Vicuna conservation and poverty alleviation: trying to link the two ends of the social scale

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Vicunas (*Vicugna vicguna*) are South American Camelids, commercial exploitation of which has untapped poverty alleviation potential. Vicuna fibre is produced by extremely low income communities that inhabit the harsh environment of the high Andes in Argentina, Chile, Peru and Bolivia. Vicunas are captured, shorn and later released into the wild (or corrals). At the other end of the world (and social scale) affluent consumers from Europe and Japan are willing to pay high prices for apparel made of vicuna fibre (more than USD $ 50,000 for a coat or around USD $ 1000 for a scarf).

Vicuna management projects developed in the Andes follow the logic of community-based wildlife management. The rationale behind vicuna conservation through sustainable use is that commercial utilization of the fibre (obtained from live-shorn animals) will generate sufficient benefits to outweigh the burden of conservation, and contribute to community development and poverty alleviation, thus encouraging local people to become partners in conservation. However, although conservation efforts have been extremely successful, and vicunas have recovered from the brink of extinction, the socio-economic achievements of the programmes have thus far proved modest.

This paper explores the link between vicuna management and poverty alleviation in Andean countries, and analyses the factors that limit a more equitable distribution of benefits among stakeholders. The study is based on fieldwork carried out in Peru and Argentina, and the analysis of secondary data (including the Proceedings of the Vicuna Convention) for Chile and Bolivia. Results suggest that the establishment of an open international market for the fiber, proper institutional arrangements for resource management, capacity building at local level and the implementation of fair trade schemes would allow for [a] sustainable use plans to be more effective and [b] more equitable distribution of benefits. These should be accompanied by conservation of untouched ecologically functional populations and proper implementation of protected areas to ensure the species' conservation.

Keywords: *sustainable use, vicunas, market, poverty alleviation, wildlife trade*

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INTRODUCTION

Trade in the products of biodiversity can potentially make enormous contributions to local, national and global economies (Koziell 2001). In most cases however only a relatively small proportion of the revenues generated accrue to local communities (Hutton and Leader-Williams 2003) and the management costs exceed the benefits enjoyed by the managing group. This paper explores the link between community management of a common pool resource and poverty alleviation in Andean countries, and analyses the factors that limit a more equitable distribution of benefits among stakeholders.

Vicuñas, *Vicugna vicugna* are wild South American camelids that live in high Andean region called Puna and Altiplano of Argentina, Bolivia, Chile, Ecuador and Peru. 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 (Lichtenstein and Renaudeau d' Arc 2004).

Vicuña management projects and programmes developed in the Andes follow the logic of community-based wildlife management (Robinson and Redford 1991; Western and Wright 1994; Hulme and Murphree 2001). These programmes emerged, in the past two decades, as a strategy to link conservation and community development through local participation and sustainable use. In the case of community-based conservation of vicuña, 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 (Lichtenstein and Renaudeau D' Arc 2004).

In 1979, Argentina, Bolivia, Chile, Peru and Ecuador signed the Convention for the Conservation and Management of the Vicuña, and Andean people that had been bearing the burden of vicuña conservation were named as the main beneficiaries of the future vicuña use. The spirit of the Vicuña Convention is reflected in the proposals of the different countries to CITES, where the *Andean community* is named as the main beneficiary of vicuña management projects.

Different models for vicuña management have been adopted by Andean countries according to the country-specific social organization systems, idiosyncrasies,

livelihoods, and national and local laws pertaining to resource and land tenure (Lichtenstein and Vila 2002). Although the first management systems, developed by Peru and Chile, consisted of vicunas managed in the wild by local communities, in the 90' there was a trend towards managing vicunas in captivity either by single producers, families or communities. At present, both systems coexist. Whereas wild management has the potential to create economic incentives for the conservation of vicuna and its habitat, the link between captive management and conservation is more dubious (Lichtenstein 2006).

