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DARWIN INITIATIVE

Darwin Project 18-015
Addressing the Illegal trade in the Critically Endangered Ustyurt Saiga
USAID SCAPES Ustyurt Landscape Conservation Initiative Project
Socio-economic Research Component

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Saiga Conservation Alliance

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Acronyms and Abbreviations

ACBK	Association for the Conservation of Biodiversity of Kazakhstan
CITES	Convention on the International Trade in Endangered Species
CMS	Convention on Migratory Species
CPUE	Catch per Unit/Effort
CS	Compressor Station
FFI	Fauna & Flora International
FG	Focus Group
GDP	Gross Domestic Product
HDI	Human Development Index
HH	Household
IoZ	Institute of Zoology
KI	Key Informant
KZ	Kazakhstan
PRA	Participatory Rural Appraisal
RRT	Random Response Technique
SCA	Saiga Conservation Alliance
SCAPES	Sustainable Conservation Approaches for Priority Ecosystems Program
UZ	Uzbekistan

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Credit for front cover images: Jean Francois Lagrot (top left image); Alexander Esipov (bottom left image); Matthias Rossbach (right image).

Executive Summary

This report presents the findings of a socio-economic survey undertaken between May and August 2011 on the Ustyurt plateau in both Uzbekistan and Kazakhstan. Within the wider framework of Darwin project 18-015 (*Addressing the illegal trade in the critically endangered Ustyurt Saiga*), and the USAID SCAPES Ustyurt Landscape Conservation Initiative, this research aimed to identify trade routes and the distribution of the benefits of trade (consumption of saiga meat and income from the sale of both meat and horn) alongside the multiple market mechanisms that support and maintain the use of these products, as well as increasing understanding of livelihood activities of local communities, including saiga poaching and trade. The report suggests that the continued exploitation of saigas in the region is due to a number of inter-related mechanisms including:

- the 'open access' nature of the species in question,
- the high prices paid for horn,
- the role that meat plays as a cheaper substitute for beef and mutton, and
- a lack of viable livelihood alternatives in the communities in which poachers live.

The research focussed on the bottom of the commodity chain; the hunters and village-based traders, and the communities within which they live on the Ustyurt plateau. Useful data were obtained concerning the series of relations through which saiga products pass, despite the major challenge that the topic is highly sensitive, concerning illegal activities, and therefore there is a general reluctance to share information with outsiders. Appropriate care has thus been taken to focus less on a quantitative evaluation and more on drawing a broad-brush picture of the market mechanisms and those factors predisposing local people to continue to hunt for, eat and trade in saiga products. The trade in saiga horn, in particular, is international, with the trade routes all leading to East/South east Asia. This means that the identity and incentives of those involved becomes less clear the further one moves away from the steppes and as the degrees of separation between original hunter and subsequent traders increase.

The key findings of the research can be divided into three sections:

1 – The Trade in Saiga Products. Despite the efforts of governmental and non-governmental bodies, the illegal hunting of saiga antelopes on the Ustyurt Plateau is still extensive, with the system of purchasing and subsequent export of horn well organized and profitable. This research indicates that

- The spectrum of exploitation differs in scope across the region, with small-scale poaching taking place in Uzbekistan compared to more organised, larger scale activity in Kazakhstan.
- This trend is thought to be driven by larger barriers to entry (in terms of hunting cost) in the smaller and more dispersed Uzbek Ustyurt saiga population, and also by the lower impact of such costs to better-off hunters in Kazakhstan.
- On the Kazakh Ustyurt, outsiders poach as well as acting as middlemen in the trading of horn. In Uzbekistan, poaching is generally done by local villagers.
- These 'outsiders' belong less to the impoverished sub-sections of society than to a class of better-off livestock owners who treat poaching as a sport.
- In Uzbekistan, tradition, risk and enjoyment were also identified as potential drivers of this behaviour.
- While horn may still be the main object of the hunt, saiga meat is a popular and low cost protein source which can provide valuable income to local households.

- Generally, the meat is distributed to family, neighbours and friends, with a small proportion being sold on trains and in local markets or cafes.
- In Kazakhstan, larger numbers of carcasses may be ordered from poachers in order to provide a reserve over winter.
- Meat is also transported from Uzbekistan to Kazakhstan, where it commands higher prices.
- From the Uzbek Ustyurt, the majority of horn is transported across the border into Kazakhstan. This transportation continues through a network of Kazakh trading hubs (Shalkar, Beyneu, Aktobe) and ultimately onto Almaty before heading to China and other east Asian countries.

2 – Knowledge and Attitudes. Despite low levels of knowledge regarding those organisations involved locally in managing wildlife populations or looking after the environment, communities are aware not only of those species that inhabit the Ustyurt, but also of the ecological problems they face.

- Despite dwindling saiga populations, sightings are still common, especially in Kazakhstan.
- There is, however, a widespread Uzbek belief that saigas no longer migrate to their side of the Ustyurt despite evidence of poaching and trade.
- Concern for the wider Ustyurt was common, with water shortages, salinity and climate change identified as being the key environmental challenges for the future.
- Individuals appeared keen to participate in conservation-related activities, particularly in Uzbekistan, where there is a history of community engagement.
- Involving local people in activities promoting saiga preservation was also recognized as a means of promoting pride in the natural environment.

3 – Livelihood Enhancement. Generally, improving the sustainability of livelihoods in the Ustyurt region was identified as being an effective way of tackling the trade in saiga products.

- Saiga poaching is considered an unpopular livelihood option, especially in Uzbekistan, where it is undertaken as a means of providing or supplementing a household income.
- In Uzbekistan it is increased income that is thought more likely to reduce this illegal behaviour, and in Kazakhstan, higher penalties.
- Focus groups identified local enterprises such as poultry breeding, brick building and computer services as areas where small grants could be provided.
- In neither country was social disapproval considered to be a particularly efficient deterrent.

Whatever the scale of the intervention, it is necessary to build on existing circumstances and skill-sets, especially where the remote location of many of these villages entails that there are few other options for income generation. However, a key recommendation of this study is that both baseline studies and ongoing monitoring must involve intensive and extended periods of fieldwork in the target villages, in order to gain the trust of local people and obtain reliable and grounded information on where saiga-related activities fit into individual households' livelihoods strategies. In this study we were not able to carry out such monitoring due to budget and time constraints, so this study provides only a limited basis for planning interventions, especially given the illegal and highly sensitive nature of the activities in question.

In terms of the implications for conservation, the findings are broadly consistent with previous studies. In Kazakhstan, where poaching occurs in more organised commercial groups, but with much lower local participation within villages, a stronger focus on law enforcement may be necessary, whereas in Uzbekistan, where poaching activity is often characterised by smaller groups and is more driven by poverty, then household-scale livelihoods-focussed interventions may reap better rewards.

Most importantly, future strategies for reducing the trade in saiga products must consider the geographical and behavioural differences that exist between the communities in the question. Just as breaking each link in the chain will need a different approach, so too does each village have varying potential for specific interventions due, for example, to its location, size, levels of wealth and the distance to markets. So while management of the distant consumer base will have to take place via the development of links to other international organisations, tackling the Ustyurt saiga trade at source will need the implementation of rigorous species protection and enforcement, coupled with carefully-targeted livelihood enhancement in those communities implicated.

1. Introduction

1.1 The Illegal Trade in Wildlife Products- The Saiga Antelope

The saiga antelope is a migratory ungulate of the steppes and deserts of Central Asia and Russia. There are two sub-species: *S. t. tatarica*, found in Kazakhstan, Russia, Uzbekistan and, until recent years, Turkmenistan; and *S. t. mongolica*, which is solely found in Mongolia (IUCN, 2010). Over the last 20 years the global saiga antelope population has shown an observed decline of over 95%, mainly owing to poaching and the illegal trade in saiga horns and other products, such as meat (TRAFFIC, 2010). The horns, which are only borne by the males, are the main target of poachers and are traded to East and South-east Asia, where they are used in traditional Asian medicine. This selective hunting of males has resulted in a skewed sex ratio and reproductive collapse (Milner-Gulland *et al*, 2003; Kuhl, 2009). Down from approximately 1,250,000 in the mid-1970s, the global population of the nominate subspecies, *S. t. tatarica*, is now estimated to be at around 105,000 animals (CMS, 2010).

The Ustyurt plateau harbours one of the three main populations of saiga antelopes. It is the only one with a significant trans-boundary component and the only population currently observed to be suffering an ongoing decline, due to poaching on both sides of the border (Milner Gulland *et al*, 2001). Hence, conservation of this relatively remote and neglected population is of primary importance for saiga conservation range-wide. Best estimates suggest that the Ustyurt supported 17,800 saiga in 2006 declining to 10,000 individuals in 2008, and to 6100 in 2011 (CMS, 2010). While poaching for both meat and horn is widely recognised as being the main threat to the population, this is compounded by poor enforcement of those laws and conventions designed to protect saiga resulting largely from limited capacity amongst, and insufficient cooperation between relevant institutions within these range states.

