Vicuña use by Andean communities: a risk or an opportunity?[1]

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Abstract:

Vicuña use by Andean communities is an interesting model that typifies many features of international conservation policy and community management. The rationale for vicuña use is that as well as achieving international conservation objectives, it can enhance the economic well-being of native people in the Andean highlands and contribute to compensate the cost of conservation. In this study, vicuña management in Bolivia and Argentina provide two pertinent scenarios to assess the potential impact in achieving the twin objectives of conservation and local development set up in policies.

Vicuñas, *Vicugna vicugna* are wild South American camelids that live in high Andean region called Puna and Altiplano of Argentina, Bolivia, Chile, Ecuador and Perú. Their fleece has one of the finest fibres in the world, with current market prizes of about $USD 500 per kg. They have long been hunted to obtain the fibre, resulting in near extinction by the 1960s. Strict conservation regulations, through the Vicuña Convention and the ratification of the Convention on International Trade on Endangered Species of Plants and Animals (CITES) successfully helped in halting a decline to near-extinction, and rebuilding populations. The global programme of conservation was so successful that it resulted in a progressive shift in international policy from strict preservation (Appendix I of CITES) to sustainable use (Appendix II of CITES) allowing trade in fibre obtained from live-shorn target populations.

Each Andean country has developed a different plan for vicuña management. Two extreme cases are the systems developed in Bolivia and Argentina. Bolivia supports only community-based management of wild vicuña. Animals are captured, shorn and released again into the wild with the participation of local communities. Infrastructure and technical assistance is

provided by the State. On the other hand, Argentina promotes private management of vicuña in captivity in corrals by only a few local producers. Most of the investment is done by the local producers, who get technical assistance from a State run agricultural organization (INTA).

Our results suggest that until now, neither of the two systems has achieved the conservation nor local development goals. Local peoples´ negative attitude towards vicuñas has not been changed because of being involved in the projects. The immediate reasons for this are because management in captivity in Argentina does not provide an incentive towards conservation of vicuñas outside corrals, and the economic benefits, if any, are negligible. The lack of commercialisation of vicuña fibre in Bolivia does not provide incentives for conservation for local people either. Beyond these factors, privatisation in Argentina does not seem to have the capacity or scope to either conserve wild vicuña populations outside corrals, or to enhance local poor people's livelihoods. Instead, community management in Bolivia has the scope or potential to meet both objectives. However, past experiences from community management of vicuña in Peru suggest that the distribution of benefits among the communities will be a key factor in determining the success of the Bolivian experience.

Introduction

Sergio Loro Piana, the chairman of the Italian Cashmere Company, stated: *"*Vicuña *is the most beautiful, legal, and moral fur a woman can wear. It is a dream fibre* (World Tibet Network News 26/12/99)*." Now, the politically conscious fashion buyer who desires the very best in fashion wear, can also be sure of aiding the* Vicuña *and the impoverished communities of the high Andes which depend on the* Vicuña *as an important source of income*.

In this paper we contrast these romantic ideas with the reality of vicuna management in two Andean countries. Our findings contribute to explore the gap between the rhetoric and practice of community wildlife management.

Vicuña *Vicugna vicugna* is a wild South American camelid adapted to live in the high Andean region called Puna and Altiplano of Argentina, Bolivia, Chile, Peru and Ecuador above the 3,500 m a.s.l. (Franklin 1982). The species is one of the few success stories of international wildlife conservation: from nearly 10,000 animals left in the 1960s (Grimwood 1969), the population increased, in less than 30 years, to nearly 200,000 animals as a result of joint conservation efforts from international to national and local levels.

While citizens of industrialized countries are fascinated by vicuña fleece, one of the finest (approximately 12.5 microns) and most expensive fibres in the world with a price of USD $300-500 per kilo; there is a regional support that commercial use of fibre has a great potential to contribute to local development (FAO 1987; Sumar 1988).

This paper first describes the paradigm shift from strict protection to sustainable use, and secondly examines the extent and scope of two contrasting models for vicuña management: private management of vicuña in captivity in Argentina and common management of vicuña in the wild in Bolivia.

