keep large herds of female camels and make their living from selling the male off-spring. There are an estimated 4000-5000 camel breeders in Rajasthan. The vast majority of them resides in Western Rajasthan, incl. Barmer, Jaisalmer, Bikaner, Jodhpur, Pali and Udaipur districts. Except for Barmer and Jaisalmer districts, they belong to the Raika/Rebari caste.

CAMEL OWNING FARMERS

Many farmers keep one or two camels to transport water, harvested crops, or goods for the market. Camels as draught animals are especially popular around Bikaner, Churu, Ganganagar, i.e. the areas which are characterised by sandy soils. They are also popular in Haryana and Punjab and demand is said to have increased because of the hike in fuel prices. The number of farmers keeping camels for draught would be around 150,000.

CAMEL CART OWNERS IN URBAN AREAS

Camel carts can be found in Bikaner and Jaipur. There are no estimates about their numbers.

CAMEL SAFARI DRIVERS

Camel safari drivers are plying their trade especially around Jaisalmer (Sam, Khuri), but also in Bikaner and around Pushkar. They can estimated to number about 1000 head.

CAMEL MILK SELLERS

Camel milk is sold at various places in Rajasthan, including Udaipur, Chittorgarh, Alwar, Pali district and elsewhere. But only in Jaisalmer is it marketed as camel milk.

SECONDARY BENEFICIARIES

These include the people who do not own camels, but whose livelihood depends on processing of camel products. Potential examples are camel wool spinners and weavers, camel dung paper makers, camel leather processors, camel soap makers and many others.



NEW ECONOMIC OPPORTUNITIES

CAMEL MILK

Camels produce milk that is not only nutritious and tastes good, but also has therapeutic qualities. Containing ingredients that act as immune-system booster, it has been used traditionally in the treatment of Tuberculosis – in India and Central Asian countries. It also contains an insulin like substance that is not broken down in the stomach and immediately lowers the blood sugar level. It is therefore recommended by doctors for the treatment of Diabetes patients.



LPPS currently supplies fresh camel milk to more than 30 Diabetes patients in Jaisalmer who have been able to reduce their intake of other medicines.

Camel milk can be consumed by lactose intolerant people and has a positive effect on allergies, autism, and, according to some sources even cancer and AIDS.

Because of these qualities, we receive many requests for camel milk from all over India that we can not fulfil. People are also asking for camel milk powder to make it easier to ship.



One advantage of camel milk is that it has a very long shelf-life. According to research in Dubai – where camel milk is sold in supermarkets – camel milk that has been flash-heated to 72° C, remains fresh for up to ten days.

CAMEL MILK PRODUCTS

Camel milk does not process well into curd, cheese, or butter. But it is especially suitable for making good low-calorie ice cream. This ice cream which is marketed as “Desert Dessert” has already proven very popular with both Indian and foreign tourists at the Pushkar Fair, the Desert Festival, and in Jaisalmer. It contains only 2.5 per cent fat, compared to between six and nine per cent for standard ice creams.



Glimpses of camel products from other countries: Camelbert cheese from Mauretania, Camelicious flavoured milk from Dubai and a camel milk truck from Kenya



CAMEL WOOL

Indian camels produce an average of 0.6 kg of wool per year, according to scientific reports. Camel wool is traditionally harvested at the time of Holi, is separated by colour and fineness, then handspun by camel breeders men with a drop spindle. Some of the spun yarn, they process by themselves to fashion ropes (especially the ropes needed for handling and tying down the camels), tobacco pouches. But most of the wool is given to the Meghwal community on contract basis for weaving rugs and blankets. The wool is also used for stringing charpoys and earlier was made into jackets, but this practice has declined.

No marketing of camel wool items has ever taken place, nor have there ever been any attempts to develop new products that would be of interest to urban consumers. It was assumed that the wool of the one-humped camel was too coarse and too short to produce appealing products.

However, recent experiments with camel wool samples initiated by the project in Jaisalmer and conducted by MITAN Ltd. in Kullu have had exciting results. Scientific analysis of two samples indicates a great degree of variation in fibre thickness, and a significant proportion of high quality fine wool. One of the samples had an average thickness of 23 micron, but with the majority of fibres being in the 17-20 micron range, which is equivalent to Cashmere quality. The length of the fibre was 5.9 cm in this sample.

Sample 2 had an average fibre thickness of 26 micron and an average length of 5.4 cm.



The conclusion from these tests is that camel wool needs to be separated by fibre quality, with some of the fine wool being suitable for soft and high-quality garments, and the coarser section providing opportunities for manufacturing bags and carpets.

Judging from the marketing success of items crafted from coarse Deccani wool which have met large international demand, camel wool represents a significant rural employment opportunity, mainly from setting up processing units, but also a welcome additional source of income for the camel breeders.



Estimating an average wool yield of 0.6 kg per camel¹, a theoretical amount of about 15000 kg of camel wool is available in Jaisalmer district alone.



What needs to be done

There is a need for investment in research and experimentation on camel wool processing, developing innovative designs which are adapted from the traditional patterns, training master craftspeople and producing new products that appeal to both the domestic and international market.