1.2 Aims and Objectives

In order to better understand the rapid decline in the Ustyurt saiga population, this study aims to identify the drivers of the illegal trade in saiga products in both Uzbekistan (UZ) and Kazakhstan (KZ), in particular through the investigation of the differing roles and perspectives both of individual households using saiga products and of the wider communities within which they live. By understanding the drivers behind the illegal trade in saiga products, it is hoped that capacity and cooperation amongst institutions responsible for saiga protection at local, regional and national levels can be improved, and that this will have benefits for species conservation region-wide. More generally, increased understanding of how background socio-economic factors might impact behavioural norms could then aid the formulation of long-term management strategies for conservation-compatible sustainable development projects for the Ustyurt plateau as a whole.

2. Background Context

2.1 The Saiga Antelope

The saiga antelope has been hunted for its meat, horns and hides since prehistoric times. In the first half of the 19th Century hundreds of thousands of horns were exported to China and by the early 20th Century, hunting had reduced the species to near-extinction (Bekenov *et al.*, 2001). As a result, the northern boundary of the saiga's geographical range has shifted noticeably southwards and the range and population has decreased in all areas (Sludskii, 1955). Following a ban on hunting imposed in the early 20th century, populations recovered until a further deterioration following the dissolution of the Soviet Union in 1991. With a 95% reduction in population over the last 20 years, the saiga antelope has experienced one of the fastest declines recorded for mammals in recent decades. Once migrating in herds up to 100,000 strong across the plains of Central Asia and Russia, the species is now separated into 5 sub-populations (**Figure 1**) and listed by IUCN as **critically endangered**.

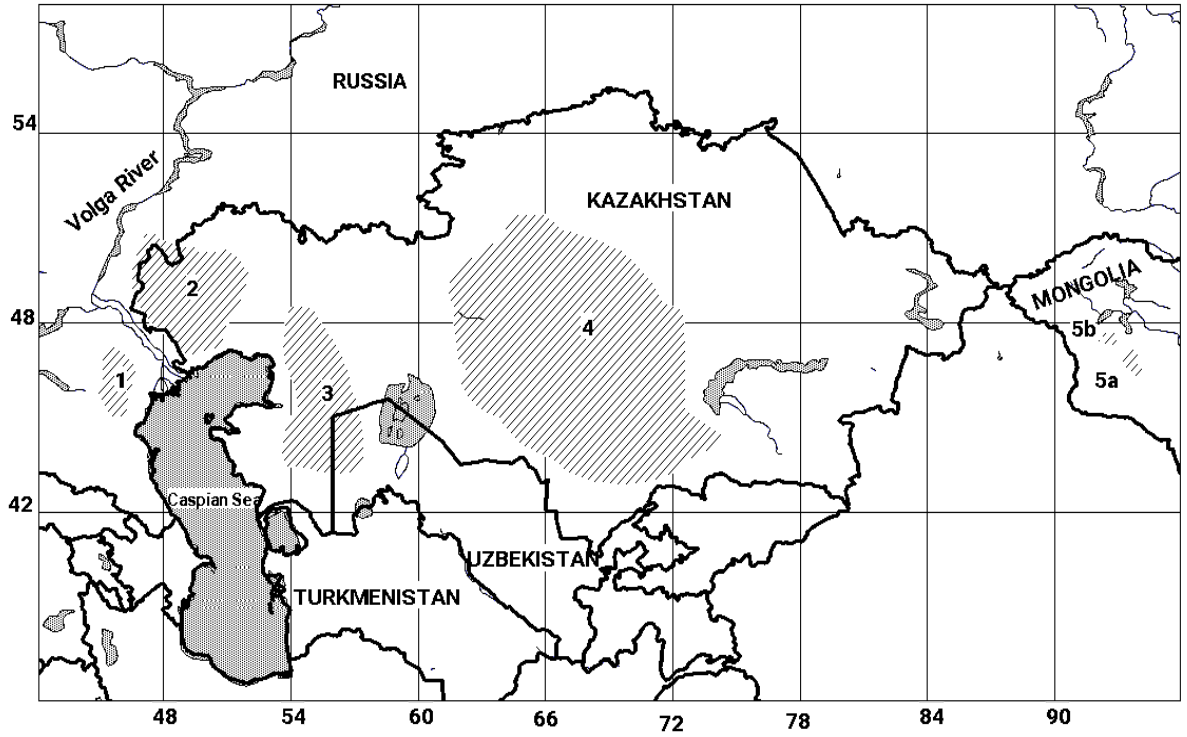


Figure 1. Current range of Saiga Antelope, showing the approximate range area of each population. 1 = North-west Precaspian population, 2 = Ural population, 3 = Ustyurt population, 4 = Betpak-Dala population, 5 = Mongolia population *Source*: Milner-Gulland *et al.*(2001).

As a keystone species of the Central Asian rangelands, the saiga antelope has an important influence on ecosystem structure. Highly adapted to steppe conditions, it is the only migratory wild ungulate within its range, and until its recent decline, the only wild ungulate found in significant numbers. Its grazing has the potential to maintain floral diversity and conditions required by a range of local taxa, and it also provides an important prey and carrion base for raptors and predators such as the caracal, grey wolf and the jackal (Bekenov *et al*., 2001). Of equal importance is the role it plays in the social and cultural life of local communities; it has substantial potential for once again generating significant levels of revenue and food, and is a source of pride and spiritual fulfilment to many, partly because saigas are viewed as a flagship species of the steppe resonating closely with the nomadic

history of many of the ethnic groups resident there (Kuhl, 2008). It can also serve as a flagship for steppe ecosystems at a time of increasing pressure from infrastructural development and industrialisation. Being adapted to the harsh conditions of the region, saigas have remarkable recovery potential; experience shows that with protection, populations can quickly rebound to healthy numbers (Milner Gulland *et al*., 2003).

2.2 From the Steppes to the Store- The Illegal Trade

In the last twenty years, the main threat to the saiga has been illegal hunting for horn for use in Traditional Chinese Medicine ((Milner-Gulland *et al.*, 2001; Kuhl *et al*. 2009). Its role as an ingredient is in turn dictated by Chinese philosophy and an approach to medical treatment going back thousands of years. TRAFFIC status reports on the trade (from 1995 and 2006) have focused on China and various other East Asian countries as the ultimate destinations for horn. According to this analysis, China is the largest importer and consumer of saiga horn, and imported 34,851 kg of horns during the period 1995–2004. The majority of these imports came from the now-depleted, official stockpiles of Kazakhstan, then considered to be the main source country for horn. More recently, however, Kazakhstan has declared a voluntary moratorium on all exports of saiga horns (TRAFFIC, 2010), and saiga hunting and possession of saiga horn is also illegal. In Uzbekistan, the hunting and trade of saiga antelopes has been prohibited since 2002 (TRAFFIC, 2007).

2.3 Darwin Project *18-015* - Addressing the illegal trade in the critically endangered Ustyurt Saiga

Figure 3. Map of Uzbekistan and Kazakhstan, with the Caspian Sea to the left and Ustyurt plateau boxed in the centre.

Current best estimates from aerial surveys undertaken in April 2011 by *Okhotzooprom* and the Kazakh Institute of Zoology, put the total Ustyurt (**Figure 3**) population at approximately 6,100 saigas (CMS, 2011). Expert assessment of the total number that wintered on the Uzbek Ustyurt in that same year is about 2,000 animals (Bykova & Esipov, 2011). There is currently no scientifically reliable information on what proportion of the population actually passed into Uzbekistan for the winter, but the density and number of saigas are clearly critically low compared to historical levels. This project,

led by Fauna & Flora International (FFI), addresses the regional supply and commodity chain of illegal saiga trade on the Ustyurt plateau.

Unemployment is high on the plateau and poverty is a major driver of the saiga trade, with revenue thought to provide a significant proportion of income to poor households. One element of this project will explore alternative livelihood options as a means of reducing drivers, and the results fed into a community small grants programme being implemented under a parallel initiative funded by the USAID SCAPES programme. The latter will provide seed money and training to individuals and groups to develop sustainable income generating projects. Those who rely on hunting and trade as a livelihood option, and so will be most affected by the Darwin project, are targets for this action. The research findings will be used to inform: a) delivery of an effective illegal trade intervention strategy; b) training for enforcement staff; c) a targeted campaign to raise awareness of the illegality of the trade in saiga products on both sides of the border.

2.4 The USAID SCAPES Ustyurt Landscape Conservation Initiative Project

The Ustyurt is covered by two WWF ecoregions: Central Asian Northern Deserts (PA1310) and Central Asian Southern Deserts (PA1312) and two Important Bird Areas (IBAs): the northern part of the Assake-Audan depression (IBA Uz004; 5,288 hectares) and part of the Saigachy Zakaznik (IBA Uz001; 511,028 hectares) located in Karakalpakstan on the Uzbek Ustyurt. There are two designated state protected areas: in Uzbekistan, the Saigachy Zakaznik (1 mil hectares) was 'designated' in 1991 for the purpose of protecting the saiga breeding grounds and other key species including large birds of prey. In Kazakhstan, the Ustyurt Zapovednik was created in 1984 to protect key species of the plateau. Over 600 plant species, 44 mammals, 52 breeding birds and 26 reptiles have been recorded in the region. Despite their size, both protected areas are ineffective and in particular the Saigachy Zakaznik is poorly demarcated and lacks an operational team. The objective of the USAID SCAPES Ustyurt Landscape Conservation Initiative is to promote the long-term sustainable management of this Ustyurt landscape through the delivery of a landscape scale approach, using a keystone species – the critically endangered saiga antelope - as a flagship, aimed at reconciling the conservation of the ecosystem with local sustainable development (SCAPES, 2010).