The production of fibre relies on a substantial investment in infrastructure such as fencing 1,000 ha in Peru (Lichtenstein et al 2002), corrals in Argentina (Lichtenstein 2006) or the materials for building the capture enclosures in Bolivia (Renaudeau d' Arc 2005). These costs can be borne by the State, as in Chile and Bolivia, or by the local people as is the case of the breeding ranches in Argentina and Peru where communities acquired an important debt either with the State (Peru), or the Argentinian firm that is the principal local buyer of vicuña fibre (Stollen et al. in press.).

Vicunas are the only wild species that can be captured, sheared and re-released on a commercial basis (Laker in press). The vicuna is one of the most valuable and highly priced sources of animal fiber in the international market, as it produces the finest fiber capable for being spun (Loro Piana 2008). The adult animal produces approximately 8 ounces (250 grams) every two years as opposed to 7 ounces yearly cashmere (300 a 500 grams) or 6 to 8 pounds produced yearly by Merino sheep. According to the textile industry, vicuna fiber is more expensive than other fine fibers because of its rarity and unique qualities. An overcoat alone requires the fleece of 25 to 30 vicunas (Loro Piana 2008). The luxury garments made from vicuña fibre are sold in the most exclusive fashion houses; in London a simple scarf currently sells from £1,000 up to £6,000-£7,000, a cardigan for £2,510, an overcoat for £8,365 and a blanket for £ 5,800[2].

Whereas these high prices make vicuña products available only to very affluent consumers, vicuna fibre is produced mainly by extremely low income communities that inhabit the harsh environment of the high Andes. Most Andean rural communities face high levels of persistent poverty and inequality which is expressed in high indices of infant mortality rate and malnutrition, high illiteracy rate, and limited amenities and basic services such as access to water, sanitation and electricity (INDEC 2001; Arias and Bendini 2006; Foncodes 2006). Families in the Peruvian Andes survive on an average income of US $300 a year (Lichtenstein et al. 2002). Given this reality, the possibility of improving local livelihoods through vicuna use creates great expectations.

Despite the rapid popularity of vicuña management projects and programmes and the high market value of vicuna products, the generation and distribution of benefits to local people has so far, been limited (Lichtenstein et al. 2002; Lichtenstein and Renaudeau d'Arc 2004; Stollen et al. in press).Previous work looked at the economic impacts of projects on single producers or communities. The asymmetry between

[2] Loro Piana Shop New Bond Street, London, May 2008.

stakeholders involved in fiber commercialization may also contribute to the limited tangible benefits derived from vicuna use.

The stakeholders

We can identify several groups of stakeholders involved in the legal fiber[3] production chain of vicuna: Andean communities, local fiber buyers or middlemen, international textile companies, consumers, local and national Fauna Bureaus (or institutions involved in wild Camelid management such as CONACS in Peru), The Vicuna Convention, CITES, FWS, international NGOs and researchers. These groups have different powers and interests with respect to the vicuna. A major area of contestation lies between the community with nominal control over the resource and international markets.

What is regarded as a community varies from one country to another and even between regions within the same country, and may change over time, reflecting political and social developments (Stollen et al. in press). Currently, the target beneficiaries vary from individual producers or cooperatives in Argentina, to families in Chile and peasant communities in Peru[4] and Bolivia (Lichtenstein and Renaudeau d' Arc 2008). Although "Andean people" are meant to be low-income indigenous people, unless this is clearly stated, any person holding land in the Puna or outside (and with no present or past history of interactions with vicuñas) could potentially make use of vicuña. The wooliness of the term "Andean people" as stated in the Vicuna Convention, and the lack of sufficient national legislation could be a threat to the exclusive rights of low income indigenous people, if the private sector wants to get involved in vicuna production (Direccion de Fauna Silvestre, 2007).