Vicuña conservation: from strict protection to shearing fibre

Before the European Conquest, vicuña fibre was sacred and only sheared for making special garments used exclusively by the Inca (Wheeler 1984). Vicuñas were captured, sheared and

released again into the wild using a technique known as *chaku* that required the organisation and participation of hundreds of people. These chaku were held every 3 to 5 years and required the organisation and participation of hundreds of people. The rules and regulations under the chaku prevented the overexploitation of the species by controlling its access and use (Rabinovich, *et al.*. 1991).

With the advent of European domination and the destruction of Inca rule that protected vicuña, this highly prized species became, within little more than a century, an open-access resource that was persecuted and hunted nearly to extinction to obtain the entire pelt to be processed and sold in Europe.

By the mid-20th century, as few as ten thousand vicuñas remained of a population estimated as two million when the Spanish arrived (Barker 1980). In order to find a solution to the open access conditions that leads to overexploitation as explained by (Hardin 1968) in his publication "The tragedy of the commons", the five countries with vicuña signed in 1969 an Agreement called the Convention of Vicuña (Convenio para la Conservación de la Vicuña) where they committed themselves to create rules and regulations in order to stop vicuña hunting activities. A network of protected areas for vicuña was created across the different countries and each government developed an Action Plan for their conservation (Torres 1992).

The conservation efforts by Andean countries were reinforced by international policies. The vicuña was listed as endangered under the U.S. Endangered Species Act in June 1970, whose effect was the prohibition of U.S. interstate or international commerce in vicuña products. All populations of vicuña were also included in the Appendix I of the Convention on International Trade on Endangered Species of Plants and Animals (CITES)[2] on July 1975 (the date of entry into force of the CITES Convention) which thereby prohibited all primarily commercial international trade in vicuña products.

In 1979, Ecuador, Argentina, Chile, Peru and Bolivia signed a new Convention for the Conservation and Management of the Vicuña, and Andean communities, who had been paying the cost for vicuña conservation, were named as the main beneficiaries of vicuña use.

The first article of this document states that "*The Signatory Governments agree that conservation of the* vicuña *provides an economic production alternative for the benefit of the Andean population and commit them to its gradual use under strict State control, applying such technical methods for the management of wildlife as the competent official authorities may determine".*

Government authorities had realised by then that the armed park-guard model was inadequate for providing extensive protection from poaching in an area of 20,500,000ha (Federal Register, 1999) such as the Puna, and that the communities on whose land the vicuña lived had to receive benefits if they were to have an interest in vicuña conservation. Considering that the Puna is a resource poor area with very few economic alternatives for local people, the possibility of generating income from the proceeds of the sale of vicuña fibre created great economic expectations among local people and National Governments. As in similar projects, the social development component was now expected to compensate for all the former failings of the pure preservation approach and offer pathways to community development.

In the 80s, the creation of a space for local people to participate in vicuña management and benefit from it was not an isolated phenomenon. In that decade there was a paradigm shift away from costly state-centred control towards approaches in which local people played a much more active role (Wells 1992). Over the years there was a strong consensus that local people must be involved in management decisions and that they must derive economic benefits. Community participation forms the core of this new paradigm (Chambers 1997). Participation of community members is assumed to enable communities to regain control over natural resources while at the same time strengthening their decision-making capabilities, advancing their involvement in project activities and improving their economic welfare (Wainwright and Wehrmeyer 1998).

Vicuña conservation projects follow the rational of Integrated Conservation and Development Projects (ICDP). These projects intend to change rural people's behaviour and practices (Gibson & Marks 1995) and "use" those people and their new behaviours as a vehicle for achieving the conservation goal (Metcalfe 1994). The approach is based on the assumption that communities will protect and conserve wildlife only if it is in their (economic) interest to

[2] CITES is an international agreement between Governments of 164 member nations. Its aim is to ensure that

do so (Western and Wright 1993). The philosophy of the ICDPs is revealed in the language used to describe them as "community based" programs employing "participatory methods" to simultaneously "empower" rural residents and "conserve" threatened species. The employment of such attractive keywords probably accounts for the enthusiasm with which international development agencies and conservation group support them (Barrett and Arcese 1995)

Two general outcomes are expected from these projects: preservation of the species and improved social and economic well being of the local communities.