2.5 Survey Site Details - Uzbekistan

Jaslyk village is located 200 km north of Nukus, and >250 km south of Bosoi (KZ). Jaslyk is a large village for the region (with a population of 3901, or 799 HHs (2010 census)), with the railway and gas compression stations providing the main source of employment. Located 8 km outside of the village, a high security prison was established in 1999 and contains within its environs an undisclosed population of personnel and their families. Jaslyk village is a primarily ethnic Kazakh village (96%), with the remainder being Uzbek (3%) and only 1% Karakalpakstan.

A large settlement built around a railway and compressor station, **Karakalpakia** is of a similar size to Jaslyk, with a population of 3400 inhabitants. Because of both its high proportion of ethnic Kazakhs and its proximity to the Kazakh border, there have been recent calls by villagers to distance themselves from central Uzbek government. Along with Jaslyk, Karakalpakia has been traditionally identified as being a centre for both poaching activity and the smuggling of horn and meat into Kazakhstan (Bykova & Esipov, 2006; Kuhl *et al*., 2009).

A middle-sized settlement[1] with a population of 40 HHs or 240 people, **Bostan** has been built around a railway station lying between the bigger towns of Jaslyk and Karakalpakia, and falls under the administrative auspices of Karakalpakia. The settlement stands 4-5 km away from the main road

[1] A mid-sized or Category II settlement is officially classified as having between 100-1000 inhabitants.

(great silk road Kungrad-Beyneu), and while the majority of its inhabitants are involved in cattle breeding or are employed by the railway, it has been suggested that poachers are resident here (Bykova & Esipov, 2006).

With both a railway station and a compressor station **Kyr-kyz** has a population of approximately 1000 people. Its proximity to Kungrad (and distance from the steppes) means that locals have better access to services than other villages on the Ustyurt, and may also entail that there is less likelihood of active involvement in poaching.

Kubla-na-Ustyurte is a mid-sized settlement of 219 people located close to the Aral Sea, East Ustyurt. This settlement was constructed for personnel maintaining the Bukhara-Ural gas pipeline and an associated gas compressor station. It is located in the saigas migratory range. Bykova & Esipov's previous study (2004) claimed that most adult men are annually or seasonally involved in saiga poaching and trade, and that the main cause of this behaviour is unemployment.

2.6 Survey Site Details - Kazakhstan

Aimaut, a small village in Zhanazhol rural district, lies 461 km south-west of the regional centre of Aktobe. Aimaut began life as a collective farm in an area considered agriculturally rich, (with many of the nomadic shepherds from the *chink*- the escarpment of the Ustyurt plateau- being settled here), but between the break-up of the Soviet Union in 1991 and 2002 there was no electricity in the village, and this stimulated a drastic drop in population size from 500 HHs to the current total of 137 HHs (or 787 inhabitants (2010 census)). Aimaut lies on the western side of both the Kazakh Ustyurt and recognized saiga habitat.

Located in Miyalinsky district and lying 527 km from Aktobe, **Diar** is the smallest (pop. 377, 2010) and remotest of the communities visited. Along with Aimuat, these two communities were selected on account of their isolated nature and the fact that they are both located on the western side of the Ustyurt, an area not surveyed before. They were also identified by state rangers as having high levels of poaching/illegal trade activities

Bosoi village is located in the very south of Aktobe oblast, close to the shore of the Aral Sea and the Uzbek border. Bosoi stands out from other villages by its relative wealth, increasing population size (pop. 2679, 2010) and level of development. A previous study identified Bosoi as being a centre for organised poaching effort with high offtake of saigas (Kuhl, 2009).

Begimbet lies approximately 90 km away from Shalkar, and has a population of 1963 (385 HHs). Of these, 291 inhabitants live in Yeset *aul*, about 8 km outside of the centre, but still considered to be a part of the town itself.

Lying 45 km away from Shalkar, **Akkaitym**'s current population of 801 (94 HHs) is split between a central core of 633 and an outlying settlement (Kopasor aul) of 165 inhabitants. These communities that lie on the road between Bosoi and Shalkar (a recognised trade route out of the Ustyurt) are considered to play a role in saiga poaching and the related trade.

3. Methods

3.1 Study Site

Figure 5. Map of all survey sites. **1**= Jaslyk, **2**= Bostan, **3**= Karakalpakia, **4**= Kyr-kyz, **5**= Kubla na Ustyurte, (Uzbekistan); **6**= Aimaut, **7**= Diar, **8**= Bosoi, **9**= Begimbet, **10**= Akkaitym (Kazakhstan). Important regional centres, **a**= Kungrad, **b**= Aktobe. The box represents the approximate extent of the Ustyurt.

Ten villages (5 in each country) were surveyed between May 15th and August 10th 2011, with between three and ten days spent in each village depending on size and schedule restrictions. Communities were chosen on account of their location on the Ustyurt and the likelihood (ascertained from previous surveys and from discussion with professionals in the field) that they would contain people involved in the trade, both as poachers and as traders (buyers/sellers) in horn and meat. **Figure 5** shows the Ustyurt with Uzbekistan to the south and Kazakhstan to the north, with approximate locations of the survey villages identified numerically in the order in which they were surveyed.

There was a general reluctance across all survey sites to participate in poaching-related dialogue, and on numerous occasions, people refused to speak to interviewers at all. Permission from these respondents to tape-record interviews was rarely given due to a general fear of the consequences of providing this kind of information. The interviews themselves were conducted in Russian, Kazakh, Uzbek or Karakalpak, depending on the region and preference. In keeping with local customs, each household surveyed was presented with a small gift (e.g. soap or tea) as a token of appreciation for their effort. Where permitted, a GPS point was taken to allow for potential follow-up visits. All interviews and focus groups were kept anonymous.

3.2 Research Methods

It is widely recognized that to most effectively explore a given market structure, the 'commodity chain' approach should be used (Ribot, 1998; Cowlishaw et al, 2003). This entails identifying the ensemble of activities and relations that make up the production, exchange, transportation and distribution of a particular commodity (Ribot, 1998). By following the flow of saiga products from harvesting through purchase one can potentially detail the number and nature of actor groups involved and their connections to one another along the chain. Conducted in villages bordering both the Uzbek and the Kazakh side of the Ustyurt plateau, this study attempted to identify commodity chains in both saiga meat and horn, infer background attitudes and beliefs about the saiga antelope and the wider environment from respondent preferences, and to provide a qualitative assessment of the trade and its effects through communal deliberation and focus groups (FG). At the same time, the possibility for wider livelihood enhancement was studied and analysed.

Recognizing that a combination of qualitative and quantitative methods can enable researchers to gain insights from the strengths of both (Milner-Gulland & Rowcliffe, 2007), this research thus took a three-pronged approach to evaluating the trade and its background socio-economic context (**Figure 6**):

1) Standardized HH questionnaire survey
2) Focus Group Discussions
3) Key Informant interviews

Figure 6. Study Methods

In certain villages, HH questionnaire sampling was biased towards particular subsets defined by poorer, outlaying HHs, with a presumed higher proportion of poachers rather than undertaken in the whole community; numbers in brackets indicate this geographical subset. For example, in Jaslyk, sampling was conducted in 40 out of a subset of 167 households, giving a total of 24% surveyed (**Table 2a**).

Name of settlement	Country	Pop. No.[2]	No. of HHs	No. of HHs surveyed	% of HHs surveyed
1. Jaslyk	UZ	3901	799 (**167**)	40	24
2. Karakalpakia	UZ	3380	710	41	6
3. Bostan	UZ	150	32	10	31
4. Kyr-kyz	UZ	954	200	30	15
5. Kubla na Ustyurte	UZ	219	44	11	25
6. Aimaut	KZ	787	135	11	8
7. Diar	KZ	377	68	8	12
8. Bosoi	KZ	2679	510 (**130**)	36	27

[2] Figures taken from most recent (2010) official census reports, provided by *aksaqal* and *akkimat* (mayoral) offices.

9. Begimbet	KZ	1956	385	40	10
10. Akkaytim	KZ	800	94	30	32
Total		**15203**	**1965**	**257**	**13**

Table 2a: Key characteristics of the communities surveyed with HH questionnaires

A total of 257 questionnaires were completed, (132 in UZ, and 125 in KZ) taking a mean time of 34 ±1.5 minutes (median=27). A breakdown of the gender and age of respondents can be seen below in **Table 2b.**

Name of settlement	Country	No. of male resp.s	No. of female resp.s	Age 21-40	Age 41-60	Age >61
1. Jaslyk	UZ	37	3	6	18	16
2. Karakalpakia	UZ	31	10	6	25	10
3. Bostan	UZ	8	2	0	8	2
4. Kyr-kyz	UZ	19	11	8	20	2
5. Kubla na Ustyurte	UZ	7	4	5	5	1
6. Aimaut	KZ	5	6	3	5	3
7. Diar	KZ	6	2	4	2	2
8. Bosoi	KZ	22	14	10	15	11
9. Begimbet	KZ	22	18	12	23	5
10. Akkaytim	KZ	17	13	7	13	10
Total		**174**	**83**	**61**	**134**	**62**

Table 2b. Gender and age of HH questionnaire respondents

Between two and four focus groups were held in each village, ranging in size from 3 to 5 participants (overall total completed = 32, 13 in UZ, and 19 in KZ) (**Table 2c**). Groups were split according to the approximate range of ages of their members.