In the cases of Argentina and Chile, all the fiber production is commercialized by mostly one company that buys the raw fiber from local producers and sells it to Italian textile companies. In the case of Peru, until 2004 there was only one national channel of commercialisation for all vicuña fibre and the industry was dominated by an exclusive relationship between the National Vicuña Society (SNV) and the International Vicuña Consortium (IVC). Since then, the market was liberalized and several companies and the industry were re-organised to allow multiple channels of commercialisation (Brewin 2007). In the case of communities with a small number of vicunas, commercialization is done through middlemen as the volume is not large enough to interest international companies.

Intermediary companies in Peru offer services to campesino communities which lack the capacity to manage their own vicuña and commercialise their fibre. Communities employ them to carry out the capture and shearing of the vicuña and also, in some cases, sell the fibre obtained on their behalf at a cost of 40% of the fibre obtained

[3] There is also an important illegal market of vicuna fiber and products that will not be discussed in this paper.

[4] In 2000 the exclusive rights over vicuñas were taken away from Peruvian Andean communities by the Supreme Decree 53 (DS 53), and the custody and usufruct rights were extended to "natural persons or businesses" that include communal and associative enterprises (Empresas comunales y Asociativas) and private owners on whose land vicuña live.

(Hoces, pers. comm).. These companies have benefited from the situation of the campesino communities with little education and business acumen and as a result reduce the income being received by the communities (Brewin 2007).

Most of the fibre from Peru, Chile and Argentina is sold to one textile Italian company that specializes in the production of cloth and garments deriving from fine animal fibres. A small proportion of the fibre is also sold to British, Peruvian and a Japanese company (CONACS 2007). The number of textile companies operating on vicuña market, still remains minimal, creating a very small market with very few options for communities to get new clients and a better deal. This is, according to the textile companies, because vicuña fibre is a very specialist product, servicing a niche market and only a few companies have the expertise and technological capacity to transform it into luxury end products. In addition, due to the small amounts produced, the textile companies claim that production costs are high, which may act as a deterrent to other companies considering it as an opportunity (Brewin 2007).

Consumers have access to two types of product. Locally, tourists may buy hand made clothes, blankets and garments produced by local people, mainly from illegal fiber (i.e. El Alto market in La Paz). Traditional processing is done with legal fibre only in few places in Argentina. Here there is an ancient tradition of weaving that result in handicrafts such as scarves and ponchos. As most of the handicrafts come from illegal fibre, their production is not encouraged by governments.
The second kind of consumer belongs to a high income group that buys exclusive products made with vicuña fiber from top of the market shops. The willingness of consumers to pay in order to improve rural livelihoods and vicuna conservation still needs to be explored.

Vicuna population & fibre production:

The total population of vicunas in the Andes is estimated to be 347,273 individuals (GECS 2008, Table 1). However it is difficult to assess with confidence the estimate as data from different countries were obtained using different methodology. All vicunas in Peru and Bolivia are in CITES Appendix II, whereas some populations from Chile and Argentina are still in Appendix I. The trade-off between culturally reinforced positive attitudes towards vicuña and practical concern for their direct impact on forage availability for livestock may be a highly significant factor influencing vicuña distribution (Laker in press).

Peru is by far he most important producer and fiber exporter in the region (Figure 1) with nearly 8-10 times more fiber exported than that from Argentina or Chile (Proceedings of the XII Technical meeting of the Vicuna Convention 2007). Peru is also the country where more areas with vicuñas are under exploitation and fenced herds are maintained (CONACS 2007). Even so, the total export figures for the region are only a few tones and thus fiber still remains a very exclusive and unique product that cannot be compared with the domestic camelid fiber production.

Table 1: Vicuna population per country

Country	Vicuna population	CITES Appendix
Argentina	127,072 or 72,678	Vicunas from Catamarca and Jujuy Appendix II, rest of the country Appendix I
Bolivia	62,869	II
Chile	16,942	Vicunas from I Region Appendix II, rest Appendix I
Ecuador	2,683	I
Peru	188,327	II
TOTAL	347,273	

Source: South American Camelid Specialist Group (UICN/SSC/GECS).