A substantial difference between ICDPs and vicuña management projects is that with ICDPs, social concerns are tackled either by the promotion of alternative income generated activities that are not directly associated with the conservation goal (Richards, 1997), or by the provision of direct compensation, infrastructure or social services associated with an improved standard of living (e.g. Mehta & Kellert 1998, Infield & Namara 2001). In their extensive review of ICDPs Wells *et al.* (1992) concluded that projects had failed to meet their stated objectives because "the critical linkage between development and conservation and conservation is either missing or obscure".

In the case of vicuña, the linkage between conservation and local development is more straightforward. The rationale is that allowing commercial utilisation of fibre obtained from live-shorn vicuñas will encourage local participation and the development of local people's positive attitude towards vicuña conservation. This will result in a decrease in poaching (or a decrease in logistic support to poachers), a replacement of domestic livestock (e.g. sheep and cows) by vicuñas, an increase in tolerance for vicuñas in community lands, and support of conservation measures. This rationale is based on the assumption that commercial use of vicuña fibre is a viable economic option that can contribute sufficient benefits to remove the cost of conservation from local communities.

Over the past 30 years, while vicuña is increasing in numbers and its distribution is expanding, its conservation faces new challenge as it moves from strict preservation

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international trade in specimens of wild animals and plants does not threaten their survival.

(Appendix I of CITES) to sustainable use (Appendix II of CITES) by obtaining fibre from live shorn animals (Table 1).

Table 1: CITES transfer of Appendix at the different Conference of the Parties (COP) meetings.

CITES	Argentina	Bolivia	Chile	Peru	Ecuador
Conference implementation (1975)	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
COP6 (1987)			Certain populations Appendix II	Certain populations Appendix II	
COP9 (1994)				All Peruvian population Appendix II	
COP10 (1997)	Vicuñas from Jujuy Province and captive populations to Appendix II	Certain populations Appendix II			
COP12 (2002)	Vicuñas from Catamarca Province to Appendix II	All populations, Appendix II	Populations from I Region, Appendix II		

Note: Appendix I include species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilisation incompatible with their survival.

Different models for vicuña management have been adopted by Argentina, Bolivia, Chile and Peru. Vicuña management plans were originally designed for whole communities to capture and release small groups of vicuña with minimal interference on the natural populations (Torres 1992). However, in the last years there is a growing trend to exploit vicuñas in captivity by fencing wild vicuñas in different sized enclosures. Argentina and Bolivia provide the two most contrasting management alternatives.

Private management model: Vicuña management in captivity by individual producers

The legal framework for vicuña conservation in Argentina is represented by laws and regulations at international, national and provincial level. The National Law for the conservation of Wild Fauna declares wildlife *res nullius*. This law has a limited application since Argentina is a federal state and each province (political and administrative unit) controls the management of its own natural resources under their own wild fauna legislation. Therefore the five provinces in Argentina where vicuñas live (Jujuy, Salta, Catarmaca, La Rioja and San Juan) have an autonomous authority on vicuña conservation and management decisions. Problems in coordinating the Nation-State[4] and the provinces make it difficult to carry out a joint conservation programme and a census of vicuña at national level. In terms of trade, Argentina currently has a CITES Appendix II listing for wild populations in the province of Jujuy and Catamarca, and captive populations derived from the breeding programme of the INTA Experimental Station in the provinces coinciding with the species range

In 1989 Argentina initiated a process of privatisation of its main infrastructure services driven by the need to alleviate the fiscal burden imposed by public utilities and the need to get the private sector involved in financing the increasingly pressing expansion requirements of these sectors (Chisari *et al..,* 1999).Within a period of four years, public services such as telecommunication, oil, gas, electricity, water and sanitation, trains, subways and airlines were transferred from the state to private owners. Vicuña use followed the logic of privatisation and the management plans were designed to focus on the productivity of vicuñas

[4] The Secretary of Environment and Sustainable Development is the state regulator with its technical agency, the Wild Fauna and Flora Bureau

bred in captivity. The main investment in this system is done by the private sector, represented by local producers, and a big fibre exporting company that buys all the production and finances fencing materials.