Name of settlement	Country	Total no. of FGDs held	No. of Male FGDs held	No. of Female FGDs held	Age 16-30		Age 31-50		Age >50	
					M	F	M	F	M	F
1. Jaslyk	UZ	3	2	1	1	1	0	0	1	0
2. Karakalpakia	UZ	3	2	1	1	1	0	0	1	0
3. Bostan	UZ	2	1	1	0	0	0	0	1	1
4. Kyr-kyz	UZ	3	2	1	1	0	0	1	1	0
5. Kubla na Ustyurte	UZ	2	2	0	1	0	0	0	1	0
6. Aimaut	KZ	4	2	2	0	1	2	1	0	0
7. Diar	KZ	2	1	1	0	0	1	1	0	0
8. Bosoi	KZ	5	1	4	1	1	0	2	0	1
9. Begimbet	KZ	4	2	2	1	1	0	1	1	0
10. Akkaytim	KZ	4	2	2	0	1	1	1	1	0
Total		**32**	**17**	**15**	**6**	**6**	**4**	**7**	**7**	**2**

Table 2c. FGD details, including age and gender

28 key informants were interviewed (19 in UZ, and 9 in KZ) (**Table 2d**). Gender has not been included, as only two of these (one in Jaslyk and one in Kyr-kyz) were female.

Name of settlement	Country	Total no. of KIs	Age 21-40	Age 41-60	Age >61	Age unknown
1. Jaslyk	UZ	10	3	4	2	1
2. Karakalpakia	UZ	3	1	2	0	0
3. Bostan	UZ	0	0	0	0	0
4. Kyr-kyz	UZ	4	2	2	0	0
5. Kubla na Ustyurte	UZ	2	1	1	0	0
6. Aimaut	KZ	3	2	0	1	0
7. Diar	KZ	1	1	0	0	0
8. Bosoi	KZ	1	0	1	0	0
9. Begimbet	KZ	2	0	0	2	0
10. Akkaytim	KZ	2	0	0	2	0
Total		**28**	**10**	**10**	**7**	**1**

Table 2d. Details of key informant age and location

3.2.1 Approach I - Questionnaire Survey

In many of the research areas there was no mobile connection, houses were unnumbered, and voter registration, accurate area maps and other 'official' information was not readily available, making a systematic sampling strategy problematic (Bernard, 2005), it was thus not possible to develop a random sampling frame for all surveys, and as a result a purposeful sampling strategy was designed and implemented instead. Where possible, every third HH was approached, with the aim of surveying no less than 5%, or 20 HHs from each village (taking a rough estimate of HH numbers as 400 in the larger villages) to ensure a reasonable and statistically meaningful sample for data analysis (Patton, 1990). In larger villages (such as Jaslyk and Bosoi) with more fragmented community structures a decision was made to purposefully bias the strategy towards poorer, outlying *aul*s (districts) which contained HHs with a higher probability of containing poachers (Bykova & Esipov, 2004). The HH questionnaire was divided into the following 5 parts (**Appendix 7.1**):

1. Demographic Data- Used to ascertain the representativeness of the specific sample population and the influence background demographic characteristics might have on the following three sub-sections.
2. Knowledge of Wildlife Rules and Regulations- Respondents were shown a series of laminated photos of wildlife that exist on the Ustyurt. Questions covered presence/absence and changes to population sizes over the last five years, with the underlying aim of allowing respondents to consider saigas without being pushed towards them by the interviewer. Questions on rules and regulations were used to test knowledge levels.
3. Attitudes- Attitudes and perceptions to environmental issues and saiga conservation were identified in agree/disagree statements.
4. The Trade in Wildlife Products- The core section of the questionnaire was designed to extract information at a HH level on saigas and saiga products alongside wider hunting practices and trade.
5. Assets- Questions concerning assets and income were used to compare and contrast wealth, with levels of vehicle ownership (associated with poaching) also identified.

3.2.2 Approach II - Focus Groups Discussions

Focus group discussions were primarily aimed at exploring livelihood options that could be supported by a community small-grants programme being implemented under a parallel USAID SCAPE funded project. This will provide seed money and training to individuals and groups to develop sustainable income generating projects. Focus Group (FG) discussions were used to discuss the relevant issues. Enumerators canvassed randomly selected sections of each community at

staggered times of the day to recruit participants for these groups. Given the need to be as representative as possible, four such groups were held in each village with restrictions imposed on their number and gender. Where possible, groups numbered no more than four members, divided by the following age categories.

- Younger men (18- 35)
- Older men (>35)
- Younger women (18-35)
- Older women (>35)

Discussion began with general questions about life on the Ustyurt, with the facilitator encouraging discussion of a wide range of services/resources/values and exploring these with follow-up questions and nondirective prompts (**Appendix 7.2**). As a warm-up to detailed group discussion work the following participatory exercises were also utilised:

a) *Community wealth ranking*. While a standard household wealth comparison was found to be both inappropriate and too time-consuming to conduct in a group situation, FGs were asked instead to identify important indicators of wealth (e.g. house type, ownership of vehicles and livestock, etc). Once these had been discussed, households were classified into categories of household wealth, e.g. on a scale ranging from "poorest" to "richest," with groups themselves suggested the appropriate categories, and overall percentages assigned to each category.

b) *Livelihood matrix*. The focus groups were asked to list and compare all the different livelihood options in the village. Categories for comparison were suggested by participants in pilot groups (e.g. income obtained, physical difficulty, hours per day worked, education level required, future career options) and each livelihood activity scored from 1 (lowest) to 5 (highest) on some or all of these categories. The overall popularity of each livelihood option was calculated based on the standardised mean ranks from each category. As it was generally not brought up as an option by the FGs, where possible, poaching was explicitly included.

3.2.3 Approach III - Key Informant Interviews

Open ended questions were used to explore the knowledge of Key Informants (KI) regarding hunting and the illegal trade in saiga products, in particular the trade-routes themselves, the range of livelihood activities of those involved, hunting methods, and the profitability of the varying levels of the trade in both meat and horn (**Appendix 7.3**). Given the highly sensitive nature of this topic and a widespread reluctance on the part of respondents to share their knowledge, it was necessary to be highly opportunistic with regards to data collection. HH respondents were asked to recommend key informants (of differing age, gender, wealth status and main form of occupation/income) to be interviewed. These initial interviews were then followed up where possible by chain referral, interviewees identifying other individuals from within the village who might be willing to take part. Where possible, responses were recorded and translated back to English on the same day so as to minimize confusion over responses.

3.3 Data Analysis

PASW (formally SPSS) Statistics 19 was used to analyse social survey data, using both parametric and non-parametric tests so as to explore relationships between socio-economic variables and factors affecting attitudes, knowledge and values. Community-level FG results were used qualitatively to identify and then compare and contrast livelihood trends and issues. Key informant interview data were analysed for specific content that related to the research questions and hypotheses.

4. Results

So as to provide the context in which the subsequent data can be understood, the results are presented in the same order as the methodological plan. Household questionnaire data are, where applicable, supplemented by relevant FG and key informant interview data, with a broad overview of the trade and commodity chain presented in conclusion, with the potential for social interventions analysed in turn. Key informants are coded with both village and identification numbers (e.g. **0101**-Jaslyk, first informant; **0603**- Aimaut, third informant), so that particular comments can then be linked to individual profiles. All currency is given in either US Dollars, Uzbek *Soum* (of which UZS 1,736 were equal to one US Dollar at the time of writing) or Kazakh *Tenge*, (KZT 145.9 to the Dollar).

4.1 Section 1- Basic Demographics

The overall ethnicity of respondents was 93.4% Kazakh, with the remainder Uzbek or Karakalpak. No ethnic Russians were interviewed, and only a single respondent was a non-national (a Tatar), and of the sample population (the total number of respondents, summed over the ten survey sites), the majority of respondents were either born in the village, or as was common in Uzbekistan, had relocated from bigger towns and cities with the construction of gas stations and railway lines in the 1970s. Only 12% had moved within the last 10 years, with 62% having been resident since before the dissolution of the Soviet Union in 1991. 32.3% of respondents were female (23% in UZ, 43% in KZ), and in keeping with other ex-Soviet states, literacy levels were very high, with 100% of respondents having some level of formal education, and 44.7% progressing to higher education (a vocational diploma or college/university degree). As expected when sampling HH heads, the majority of respondents fell within the older demographic bracket, with 76.2% over 41, and none younger than 20. The mean number of people per HH was 5.25 ±1.98.

Overall, 32.7% of HHs contained unemployed members (defined as those of school-leaving age or over lacking work), with only 23 out of 257 HHs containing 2 or more such members. In Kazakhstan, 37% of HHs compared to 29% in Uzbekistan, and 'official' statistics from Karakalpakia, for example, seem to support this second figure, with 895 men and 63 women (tot. 958) unemployed out of a population of 3380 (28.3%).[3] In this village, 37 out of 710 HHs were officially classified as 'low income', although what this classification entailed, exactly, was not provided. It is also important to note that total 'official' figures may conceal geographical differences; for example, in Jaslyk, one KI claimed that his, much poorer *aul*, had an unemployment rate of nearer 70% (**0104**). While unemployment rates and the percentage of HHs containing unemployed members can't be compared directly, these figures illustrate interesting local perceptions.