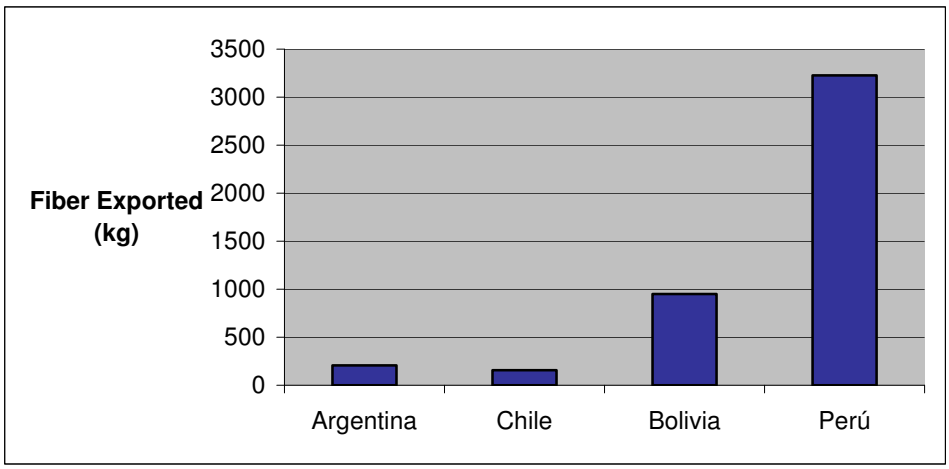

Figure 1: Volume of fibre exported by Andean countries in the period 2006-2007. The exports of Bolivia represent the production of 9 years. Source: Proceedings of the Vicuna Convention 2007.

Communities from Bolivia only started selling vicuna fibre in 2007 so the exports in Figure 1 represent the stock that resulted from 9 years of community work on vicunas.

Fibre market

There is no formal market for vicuna fiber and there are no reference prices as in the case of merino wool or cashmere. In the last 10 years, prices paid for raw fiber ranged from USD $250-940 (Table 2). Prices vary greatly among countries for the same year (e.g. 2007), and there is also a big variation within countries in cases as Peru after 2004, when more than one channel for commercialization was established.

It is interesting to note that the highest prices were never obtained by local communities negotiating by themselves but by governmental agencies (e.g. INTA in Argentina after 2004) or a local cooperative strongly supported by the government (e.g. Chile). The same fiber exporting company buys fiber from Argentina and Chile and was never able to get into the Peruvian market.

Vicuna fiber prices have historically being related to factors such as: the market demand, bargaining power of the actors involved; their need to get cash, volume of fiber stocked, whether there was one or multiple channels for commercialization, and the degree of corruption in the case of biddings (Lichtenstein et al. 2002, Lichtenstein 2006, Sahley et al. 2004, Brewin 2007). The volume produced is also very important, as communities or producers that manage few animals end up with no option other than selling the fiber to middlemen for relatively low prices (e.g. breeding ranch owners in Argentina, Lichtenstein 2006).

The lack of information about prices paid to other producers, communities or countries is a disadvantage at the time of negotiating, as well as distance to international markets. In many cases the access to markets is restricted by middlemen that guard entry from potential competitors. The vast disparities among community members and international market actors are often underestimated when management plans are conceived. In many occasions, local people are insufficiently aware of the demands the international market poses and as a result find themselves in a poor negotiating position. They might also lack the necessary skills for adequate quality control, processing (e.g. dehairing) or specialized marketing of their products.