Private management fits well with socio-economic conditions of the Argentina Puna, where in contrast with Bolivia or Peru, lands are owed (legally or *de facto*) by individual ranchers, economic production is done by family units (instead of communities), and human populations are very sparse (Direccion de Flora y Fauna Silvestre 1997).

Since 1994, 25 vicuña breeding ranches were established in the Provinces of Salta and Jujuy, by the National Institute of Agriculture and Cattle Technology (INTA) at their High Altitude Experimental Station (CEA) with the stated aims of improving the economic situation of low income local people and contributing towards vicuña conservation. The CEA INTA gives a small number of adult vicuñas (12-36) on loan to individual producers. Vicuñas come from a semi-captive herd, of approximately 1,500 individuals, run by the INTA, that originated from 16 individuals in 1965[5]. Mean herd composition consists on average of 12 castrated males, 2 reproductive males and 10 females. Producers have 7-12 years to return the same amount of adult vicuñas they were given in offspring to the CEA INTA station. Vicuñas are kept in small (average 10 hectares) fully fenced enclosures that are more solid? and costly than the fences used in the area to keep lamas, and that follow specifications given by the INTA. Producers have to make an investment to keep the ranch running[6].

If producers need financial assistance for buying materials for the fence[7], they can get a loan from a company that is the main local buyer of vicuña fiber, and the principal fibre exporter. The loan has to be payed back with at least 50% of the fibre production of every shearing and the producer has the option to sell or keep the rest of the production. However, producers can decide to pay back the loan with 100% of the production and take less time to retire the debt. The price paid for the fibre is fixed at the time of signing the contract, and originates from a public bidding organised yearly by the INTA. Given the lack of loans available in the area, 80% of producers opted to get the loan.

[5] As such, there is concern over the genetic consequences of inbreeding of animals from this population

[6] Costs to producers to keep vicuñas include: vicuña transportation from the INTA station to their ranches, labour for the installation of corrals (approx. 3 months, 5 people), vicuña yearly vaccinations, veterinary care, food supplementation and water provision (when these are naturally scarce) and a salary for a tender of livestock to take care of vicuñas and keep predators away (for producers don't live by the breeding ranch).

Vicuñas are sheared at two year intervals. At the time of the shearing, representatives from INTA, the Provincial and National Department of Renewable Natural Resources, and the wool buyer are present to supervise the operation. In the case of breeding ranches that are nearby, producers help each other to gather vicuñas (25 people are needed). This is also done with hired labour. Once vicuñas are shorn, producers sell the fiber obtained to the company to retire the debt on fencing materials and to get immediate payment. The wool at the time of shearing, is weighed, bagged, marked, sealed and recorded and stored in a special wharehouse untill commercial authorization (by the Department of Fauna) has been completed. Producers that did not get a loan or that payed back the loan, can choose (in theory) to make crafts (i.e. ponchos) or to sell the fibre to other companies[8].

Vicuña fibre from all breeding operations is auctioned yearly by the INTA. The company that finances the fences has been involved in buying vicuña fibre since the first auctions. The price of USD$ 250 for fibre and USD $ 70 for belly and underparts paid until 2001 was raised to USD $ 300, and USD $ 84,29 in 2002. However, this is far less than the price of vicuña wool paid in other countries.

Although the programme is said to be targeted to local low income small scale producers, very few of the ranch owners could be described as “low income” or "indigenous people". In most cases, they are influential people in their communities, either public servants, policemen, former military or even professionals.[9] . They frequently employ hired labour to tend the vicuña and their domestic livestock. It would be hard for low-income producers to participate in the corral scheme, since they need to own land and to be affluent enough to afford the risk of becoming involved in a long-term, and uncertain, investment.