4.1.1 Community Details – Uzbekistan

The most recent UNDP figures for Uzbekistan's HDI (2000-2007) show a slight decrease in GDP but an increase in achieved levels of education and life expectancy (UNDP, 2008). Local standards of living are considered by inhabitants as being lower in Uzbekistan than Kazakhstan, and lower still in Karakalpakstan than in other regions of the country. **Table 4** presents for comparative purposes a community profile for the five villages surveyed, and contains general data gained through discussion with village heads and in FGs.

[3] Figures provided by the local *aksaqal*'s (mayoral) office.

Community Profile	
Population and number of HHs	• Jaslyk: 3901 people, 799 HHs • Karakalpakia: 3380 people, 710 HHs • Bostan: 150 people 32 HHs • Kyr-kyz: 954 people, 200 HHs • Kubla na Ustyurt: 219 people, 44 HHs
Average HH size	Estimated at 5 by FGs, and calculated from questionnaire responses as 5.03
Gender/age structure	• Slightly more women than men reported in all villages, with the largest difference in Jaslyk (55% women to 45% men). • 15-25% of the population under 18 in the bigger towns (Jaslyk, K'pakia), rising to 40% in Kubla na Ustyurt. FGs claim the elderly population is growing, but it currently ranges from 4% (Kyr-kyz), to 9% (K'pakia).
Ethnic, religious, cultural groups	• No official data on overall totals other than in K'pakia, where the population is 90% ethnic Kazakh, <2% Karakalpak, <1% Uzbek, and <0.1% Russian or Korean. Overall, 93.4% of questionnaire respondents considered themselves ethnic Kazakh.
Socio-economic groups (% of total)	• No official data on this. Generally, 40-60% of HHs are classified as being of 'average' wealth, with the remainder split between poorer and wealthier, and a smaller % (5-10) in considered to be 'very poor' or very rich'.
Natural Resources	
Land - Location	• Larger villages contain both modern, 'Russian'-style apartment buildings without land, and more traditional 'Kazakh'-style houses which have yards and gardens of differing sizes.
- Use	• Land around the households tends to be used for vegetables, vineyards and to house livestock. • Plots in the villages are used for cultivation, or sometimes for grazing. • Fruit and vegetables include cherries, apricots, maize, onions and fodder. • Livestock graze locally (within 15kms of the village), with larger herds kept further away on land leased from the government.
- Access	• Wealthier families own larger HHs on larger compounds.
- Water and gas	• Water is considered to be a problem for HHs, but access seems to be equal. • HHs are given a yearly gas quota, which will be reduced if they use less during this period.
Livelihoods	
Principle HH activities	• Working abroad. Men of all ages work in Kazakhstan and send remittances home. • Selling labour- the most highly prized jobs are those in the gas industry or the railway, with women often employed as teachers, and young men as builders or shepherds. • Cultivation of fruit and vegetables is usually for personal consumption and not for sale. • Domestic animals (sheep, cattle, camels, horses) for home consumption and sale (meat and milk). • Drying and selling mud bricks. • Pensions. • Remittances from other Uzbek towns/cities.
Local Institutions	
	• Government offices and schools in all 5 villages, although Bostan lies within the administrative district of K'pakia and thus does not have an '*aksaqal*'. • There are mosques in Jaslyk and K'pakia, but no churches. • No NGOs other than FFI are active in any of these villages, although UNDP have run health programmes in K'pakia.

Infrastructure and services	
	• All five villages have electricity, gas and water supplies. • There are land telephone lines, and limited (to specific providers) mobile access in all villages. • Railway connections for the villages on the west (Jaslyk, Bostan and K'pakia). • There are markets in the bigger villages (Jaslyk, K'pakia) but not in the smaller villages (but privately run shops in all communities). • All villages have schools, but Bostan and Kubla na Ustyurt lack secondary schools. Privately run bus services operate on the road from Kungrad through Jaslyk, Bostan and K'pakia, and all 5 villages have private taxi services.
Community History	
	• All communities were settled in the 1970s around gas industry infrastructure. These first settlers were usually specialists brought in to work in the industry and their families.

Table 4. Community structure profiles for the five Uzbek villages surveyed

Differing levels of livestock ownership (commonly associated with wealth and status) were noticed between the two countries, with 25% of HHs surveyed in Uzbekistan classified as being without livestock, compared to 5% in Kazakhstan, although this may reflect varying livelihood strategies, with more labourers for the gas industry and transport in Uzbekistan as opposed to a greater dependence on livestock in Kazakhstan. While unable to access official statistics on the exact number of livestock head owned, figures reported in this survey were small, with few HHs owning more than a single cow or ten sheep. While the educational system seems comprehensive (with 99% literacy rates), FGs pointed out that there is little opportunity for the majority of students to proceed to higher education. Secondary schools tend to have nine grades, from 7-15 years old (compared to the Soviet system of 11 grades until 18 years of age), with between 25 and 30 children in each class. After this, students can apply to specialist colleges or for university education. Common to all villages sampled was the high prices of basic commodities in local shops (which come predominantly from Kungrad), resulting in debt for the poorer sections of the community, and that the most prestigious work lies in railway and compressor stations, although it was mentioned on several occasions that getting such a job had less to do with education and more with bribing the heads of the organization (a foal was mentioned in Karakalpakia as the going rate of exchange).

Nationally, living standards are considered by both FGs and HH respondents to be improving. However, in communities such as Jaslyk and Karakalpakia, which lie close to the international border and are predominantly ethnic Kazakh, the large number of people moving to Kazakhstan suggests that unemployment is causing migration. Approximately one hundred HHs in Jaslyk are due to 'shift' back to Kazakhstan as part of the Kazakh Government's programme of repatriation and the promise of good jobs, higher public spending and better benefits. Jaslyk has one primary/secondary school, and two kindergartens. In the last 3-4 years, the number of secondary school pupils has decreased from 1000 to 600 as a result of migration to Kazakhstan. Furthermore, since September 2010 (9 months before the period of this survey), a further drop from 600 to 582 pupils took place. Out of the 40 who graduated from school last year, only 15 went on to college. This is not to say, however, that the population is shrinking as a result; the more general demographic effects of such an exodus are offset by a continual influx of migrant workers from Kungrad or Nukus. In Jaslyk's Kazakh *Aul* (reportedly a centre for poaching activity), an estimated 10-15% of HHs belong to such newcomers (considered to be those who have relocated within the last 5 years). However, effects on internal dynamics (a reduction of community cohesion expressed as '*no longer knowing one's neighbours*') have nevertheless been noticed, and thus on poaching as well, with many known hunters said to have already left Uzbekistan (**0104**, **0202**, **0203**).

4.1.2 Community Details - Kazakhstan

As they themselves are quick to point out, the inhabitants of the Kazakh Ustyurt are predominantly shepherds, and thus life follows seasonal patterns (with little for people to do in the winter). FGs were unanimous, however, in giving shepherding a low ranking in livelihood matrices, partly as a result of the lack of prestige and the low potential for advancement associated with it. While cattle are widely considered to be the main HH asset, both horses and camels are kept as an investment (horses can be sold for KZT 500,000/$3427, compared to 300,000/$2056 for a camel). Livestock ownership levels are high, with even the smaller communities containing large numbers of animals. Questionnaire data reiterated this with only 5% of all Kazakh HHs (7 out of 125) claiming not to own any livestock at all. As in Uzbekistan, the most prestigious jobs were associated with the gas and oil industry, although again, bribery was mentioned as the main track to getting such a position (with a camel being the going rate). Infrastructure is more comprehensive than it is across the border; even the smaller villages have access to hospitals, libraries and culture clubs, the employees of which often organize concerts and performances. Generally, water shortages, localized drought, increasing salinity and poor roads (and thus connection to the outside world) are cited as being the main problems that these Ustyurt villages face. **Table 5** presents a community structure profile of the villages surveyed.