In Peru, all the fiber commercialization was channeled through the Sociedad Nacional de la Vicuna (SNV) until 2004 (Sahley et al. 2004), since then communities or regional associations sell their fiber independently. Since the demise of the SNV, no other national body has been created to represent the *campesino* communities. Instead, the communities are now responsible for the commercialisation of their own production of fibre, and multiple routes for the commercialisation of vicuña fibre have opened up (Brewin 2007). The entry onto the market of various textile companies competing to purchase vicuña fibre, has had the result of increasing the prices achieved per kg of fibre in comparison to the previous period (Table 2). Nevertheless, as the prices being paid are no longer uniform or guaranteed, there are considerable variations between communities, and those with greater production of vicuña fibre have more strength in negotiations with textile companies, than those with a minimal production. Smaller communities also see the income they receive reduced through the employment of intermediary firms (Brewin 2007).

Andean Aymara families from Chile started selling fiber in 2002. The Sociedad Surire is the only channel of commercialization and its members get support from several national organizations in terms of marketing, resources, generation of added value, and organization of biddings (e.g. FIA, ProChile). Probably as a result of this State intervention, the Sociedad Surire always received good prices for the fiber.

In Argentina the main producers are not local farmers but a public organization: the National Institute of Agriculture and Cattle Technology (INTA) Abrapampa. This

organization has 1000 vicunas under production in large corrals, and provides technical assistance and vicunas to local producers that run small breeding ranches (Lichtenstein 2006). The lack of transparent biddings kept prices relatively low until 2004 when the director of this Experimental Center was removed and replaced. In the case of the breeding ranches, their owners were always paid less than the INTA and the rest of producers from other countries. This was due to a contract signed with the principal fibre buyer that gave them financial assistance for buying materials for the fence if they paid him back with a fixed low price (Lichtenstein 2006).

Vicuna management schemes in Bolivia started in 1998. Bolivian vicuna populations were transferred to CITES Appendix II in 2000; however a National Regulation established that the State retained the rights to store and auction vicuña fiber that could only be exported as cloth. Only in 2007 new national norms were created to allow the trade of raw as well as processed fiber. Nine hundred and fifty kilos were sold to the International Vicuna Consortium for USD 380 in 2007. The price seems low considering the high volume stocked and prices paid during the same year to producers in other countries and will probably improve in the future, when more trade experience is acquired.

	Bolivia ($US/kg)	Argentina ranches ($US/kg)	Argentina INTA ($US/kg)	Chile ($US/kg)	Peru (US/kg)
1998		250	349		*308*
1999		250	349		*308*
2000		250	349		*308*
2001		250	349		*308*
2002		300	349	575	385
2003		NA	363	615	380-437
2004		NA	661	615	*507*
2005		NA	895	NA	*450*
2006		NA	896,50	660	*365/?*
2007	380 (400)	NA	940	670/760	250-507

Table 2. Evolution of fibre prices in the different Andean countries. Every country started commercialization in a different year depending on when vicunas were down graded in CITES. Sources: Argentina: INTA Abrapampa; Peru: Lichtenstein et al 2002, Hoces & Valverde 2004; Brewin 2007; Chile: CONAF, SAG (pers. comm.). Figures in italic refer to pre-dehaired fiber that is fiber with some level of processing. NA indicates that the info is not available.

Fiber processing.

There is a gradient of added value that can be placed on vicuna fiber. Raw fiber is obtained after shearing the animals and lends no added value; at the other extreme is the production of textiles.

The highest volume of vicuna exports by Andean countries is represented by raw fiber (Table 3). In Peru, two textile companies are also producing industrial textile products, but this still represents only 14% of the vicuna exports (CONACS). Italy is the country where most of the adding value activities are concentrated.

Table 3. Stages involved in the fibre processing. From left to right there is an increase in the added value.

	Raw fibre	Pre-dehaired fiber	Washed	Dehaired	Yarns	Cloth	Clothes	Crafts
Argentina	X							X
Chile	X							
Bolivia	X	X						
Peru	X	X	X	X	X	X	X	
Italia			X	X	X	X	X	

The revenues obtained from the transformation of the raw material in Italy are very high. Considering the market prices paid to communities in Peru or Bolivia in 2007, the cost in raw material for a scarf that is sold at £1,000 is a the most, £100. Instead of contributing with tangible benefits to local communities, vicuna use projects seem a great opportunity for the textile industry.