Although the INTA considers that production of vicuña fiber under captive conditions benefits the individual ranchers and is growing in popularity (Rebuffi *et al.*., 2003), interviews to 70% of ranch owners revealed contradictory data (G. Lichtenstein, pers. Obs.) . Economic returns were far less than anticipated and inadequate to maintain local enthusiasm. An economic assessment of the viability of the captive management model revealed that the

[7] This fences are much more expensive than the ones used in the area for domestic livestock.
[8] In practice, producers do not want to risk their reliable client, and although they know that they could get more money from other companies. Only one breeder makes crafts and the rest sell raw fibre.

annual costs exceed revenues except in the most favourable scenario where there is no need for additional water supply or food supplement; ignoring the costs of capital, and of labour for tending the vicuña (McNeill & Lichtenstein, in press). Producers with 24 vicuñas need from 6 to 12 years to pay back the debt of the fencing material (Lichtenstein, 2004). Considering that producers have to give back the same number of vicuñas they were given to the INTA in a period of 7-12 years, the possibility of getting returns diminishes. Vicuña populations in breeding ranches are showing a very small and even negative growth rate due to low reproduction and high predation by foxes, pumas and feral dogs (Direccion de Flora y Fauna Silvestre 2002). If vicuña populations keep growing so slowly, and the conditions of return are not changed, producers might end working for 7 years just to pay back the fence and then they will have to give back the vicuñas to the INTA.

To date 37% of breeding ranches have been closed down either by the INTA or by the same producers who decided to return the vicuñas to the INTA due to lack of water and good pastures, high predation, high vicuña mortality and low fibre production. The ones that remained open seem to be those that 1) had low operating costs (no need to supplement with food or water or wages to tender of livestock); 2) were able to subsidize vicuña use by other economic activities; 3) were getting returns for activities other than selling vicuña fiber to the processing company (e.g. sold ponchos, ecoturism).

Common property model: Vicuña management in the wild by communities

The model for exploiting vicuñas in captivity (either in small or large enclosures) was taken up by Chile and Peru but was not considered as a viable management option in Bolivia. Vicuña in Bolivia lives in communal lands from *Aymara* and *Quechua* speaking communities and the management of vicuña by individual users through captive ranches was considered problematic. The main argument is that the implementation and maintenance of breeding ranches do not fit the territorial and social configuration of indigenous communities in Bolivia, characterised by land not divided by fences and different types of institutions for mutual aid, reciprocity and collective work (e.g. ayni) where people participate by providing resources, for example labour, in return for food, cash or other materials (Albó 2002).

[9] G. Lichtenstein pers. Observation.

In 1994, Bolivia started a process of decentralisation of government under the Law of Popular Participation emphasising the need to give more rights and responsibilities to local communities. Donors together with NGOs were critical in financing the development and facilitation of this devolution of authority and management and a wide range of community-based projects emerged (Bebbington and Bebbington 2001). Under this new socio-political interests, the common property model for management of vicuña populations in the wild was adopted by the Vicuña National legislation as the best strategy to link conservation of vicuña populations in the wild with the participation of local communities (DNCB 1997).

Vicuña in Bolivia is State property and under the vicuña national regulation the State grants to local communities the custodianship of those wild vicuña populations living in their land. The unit of custodianship and management is the communal management area. The assumption is that communal management areas designed by communities themselves will fit their territorial and social organisation and facilitate collective participation in vicuña custodianship and shearing activities. In 1997 the Bolivian government formulated the National Regulation for Vicuña Conservation and Management to provide the national legal framework that would enable shearing activities in those areas where vicuñas were downlisted by CITES[10].

Under the new vicuña national regulation communities have the exclusive usufruct rights to benefit from fibre shorn from live vicuñas. However, from 1997-2002, vicuña capture and shearing activities have been happening on an experimental basis with no commercialisation of fibre. Under the lack of economic benefits[11] from the shearing programme the supportive role of government has been fundamental to maintain the participation of communities. Technical, logistic and financial support was invested by the State through two government institutions: DGB[12] (General Biodiversity Bureau) in Mauri-Desaguadero and Lipez-Chichas and, SERNAP (National Service of Protected Areas) in Apolobamba. Donors and NGOs have played a key role during this period, often attaching conditions to their funding, forcing

[10] Ulla Ulla (North of Lake Titicaca, department of La Paz), Mauri Desaguadero (South of Lake Titicaca, department of La Paz) and Lipez Chichas (Sud Lipez province, department of Potosi) were first downlisted by CITES in 1997 to Appendix II.