Community Profile	
Population and number of HHs	• Aimaut: 737 people, 135 HHs • Diar: 377 people, 68 HHs • Bosoi: 2679 people, 534 HHs • Begimbet: 1963 people, 385 HHs • Akkaitym: 801 people, 94 HHs
Average HH size	• The calculated mean HH size from questionnaires was 5.49
Gender/age structure	• No gender data for any of the villages. • In both Begimbet and Akkaitym, pensioners make up approximately 12.5% of the population (no data for other villages).
Ethnic, religious, cultural groups	• No official figures on ethnicity. 99% of HH respondents were ethnic Kazakhs. In Bosoi, researchers were told that there were 7 'registered foreigners' (settled permanently), and a number of immigrants working at the local oil refinery.
Socio-economic groups (% of total)	• No official data on this. FG averages put 45% at medium wealth, 25% below, and 30% above.
Natural Resources	
Land - Location	• Larger villages contain both modern, 'Russian'-style apartment buildings without land, and more traditional 'Kazakh'-style houses which have yards and gardens of differing sizes.
- Use	• Land around the households tends to be used for vegetables, vineyards and to house livestock. • Plots in the villages are used for cultivation, or sometimes for grazing. • Fruit and vegetables include cherries, apricots, maize, onions, tomatoes and fodder. • Livestock graze locally (within 15kms of the village), with larger herds kept further away on land leased from the government.
- Access	• Wealthier families own larger HHs on larger compounds.
- Water	• Water is considered to be the main problem for HHs in all villages, with richer HHs having better access both to local sources and to ground water further away which can be accessed with a car (Diar). The quality is poor (high salinity). Water is also taken from wells (in contradiction to sanitary regulations)

Livelihoods	
Principle HH activities	• Most HHs consider themselves shepherds (in terms of owning livestock as a source of financial revenue). • Selling labour- the most highly prized jobs are those in the gas or oil industry, with women often employed as teachers or in cultural clubs. • Cultivation of fruit and vegetables is usually for personal consumption and not for sale (due to water shortages). • Domestic animals (sheep, cattle, camels, horses) for home consumption and sale (meat and milk) forms a big part of a HHs income. • Pensions. • Remittances from other Kazakh towns/cities. • Government subsidies paid to rural HHs and also on account of proximity to the Aral Sea. • Social benefits for women with babies under one year of age and for those with more than 4 children
Local Institutions	
	• *Akkimat* (mayoral) offices only in villages with more than 300 adults. • No NGOs other than FFI are active in any of these villages.
Infrastructure and services	
	• Equal access to water, gas and electricity, but services (metered) are expensive. • Primary and secondary schools in each village. • Land telephone lines in each village, and Aimaut and Diar without a mobile connection. • Electricity is free for veterans of the 'Great Patriotic War'. • Limited medical services in all villages, especially for pregnant women. • Culture clubs (theatre, music and dance performances) and libraries in each village. • Very poor roads to regional centres furnished by private taxis. • Private shops in each village. • Veterinarians in each village.
Community History	
	• Many of the nomadic shepherds from the *chink* escarpment were settled in this area.

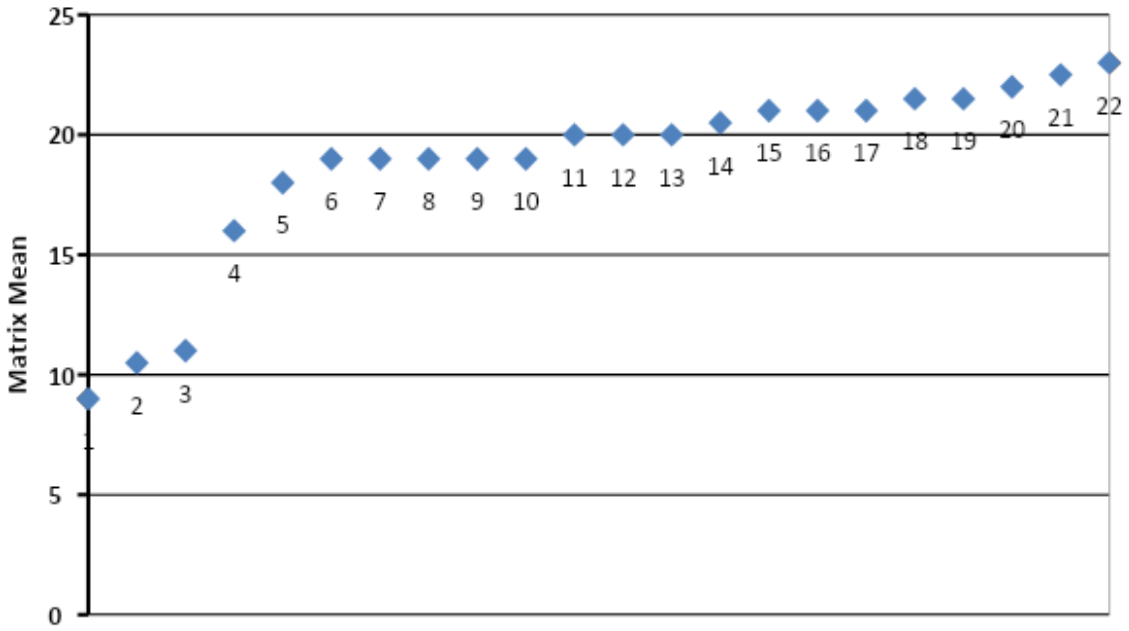
Table 5. Community structure profiles for the five Kazakh villages surveyed

4.1.3 Focus Group Data – Livelihood Exercises

As an important component of the detailed discussion on the socio-economic situation of those communities surveyed, two participatory exercises were used with all groups. The first was a community wealth (or well-being) ranking, with FGs asked to identify important indicators of wealth (e.g. house type, ownership of vehicles and livestock, etc). HHs could then be classified into categories of household wealth ranging, for example, from 'poorest' to 'richest', and with overall percentages assigned to each category. Some groups chose a number of intermediary categories (e.g. poorest', 'poorer', 'average wealth', 'richer', and 'richest'), while others kept it simple (e.g. 'lower', 'average', 'higher'). Rather than a robust method of analysing village levels of wealth, these provided a springboard for discussion of the range of assets and livelihood options of the different groups, and the differing proportions given depending on the social status (here relating to wealth and assets owned) of those involved.

Each FG was then asked to list and compare the common livelihood options in their village. The categories chosen for comparison by respondents when piloting were (i) income obtained, (ii) education level required, and (iii) potential for future career advancement (ranked positively), and

(iv) physical difficulty and (v) hours per day worked (ranked negatively), with each livelihood activity scored from 1 (lowest) to 5 (highest) on each category (see **Figure 8** below). These categories were then utilised as examples in each FG as a means of providing comparable data between groups and villages, although some chose not to stick to these examples. The overall popularity of each livelihood option was calculated based on the standardised mean ranks from each category.



1. Saiga Hunter (8)
2. Train Seller (3)
3. Saiga 'Trader' (6)
4. Builder (1)
5. Nurse (1)
6. Railway Worker (9)
7. Accountant (1)
8. Welder (1)
9. Electrician (1)
10. Machine Driver (1)
11. Train Driver (2)
12. Engineer (2)
13. Border Guard (2)
14. Doctor (9)
15. IT worker (1)
16. TV Relay Station Worker (1)
17. Shop Owner (3)
18. Gas Station Worker (10)
19. Military (7)
20. Policeman (8)
21. Teacher (11)
22. Pensioner (2)

Figure 8. Livelihoods matrix, Uzbek Ustyrut, with the overall popularity of each livelihood option calculated based on the standardised mean ranks from each of the 6 categories. The figures in brackets indicate how many time the option was brought up in FGs (out of a total of 13), with the higher the matrix mean indicating a more respected livelihood option.

Most of the more commonly mentioned professions were ranked consistently across FGs, with the most coveted options (as a source of both income and prestige) usually associated with either the local gas or railway stations, the main employers for the region. Although very few of them are open to women, the 'higher-level' professions such as teacher or nurse, despite being less well-paid, still scored highly overall. It is important to note, however, that some professions scored negatively as a result of being considered 'hard work' with long hours (e.g. gas station worker), and this brought their mean down. So while being a pensioner, for example, scored highly overall (and was considered 'easy money'), it was not as popular or well-respected as some of the other livelihood options.

As they were generally not brought up as an option by the FGs, where possible, poaching and trading were explicitly included. However, in Uzbekistan (from where the above figures are taken) only 8 out

of 13 FGs were willing to consider saiga poaching in the above matrix, and of these, two would include poachers but not traders. In Kazakhstan, where 19 FGs were held, not a single group was willing to include these as potential livelihood options, even when asked to '*imagine the scenario in other villages'*. Both examples, hunting and trade, scored low across the matrix categories, with the sole exception of income, which was deemed to be 'average' (3) in FGs in Kyr-kyz and Kubla na Ustyurte. Such figures are similar to those presented in Kuhl's 2004-2005 study, where livelihood matrices showed that saiga poaching was the second-least popular livelihood activity (after housekeeping), with average income production and low potential for future career progress. However, given the problems involved with getting a representative sample for these groups, coupled with official procrastination in the first three villages, these current responses to poaching and trade are likely to be biased.

4.2 Income & Assets

When discussing assets, any comparative analysis of 'value' needs to account for relative scales of wealth. An attempt to create even the most rudimentary of rankings was thus hampered by the complex nature of these assets, and in particular, of a meaningful way of aggregating them for scaling up. While some HHs with low incomes owned livestock, for example, there were others with high income that lacked livestock However, the main objective of these FGs was not to identify and rank every HH but rather to get an overview of the different socio-economic groups according to local people (**Table 6a** & **b**). HHs have also been stratified according to both ownership of livestock and of vehicles, so as to provide a further simple basis for analysis.

Poorer	Average	Wealthier
• Less labour/manpower within household • Education may be limited to secondary • May live in government accommodation • More likely to have HH members with health problems • Un- or under-employed members in HH • May be unable to work • May not own livestock, or perhaps only chickens • Women involved in selling produce on trains • Sell labour / casual work, e.g. as herders, builders, etc.	• More people in household able to work • May own 1-5 sheep, potentially a cow or camel, for milk and meat, including some for sale • Employed / sell labour • Government workers, e.g. railway staff or teachers • Can provide (further) education for children • May own a motorbike • May have savings	• Own more sheep (>10) • Own 1-5 cows/horses/camels • Some have their own business • Able to save • Able to accumulate assets, such as vehicles (cars, motorbikes) • Majority of HH members will have completed some form of higher education • Will have HH members working in the gas industry • HH members may have pensions

Table 6a. The characteristics of Uzbek communities, generalised from FGs.