¹ This figure is based on information provided by the Central Sheep and Wool Research Institute. It would need to be confirmed.

CAMEL DUNG PAPER: THE MOST PRECIOUS PAPER ON EARTH!

Regular paper is made from monocultures of trees grown in huge monocultures that are cut to make the pulp. Camels eat the leaves and pods of around 32 wild species, digest them, and the resultant dung can be used to produce a rough and unique type of paper that symbolifies biological diversity.

In 2008, the first camel dung paper was created in a collaborative effort between a Delhi-based handpaper designer and distributor, a handpaper unit in Jaipur and LPPS. Objects made from camel dung include greeting cards, diaries, and bookmarks. They have proven a major success with tourists at the Pushkar fair as well as at Delhi's Nature Bazaar.



The real marketing opportunity for camel dung paper would probably be for shopping bags and as packing material for environment conscious high-end luxury item producers and the product should be marketed accordingly.



CAMEL LEATHER

Objects made of camel leather are craved by tourists because of their exotic flair. However, the vast majority of items sold as camel leather is actually made of goat or buffalo leather. The reason for this is that the leather processing castes are no longer removing the skins from camels that have died and are leaving them to rot, for social reasons. Hence there is no skin collection from camels that die in Rajasthan.

Popular so-called camel leather products include bags and mochris, as well as diaries with camel leather covers that are for sale in Udaipur.

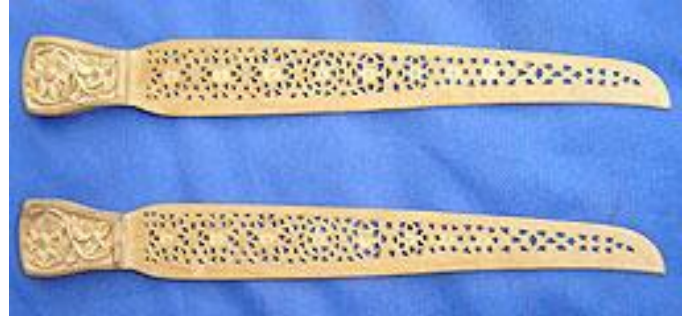
In order to make genuine camel leather items available, there would need to be a camel leather processing facility set up in Rajasthan, and a trademark for genuine camel leather would need to be developed.



CAMEL BONE

Camel bone is used as a substitute for ivory. It is made into elaborately carved objects that are marketed in outlets for tourists and the high-income sector, for instance shops in Jodhpur's Mehrangarh Fort. In Udaipur there are several artisan workshops that use camel bone for making inlaid furniture, mirrors, and other handicraft items. However these artisans apparently obtain their bone supply from Uttar Pradesh.

Another use of camel bone is as fertilizer (bone meal).



COSMETICS AND SOAPS FROM CAMEL MILK

In other countries, such as the US, Israel, and Australia, various skin creams as well as soaps based on camel milk are on the market. This is another option that could also be tried in Rajasthan.



THE LPPS CAMEL PROJECT

The purpose of the LPPS camel project is to support camel breeders in adapting their traditionally extremely extensive breeding system of keeping large herds under free-ranging conditions to the changed situation of reduced pasture areas, and enabling them to take advantage of newly emerging marketing opportunities. Up to now, camel breeders receive profits only from selling young camels and, because herd sizes have shrunk, incomes have also been reduced. The project is involved in the following activities:

- Educating and raising awareness of traditional camel breeding communities about new marketing options.
- Supporting camel breeders in innovating their production systems
- Establishing linkages with research institutes
- Liaising with government agencies for providing an appropriate policy framework

The response of the camel breeders in Jaisalmer district has enthusiastic, since they have felt totally neglected before and nobody has ever asked them about their needs. They eagerly avail themselves of the vet. medicines. They are learning about new marketing opportunities and are hoping that collecting facilities will be established, so that they can start delivering camel milk.



There is also great interest among tourists in the project and many of them come to our office in Jaisalmer to try camel milk and camel milk ice cream.



CONCLUSIONS

The camel is a desert resource with enormous economic potential for Rajasthan. However, in order for the potential to be accessed, certain state policies are necessary that create an enabling environment for camel breeders and for secondary industries. LPPS recommends the following actions to the government

RECOMMENDATIONS

- 1. The camel should be declared as the State Animal of Rajasthan. Since many people, especially in the west, are fascinated by the camel, this would also increase Rajasthan's attraction as a tourist destination. Such a move would certainly make international headlines.**
- 2. Protection and good maintenance of *orans* (sacred groves) is essential as nutritional foundation for camel herds. Furthermore, one or more camel sanctuaries should be established.**
- 3. The infrastructure for the collection and processing of camel milk should be put into place. A network of chilling tanks or plants would enable camel breeders to supply milk. In Jaisalmer district alone, there are 15,000 female camels which could produce at least as many litres of milk per day. Furthermore, camels provide milk just at the time when buffalo and cow milk is at its lowest.**
- 4. A credit and loan programme for small enterprises based on camel products (wool, leather, bones, camel cafes, etc.) should be established.**
- 5. A camel health care system is absolutely essential. So far, the animal husbandry system has not paid any attention to the camel. Considering that camels often stay in very remote areas, the best approach would be to establish a decentralised health care system. The role of vet. doctors would mainly be to train interested youths in treating the main camel diseases.**

APPENDIX: THREATS TO THE SURVIVAL OF THE CAMEL

If the camel is to develop its economic potential, then a number of threats need to be addressed. These include shrinking of grazing areas, absence of veterinary care, and the stigma associated with camel herding.