[11] Due to different national regulations, since november 2002 CITES authorised the free commercialization of vicuñas fibre and downlisted all populations from Appendix I to Appendix II.

[12] General Wildlife Bureau, technical bureau within the Ministry of Sustainable Development and Environment that regulates the Vicuña National Programme in Bolivia.

government to change their priorities. Harvesting of fibre has been very variable depending on the number of animals sheared (not all captured are sheared) and the learning process between communities, wildlife wardens and technicians support.

Vicuña management in the wild is a two-day event carried out once a year within the communal management areas. The event is divided in a number of activities that require organisation and participation of more than one person: construction of capture enclosure; round-up and capture of vicuña; shearing and release into the wild; weighing and certification of fibre. The temporary use of the capture enclosure doesn't interfere on the dynamics of vicuña populations. All vicuñas have the potential to be used and the different communities are in charged of their custodianship. Custodianship from community members does not mean the cessation of the State property rights on vicuña populations and reinforced by wildlife wardens (community members employed by the State) who carry out patrolling and monitoring activities (monthly census).

Since 2002[13], all communities with vicuña have access to the vicuña national shearing programme. The management authority has been passed to hands of decentralised government (Prefecture and Municipality) following the Law of Popular Participation formulated in 1994 and the financial support of the programme is now subject to the creation of new partnerships between communities and NGOs regulated and supported by decentralised government.

Impact on local people's attitude towards vicuña conservation

The general assumption that generating benefits from vicuña use and creating incentives to participate will change local people's attitude from opponents to supporters of wild vicuña populations is tested on the ground through research undertaken by the authors in Argentina and Bolivia (Renaudeau d´Arc & Lichtenstein, 2003). Results from semi-structured interviews to vicuña-user and non-user groups in Argentina and Bolivia revealed that both groups coincided with a number of problems listed in Box 1.

[13] Since 2002, CITES have passed all vicuña populations in Bolivia to Appendix II

Box 1. Problems associated with vicuñas from the perspective of local people using and not using vicuña in Argentina and Bolivia

- They catch diseases and transmit them to llamas and sheep
- They eat the best pasture
- They bathe in our animals drinking points and dirty them
- They are harming us very much
- We chase them and they come back

The problems listed in Box 1 show that vicuña use through captive breeding or wild management is not changing local people's perspectives towards vicuña neither in Argentina nor in Bolivia. People with or without vicuña ranches in Argentina expressed the same discontent. Breeding ranch owners had a utilitarian mentality with regards vicuñas and did not care about the conservation of vicunas outside their corrals. This result is not surprising considering that ranchers do not obtain any benefits derived from having free-ranging vicuñas in their properties (if anything, they share the same "costs" as local producers without a ranch). It is not clear by which means captive-breeding ranches could provide incentives to conserve wild vicuñas populations outside corrals. The lack of sufficient earnings combined with the characteristics of the exploitation system (vicuña breeding by few producers) doesn't generate positive attitudes towards the conservation of vicuña populations in the wild, neither in the "beneficiaries" of the system (local people with breeding ranch), nor to the rest of local people. One might suggest that the lack of incentives for conservation of wild populations also allows poaching and unregulated trade to continue.

In the case of Bolivia, the link between vicuna conservation and fibre production should be more easily established than in Argentina. However, local people (participating or not in vicuna use) complain about the same problems.

The lack of economic benefits is probably generating a negative attitude towards vicuna populations, this is not however, negatively affecting its conservation. This suggests that values other than economic ones exist (e.g. stewardship, bequest values). However, there is notangible evidence to suggest that these other values will be maintained into the future if the market for fibre and economic benefits do not reach communities.