Economic impact on beneficiary communties.

The impact of the commercialisation of the vicuña fibre on the economic development of the *Andean* communities who are responsible for its management has proved to be very limited in the whole region (Stollen et al. in press, Brewin 2007). In the case of Peru and Argentina, the earnings from the production of vicuña fibre in captivity did not cover the costs they had incurred purchasing vicuna corrals. As a result many communities and producers found themselves in debt to the government (Peru) or a private company (Argentina[5]) and were not able to use the income received from the sale of the fibre to the benefit of the community at least during the first years. A further cost in the case of captive management is the opportunity cost of the labour and land. Management of vicunas in the wild is preferable to captive management for ecological and economic reasons and it proved to be more economically viable (Lichtenstein et al. 2002, Vila and Lichtenstein 2006).

[5] Producers with 24 vicuñas need 6 to 12 years to pay back the debt of the fencing material (Lichtenstein, 2006).

The economic impact of vicuna use is also related to the number of beneficiaries within the communities, and the number of vicunas managed (or kilos of fibre obtained). The best scenario is a small community with a large number of vicunas, but this is usually not the case. In Chile or Argentina, the amount of beneficiaries is very low but the number of vicunas managed is below the minima required to make captive management viable (Proceedings of the Vicuna Convention 2007).

DISCUSSION

This study reveals that poverty alleviation through vicuña management reflects rhetoric more than substance. Although, goods made from vicuña fibre are sold at exorbitant prices on the international market, local people are still not obtaining significant economic benefits derived from legal vicuña use, be it captive management or management in the wild. Trade links need to be developed that can help redirect a fairer and more equitable proportion of the benefits to local people.

The distribution of costs and benefits between and within different stakeholder groups should be revised and made more equitable. Local communities “pay the cost” of vicuna conservation by allowing vicunas to graze in communal or private land. The production of fibre relies also on a substantial investment that is borne by the State, as in Chile and Bolivia, or by the local people as is the case of the breeding ranches in Argentina and Peru. However, most of the benefits are not captured by local producers but by international textile companies.

Key determinants of the economic benefits from vicuna management are the price of fiber and overall international market conditions. However, there is no formal market for vicuna fiber and there are no reference prices as in the case of merino wool or cashmere. It is interesting to note that the highest prices were never obtained by local communities negotiating by themselves but by governmental agencies. It is impossible to pretend that a remote Andean community (or producer) can negotiate with a European textile company on equal terms. Local producers are insufficiently aware of the demands of the international market poses and as a result find themselves in a poor negotiating position. Capacity building in all areas of commercial engagement, joint commercialization and the implementation of fair trade schemes would allow for [a] sustainable use plans to be more effective and [b] more equitable distribution of benefits.

The high international commercial value and world demand of vicuna products could potentially have a significant economic impact and be a means for promoting development at local level. However, as in other conservation development projects, the benefits for the local community are elusive (Adams et al 2004). In order to capture more benefits communities need to stop just supplying raw material and start selling more processed products that are adequate to the market demand. More benefits could be accrued either by increasing the price of the fiber, carrying most of the production chain or by creating partnerships with textile companies in order to get payments related to the sales of final products. I all these cases, capacity building and the government assistance are crucial.

Argentina, Bolivia and Peru have an important tradition on weaving vicuna and producing handcrafts. Local handcraft production should be encouraged and embraced under legal trade in order to keep an important tradition and source of income while securing the origin of the fibre.

The vicuna case study shows how local communities articulate to the global market via a sustainable use project. The complex and challenging nature of this asymmetric relationship needs to be recognized and appreciated in order to address poverty alleviation and conservation and arrive to a win-win scenario.

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