Poorer	Average	Wealthier
• Less labour/manpower within household • May be single parents • May have many children • Education may be limited to secondary	• More people in household able to work • May own 5-50 sheep, potentially 1-10 cows, 1-5 camels, for milk and meat, including some for sale • Employed / sell labour	• Own more livestock (10- 100 sheep), 10-100 cows/horses, etc • Some have their own business, e.g. a shop, bath house • May have a flat in Aktobe or Shalkar

• More likely to have HH members with health problems • Un- or under-employed members in HH • May be unable to work or live in pension only • May not own livestock, or perhaps only chickens • If owned, livestock will share poor pasture • Will not own a vehicle of any kind • Sell labour / casual work, e.g. as herders, builders, etc. • Perhaps no gas supply to house	• Government workers, e.g. teachers, librarians, club • HH members likely to have completed higher education • Can provide (further) education for children • Will own vehicles (motorbikes and cars) • Are likely to have savings • May employ shepherds for livestock	• Vegetable gardens • High salaries- able to save • Able to accumulate assets, such as vehicles (cars, motorbikes, tractors, other agricultural machinery) • Majority of HH members will have completed some form of higher education • Will have HH members working in the gas and oil industries • May have HH members looking after the livestock • Older HH members will have pensions

Table 6b. The characteristics of Kazakh communities, generalised from FGs.

Of the 96 HHs in Kazakhstan prepared to reveal their monthly income, the mean was KZT 81,760, or $560 ±449, with the lowest income recorded at KZT10,000 or $68, and the highest at KZT350,000 or $2397. For illustrative purposes, this lowest income belonged to respondent no. 21, a Bosoi pensioner with a single income (his wife's; a cleaner), in a HH of three dependent children, with a herd of 30 sheep. The higher end valuation of respondent no. 109, from Akkaitym, was the combined income of a HH that contained five working members, and owned two jeeps and an undisclosed number of livestock.

All but 11 respondents in Uzbekistan provided monthly incomes, and here the mean across these 121 HHs was UZS 590,240, or $340 ±171. The lowest income was UZS 52,000, or $30, from HH no. 32, Jaslyk, containing a single male earner (occasional welding), with a daughter and an elderly relation to support. This family had neither livestock nor vehicles of any kind. Conversely, the biggest income of UZS 1,600,000 ($922) came from Kyr-kyz, HH no. 108, with 7 members, 6 of whom were adults (4 working), but with no vehicles and only a single goat. While illuminating, it is necessary to note that defining 'assets' is complex, and such figures paint only a portion of the picture. As a case in point, the so-called 'richest man in Jaslyk', owner of several houses, a hotel, 10 vehicles, and 50 horses, claimed his combined 'income' (from him and his wife's pension) was a mere UZS 500,000 or $288 a month.

Overall, 22% of Uzbek HHs owned no livestock at all, compared to only 5.6% in Kazakhstan. With so many respondents owning livestock, it became increasingly difficult to differentiate between levels; indeed, in Kazakh villages with high livestock ownership such as Aimaut, FGs identified these 'better-off' HHs as owning 500 or more heads of cattle, which none of these HHs reported. For such an evaluation there is a need to use a common unit to describe livestock numbers of various species as a single figure that expresses the total amount of livestock present – irrespective of the specific composition. In order to do this, the concept of an 'Exchange Ratio' has been developed, whereby different species of different average size can be compared and described in relation to a common unit (Heady, 1975). For this study, the unit used is 1 Livestock Unit (LU). In keeping with current FAO guidelines, the exchange ratio used here is as follows: cow = 1.0, sheep/goat = 0.10, camel = 1.20, horse = 1.30 (Womach, 2005). Villages levels of ownership have been categorised according to variation around the mean (**Table 8 a** & **b**). This highlights not only the differences in ownership between the two countries, but also those between villages, especially relevant in Kazakhstan and between the villages on east (Bosoi, Begimbet and Akkaitym; lower means) and west (Aimaut and Diar; higher means) sides of the Ustyurt.

	Jaslyk (no.= 40, Mn.=1.2)			Karakalpakia (no.= 41, Mn.=1.6)			Bostan (no.= 10, Mn.=1.7)			Kyr-kyz (no.= 30, Mn.=1.7)			Kubla-na-Ustyurte (no.= 11,Mn.= 1.8)		
	<1.2	1.2-3	> 3	<1.6	1.2-3	>3	<1.7	1.7-3	>3	<1.7	1.7-3	>3	<1.8	1.8-3	>3
LU	25	9	6	28	6	7	7	2	1	14	12	4	3	6	2

Table 8a. Table showing mean Livestock Unit figures for Uzbek villages, with the village mean in brackets next to the number of HHs surveyed

	Aimaut (no.= 11, Mn.= 17.8)			Diar (no.= 8, Mn.=23)			Bosoi (no.= 36, Mn.=7.4)			Begimbet (no.= 40, Mn.=8.3)			Akkaitym (no.= 30, Mn.=2.7)		
	<17.8	17.8 -25	>25	<23	23 -30	>30	<7.4	7.4 -25	>25	<8.3	8.3 -25	>25	<2.7	2.7-8	>8
LU	6	2	3	5	1	2	28	5	3	28	7	5	19	8	3

Table 8b. Table showing mean Livestock Unit figures for Kazakh villages, with the village mean in brackets next to the number of HHs surveyed

In past studies, ownership of motorbikes has been positively correlated with poaching (Bykova & Esipov, 2004; Kuhl, 2009). While 42% of HHs interviewed owned a vehicle of one form or another, only 15.6% of respondents owned (or admitted to owning) motorbikes, 30 HHs in Uzbekistan and only 8 in Kazakhstan (see **Tables 9a** & **b** below). While only a single KI in Uzbekistan mentioned jeeps being regularly used in hunting (**0001**), it is believed that the converse is true in Kazakhstan, where more organised (and certainly better-off) groups of poachers come from further afield to hunt (**0601**; **0602**; **0801**; **0902**). As expected, there were much higher levels of jeep ownership in Kazakhstan.

	Jaslyk (no.= 40)	Karakalpakia (no.= 41)	Bostan (no.= 10)	Kyr-kyz (no.= 30)	Kubla-na-Ustyurte (no.= 11)
Motorbikes	6	9	1	9	7
Jeeps	3	0	0	0	3

Table 9a. Frequency table showing motorbike and jeep ownerships figures for interviewed HHs in Uzbek villages

	Aimaut (no.= 11)	Diar (no.= 8)	Bosoi (no.= 36)	Begimbet (no.= 40)	Akkaitym (no.= 30)
Motorbikes	2	3	1	1	1
Jeeps	3	4	24	12	10

Table 9b. Frequency table showing motorbike and jeep ownerships figures for interviewed HHs in Kazakh villages

4.3 Section 2- Knowledge of Wildlife, and Rules and Regulations

A discussion of those species known to inhabit the Ustyurt provided both researchers and respondents with a means of not only gauging levels of general knowledge about local biodiversity, but also of gently approaching the subject of saiga poaching. Images of nine such local species were shown, with follow-on questions asked concerning presence/absence and changes in abundance over the last five years.

	Fox	Gaz/Ur	Saiga	Wolf	Tortoise	Saker	Houbara	Hare	Boar
% Seen, UZ, (no.= 132)	80	6	25	39	83	33	12	80	5
% Seen , KZ, (no.= 125)	74	0	60	58	34	11	3	88	20

Table 10. Wildlife sighting %s for Uzbek and Kazakh HHs during the last 5 years for a range of species types, (**1**= Red Fox, **2**= Goitered Gazelle (UZ)/ Urial (KZ), **3**= Saiga, **4**= Wolf, **5**= Steppe Tortoise, **6**= Saker Falcon, **7**= Houbara Bustard, **8**= Hare, **9**= Wild Boar)

While certain species were more commonly seen (the red fox, *Vulpes vulpes*, tolai hare, *Lepus tolai*, steppe tortoise, *Testudo horsfieldii* and wolf, *Canis lupus*), the other ungulates (goitered gazelle, *Gazella subguttorosa*[4]; urial, *Ovis orientalis*) were very rarely or never encountered, and only 42% of HHs had seen saigas in this period (**Table 10**). The presence of other raptors on the Ustyurt (and their cryptic nature) meant that many respondents had difficulties in differentiating between the saker falcon, *Falco cherrug* and a generic 'hawk' (several other falcons exist on the ustyurt and are more abundant that the saker falcon), meaning that the results for this species are likely to be upwardly biased.

In the first three villages sampled in Uzbekistan (Jaslyk, Karakalpakia and Bostan), all of which are situated close to railway and gas infrastructure, only 20% of respondents had seen saigas (and it is worthwhile to note that some of these sightings took place as much as 100 km away from the community in question). The percentage of positive answers doubled in the two remaining villages on the eastern side of the Ustyurt, an area that is closer to both the Aral Sea and recognized saiga breeding sites (TVR-21 & 22 (**0001**), and CS-7 (**0403**))[5]. In Kazakhstan, a far greater proportion of respondents had seen saigas, with the highest response coming from inhabitants of Diar, with a 75% positive response. Overall, 23% had seen young animals (9% in Uzbekistan compared to 38% in Kazakhstan). While in Jaslyk, respondents had encountered saigas or calving aggregations significantly less often than in the period leading up to A. Kuhl's previous 2004 survey, this was not the case in Bosoi (**Table 11**).