SHRINKING OF GRAZING

Shrinking of grazing is due to the following developments:

The **Indira-Gandhi Canal** has eliminated prime camel breeding areas. In some villages in Jaisalmer district that formerly were proverbially famous for providing the best camels in Rajasthan, such as Nachna and Mohangarh, not a single camel can now be found. The canal interferes with camel migration patterns; in addition farmers protect their harvest from roaming camels by shooting them with guns or subjecting them to a slow and painful death by tying their mouths shut or attaching thorny shrubs to their tails.

Tubewells and irrigation

Because of government support for green revolution agriculture through subsidised fertilizer and electricity, huge tracts of land are now irrigated by means of tubewells. Very often, the water supply lasts only for 6-7 years, after which the farmers shift to new areas and drill another tubewell to start the process anew. The fields are abandoned without any protective vegetation cover that leaves them prone to erosion; because of the destruction of trees and other perennial vegetation they have become useless for grazing and any other productive use.

Enclosures by Forest Department and Protected Areas

Under pressure to increase the acreage of forested land, the Forest Department fences in so-called "wastelands" to establish nurseries and in the process eliminated former grazing opportunities. The establishment of wildlife sanctuaries, for instance the Kumbalgarh Sanctuary also has had far reaching repercussions on camel-breeders.

Expansion of Gaushalas

Popular and government support for gaushalas has resulted in huge numbers of cattle overgrazing the surrounding areas and destroying drought adapted perennial vegetation, such as *jal*.

Military ranges

A substantial area of the desert is also used by the military as exercise and firing area, for instance the area south and north of the Pokaran-Jaisalmer highway which is an important camel-breeding zone.

DISEASE PROBLEMS

One reason why the camel numbers have decreased is the lack of veterinary care. Camels are affected mostly by two diseases: mange and trypanosomiasis. Both of these sicknesses can be treated, but the drugs are not easily available; in addition they are overpriced, and there are many fake medicines in the market.

LACK OF ATTRACTION FOR YOUNG PEOPLE

Although camel breeding can provide a reasonable income, it is still not a popular occupation with many young people and it is mostly illiterate young men who end up camel herding. This is because it is a very hard job and because it does not have a high status. This situation must change, if the camel is to have a future! Camel breeding must be made attractive for young people and obtain a more modern image. Camel shows and camel races could be one option.

ACKNOWLEDGMENTS

This report is based on research and experience gained during the on-going project “*Revitalizing Rajasthan’s camel husbandry for sustainable land use and poverty alleviation*” We would like to express our gratitude to the Ford Foundation and its programme coordinator, Dr. Vasant Saberwal, for financial and moral support for this project. We are also extremely grateful to the camel breeders from Jaisalmer district as well as from all over Rajasthan with whom working is a great pleasure and privilege. We also thank the other organisations that have encouraged us over the years to investigate the economic potential of local animal genetic resources; these include Misereor, the FAO, the HIVOS Oxfam Novib Dutch Biodiversity Fund, as well as Swedbio. Thanks are also due to LPPS staff that carried out the project even under most difficult conditions.

ABOUT LOKHIT PASHU-PALAK SANSTHAN (LPPS)

Lokhit Pashu-Palak Sansthan (LPPS) was founded in 1996 by Shri Hanwant Singh Rathore in response to requests for support by Raika camel breeders in Pali District. Initially, activities of LPPS focused on camel health services and support for camel milk marketing in Pali District, but then expanded to encompass services and advocacy for livestock keepers in general.

LPPS seeks to empower pastoralists through awareness raising, training, technical support and advocacy. The vision of LPPS is for Rajasthan’s pastoralists to be recognised as competent managers of the state’s arid lands and as stewards of its indigenous animal genetic resources. The LPPS mission is to support pastoralists’ endogenous development, to help them in their struggle for a supportive policy framework, and ensure the long-term continuity of mobile livestock keeping as an ecologically sustainable land-use option, as income opportunity for rural people, and as source of healthy food.

LPPS’s work on supporting camel breeders and highlighting their extensive traditional knowledge, especially with respect to ethnoveterinary-medicine was honoured by a Rolex Associate Award for Enterprise that was awarded to Ilse Köhler-Rollefson in 2002. Previously the project had been selected as one of ca. 300 “Projects around the World” represented at the EXPO 2000 in Hannover (Germany).

LPPS has established an international reputation for its work on community-based management of animal genetic resources. It has developed an approach for the participatory documentation of indigenous livestock breeds and promoted these concepts successfully through several international workshops and conferences that were funded by GTZ and FAO. Its method for participatory documentation of indigenous livestock breeds is now being disseminated globally by the FAO in all of its 180 member countries.

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