In the case of Bolivia, the link between vicuna conservation and fibre production should be more easily established than in Argentina. However, local people (participating or not in vicuna use) complain about the same problems as in the neighbour country. This is probably due to the lack of economic returns derived of vicuna use. Interestingly, the number of communities interested in participating in the programme has been increasing since 1997 and poaching activities have been reduced[14]. This suggests that values other than economic ones exist (e.g. stewardship, bequest values). However, there is no tangible evidence to suggest that these values will be maintained into the future if the market for fibre and economic benefits do not meet community expectations.

People in Bolivia and Argentina wanted to limit vicuña movement in order to make sure that they had exclusive right of use over, the resource. This shared perception is probably related to the nature of the resource (a wild animal which mobility over space and through time is unpredictable) and the difficulty to demarcate exclusionary boundaries. This entails a discussion on who owns vicuña and who has rights over its use.

In the case of Argentina, producers wanted to capture and put into corrals all the free ranging vicuñas that wandered in their lands (and outside). In Bolivia, local people say that the mobility of free vicuñas could be 'controlled' by providing extra supply of food and water within the communal management area. In these cases, the demarcation or exclusion depends on finding a balance between the benefits of enlarging the size of the communal management area and the costs this represents to the internal coordination for monitoring the area which in the absence of economic benefits it is still too costly and difficult.

Across all sites and both countries where vicuña and people co-exist, users and non-users views were negative towards wild vicuña populations. These findings indicate that in practice a balance has not been achieved between local and wider interests and objectives. Therefore there is an uncertain and prominent risk or detrimental effects of this on long-term vicuña conservation.

[14] Vicuña population has increased from 34,543 animals distributed in 3,428,356Ha (DNCB 1996) to 56,383 vicuñas in 3,428,356Ha in 2002 (DGB 2002) and, from 4 communal management areas (CMA) in 1998 to more than 10 CMA in 2002 (DGB 2002; Nadine Renaudeau d'Arc obs.pers.)

Discussion

This study forms the basis for analysing whether vicuña use by Andean communities represents a risk or an opportunity for the local people and the species. The question is, who currently is risking and who is taking an opportunity from these two extreme management systems of captive breeding and wild management.

This analysis shows that in Bolivia and Argentina, the highest costs for vicuña conservation are still being paid by local communities (users and non-users) that live in areas with vicuñas. The model in Argentina illustrates how the rhetoric of integrating conservation and local economic development goals has been manipulated to legitimise a management system that generate revenues mainly for a public and a private institution in the detriment of local people. The space created by the retreat of the State as regulator controlling access and rights to benefit from vicuña represents a risk for local livelihoods and development. The lack of alternative types of management also represents a risk for 98% of the national vicuña population that live outside ranches. Most of the vicuñas in Argentina are still an open access resource, impossible to patrol, and protect, without the assistance of local people. Unless these people are involved, vicuña populations will continue at risk.

At the other extreme, shearing free ranging vicuña by local communities, represents in theory an ideal opportunity to meet both conservation and local development objectives. In this case local people should be able to establish a direct link between species and habitat conservation on the one hand, and economic production and returns on the other. It would be interesting to test this assumption by exploring whether negative attitudes towards free ranging vicuñas in Bolivia are changed when economic returns start flowing.

The lack of economic benefits and negative attitudes towards vicuña are not explaining the increase interest of local people to participate in vicuña management. Other type of valuation (e.g. bequest, stewardship, cultural) are also promoting and mantaining local participation in vicuña use. However, taking into account experiences in other countries (e.g. in Peru Lichtenstein et. al 2002), it is doubtful that local enthousiasm will continue if commercialization keeps being postponed. Agendas of government officials need to get aligned with those of local people.

The far-reaching policy implications of these two extreme models make it essential to re-assess "the tragedy of the commons" in the socio-political context of vicuña management and conservation in each country. How far the State should retain authority and control over management decisions and usufructuary rights over vicuña is a key issue of partnerships between local and national levels.

The two contrasting management options examined: the private and community-led programmes, seem to conflict with the original objectives of the Vicuna Convention that centers in the conservation of the species in the wild and its use for the benefit of local people. Our findings seem to indicate a widening gap between vicuna's institutional conservation rhetoric and its practice and in turn questions whether a balance in the future can be achieved among local, national and international interests.

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