Village	Sighting prior to 1991	Sighting in 2004	Sighting in 2006-2011
Jaslyk (UZ)	90%	37%	18%
Bosoi (KZ)	95%	18%	61%

Table 11. Changes in levels of saiga viewing in two villages between 1991 and 2011

However, it should be noted that the figures for the period up to 1991 and from 2006 are cumulative rather than referring to particular years (unlike the 2004 data), so while the trend in Jaslyk may well be indicative of a steep decline in viewings, the Bosoi figures are more difficult to interpret.

Furthermore, when asked about general changes to wildlife populations, 54% failed to answer the question at all, a disinclination which could be a result of suspicion rather than mere disinterest. Such suspicion could indicate a more general bias in the responses to these kinds of questions (and might then help explain the low, 18% figure for Jaslyk in **Table 8**, above). The 35% who noted a change usually attributed it qualitatively to a 'decrease in saigas' or an increase in more 'urban' (meaning more likely to be seen close to settlements) species such as the fox and the hare. While little information about the hunting of these other species was forthcoming from Kazakhstan, this was not the case in Uzbekistan, and several KIs referred to both the trade in wolf pelts and of the Arab tradition of hunting Houbara bustards (*Chlamydotis undulata*) with saker falcons.

From the Uzbek side, the reduction in saiga numbers was linked to any or all of the following reasons:

- Drought (lack of fodder, but also water sources)
- Kazakh restriction on border crossing preventing saigas from moving into Uzbekistan during winter migration
- Past poaching levels, and
- Mass die-offs in Kazakhstan (the recent mass mortality in spring 2010 and 2011 occurred in the Ural population and did not affect the Ustyurt population).

[4] Listed as vulnerable on the IUCN Red List 2011

[5] TVR- TV relay stations, CS – Compressor Station, both identified by the following number.

Other contributing factors suggested were anthropological factors such as climate change, vehicle disturbance and Kazakh weapons testing (mentioned by several Jaslyk respondents). It is interesting to note that in Uzbekistan, reduced sightings were not necessarily taken to be commensurate with a dwindling population, but instead with moves by the Kazakh authorities to actively restrict migratory behaviour by preventing saigas from crossing the border. Interestingly, this local belief was heard regularly (from almost 90% of respondents in Karakalpakia, for example), perhaps as a result of Kazakh TVs coverage of monitoring practices on their side of the border (*Okhotzooprom* use an MI-2 helicopter for conducting annual aerial censuses). This was also seen as having an effect on the spatial and temporal nature of poaching activity, with a number of KIs pointing to Kazakh law enforcement (and specifically the fear it produced) as a reason for decreasing levels of poaching (**0101**; **0105**; **0107**; **0202**).

As an attempt to measure levels of environmental knowledge, HH questionnaires asked respondents whether they were aware of any organisations (both governmental and non-governmental) involved locally in managing wildlife populations or looking after the environment, with follow-up questions on their roles and responsibilities. The classificatory method used is as follows:

- No knowledge
- Knowledge of the names of organisations only
- Minimal knowledge of their roles and responsibilities
- High knowledge of these roles and responsibilities.

Types of knowledge also included the existence of the National Red Books of threatened species, the details of hunting seasons and licensing, the work of environmental state agencies, Fauna & Flora International and the Saiga Conservation Alliance, etc. However, this question seemed to reveal little in overall terms, with 38% classified as having no knowledge, 23% as having 'low', 37% as having 'medium', and only 1.6% being classified as having 'high' levels (**Table 12**).

	No Knowledge	Low Knowledge	Medium Knowledge	High Knowledge
Uzbekistan	32	11	55	2
Kazakhstan	45	37	17	1

Table 12. Knowledge levels (%) divided by country (Uzbekistan (no.= 132); Kazakhstan (no.= 125)).

Local governmental organisations identified by 75% of respondents in Uzbekistan included the Hunting Board and Administration of State Reserves and National Parks of Uzbekistan (*Ohotnadzor)* and local branches of the 'Forestry Economy' department under the Ministry of Agriculture and Water Resources in Nukus, with a further 62% exhibiting knowledge of their responsibilities (e.g. monitoring, anti-poaching and the planting of saxaul). In Kazakhstan, responses were limited to knowledge of *Okhotzooprom* – the national agency responsible for anti-poaching controls and rangers, and the Forestry and Hunting Committee under the Ministry of Agriculture, with 43% mentioning them as being involved directly in environmental work of one form or another. While 20% exhibited some knowledge of hunting rules and regulations, including hunting and seasons and fines levied for the poaching of protected species, only 9% knew that the saiga was included in the Red Data Book of Kazakhstan. However, while it might appear from these results that knowledge levels were higher in Uzbekistan, there is some concern that inconsistent data collection in Kazakhstan might have influenced these figures.

4.4 Section 3 – Attitudes

Although the unit of the HH questionnaire was the household itself (here defined as '*those who sleep together under this roof*'), certain sections focused on the knowledge and attitudes of the individual

respondent. A series of statements were put to respondents with their attitudes towards the statement being ranked via a five-point Likert scale.

Statement	+2	+1	0	-1	-2	DK
a) The environment of the Ustyurt is currently in a good condition.	2	49	0	40	4	6
b) The hunting of any animal is acceptable if done sustainably.	0	15	0	76	3	6
c) If there were no more saiga in this country (i.e., they went nationally extinct), I would not mind.	0	6	0	86	6	2
d) The State should increase its protection of the wolf.	0	62	0	27	1	10
e) The State should increase its protection of the saiga.	8	89	0	1	1	1
f) People found having killed protected species should face a heavy penalty.	9	83	0	5	0	3
g) Only once the needs of the local people have been met should the state care about protecting wildlife.	1	79	2	14	0	4
h) I would personally be prepared to act on a volunteer basis to help conserve saiga antelopes.	1	75	0	23	0	1

Table 13a Uzbekistan. % of respondents agreeing or disagreeing with a range of attitudinal statements (**+2** = strongly agree, **+1**= agree, **0**= neither agree nor disagree, **-1** = disagree, **-1** = strongly disagree, **DK** = don't know

Statement	+2	+1	0	-1	-2	DK
a) The environment of the Ustyurt is currently in a good condition.	2	43	4	20	1	30
b) The hunting of any animal is acceptable if done sustainably.	0	61	3	21	0	15
c) If there were no more saiga in this country (i.e., they went nationally extinct), I would not mind.	0	8	4	82	4	2
d) The State should increase its protection of the wolf.	3	34	0	56	0	7
e) The State should increase its protection of the saiga.	28	70	0	1	1	0
f) People found having killed protected species should face a heavy penalty.	22	76	0	1	1	0
g) Only once the needs of the local people have been met should the state care about protecting wildlife.	8	78	2	11	0	1
h) I would personally be prepared to act on a volunteer basis to help conserve saiga antelopes.	10	72	2	7	0	8

Table 13b Kazakhstan. % of respondents agreeing or disagreeing with a range of attitudinal statements (**+2** = strongly agree, **+1**= agree, **0**= neither agree nor disagree, **-1** = disagree, **-1** = strongly disagree, **DK** = don't know

As shown in **Tables 13a and b**, statements **c**, **e**, **f**, **g**, and **h** stimulated more or less unanimous responses, with statements **a**, **b**, and **d** eliciting much more varying positions. The most unequivocal response, as might have been expected given the presence of saiga researchers, was statement **c**, eliciting 98% agreement when both countries were summed together. While it was expected that most HHs, being livestock owners, would hold negative views about wolf protection (statement **d**), the issue was included alongside saiga conservation as a means of ensuring that respondents were not just saying what they expected that the researchers would want to hear. However, almost 50% of respondents held a favourable attitude to the species, which may relate to the fact that many HHs regularly reported seeing wolves in the vicinity of their communities.

Although the responses to several of the statement suggest that Ustyurt communities held strongly pro-environmental views (**c**, **e**, **f**, **h**), the respondents were also concerned that people's needs should be considered in environmental policy (**g**). Likewise, FG exercises suggested that while many respondents held indirect values (related to goods and services not ordinarily bought or sold), option values (something having use/value as a resource in the future) and non-use values (e.g. cultural value), expressing concern about the Ustyurt, all surveyed communities also appeared to be concerned about immediate HH needs. Indeed, the most common environmental worries, population growth (both human and livestock), water shortages, increasing salinity and drought were

always anthropocentrically driven, and FGs suggested that (while inextricably linked to a healthy ecosystem) the provision of habitat for wildlife remained a low priority. There is little novel about this position; trade-offs between people and the environment are common. Positive attitudes towards nature are likely be superseded when more pressing day-to-day issues of health, poverty and education are faced.

Of the 79% of respondents who would be willing to act to help conserve saigas, there appeared to be a marked tendency to get more involved in Uzbekistan, rather than in Kazakhstan, where few respondents were willing to do anything other than '*talk about saiga conservation to friends*'. In Uzbekistan, 57% of respondents were prepared, at least when asked, to participate in saiga-related events, compared to 9.6% in Kazakhstan. Of those who then went on to say that they would donate money (58% in UZ, as opposed to a mere 4.8% in KZ), amounts offered ranged from UZS 500-100,000 ($0.3-58), and from KZT 1000-10,000 ($7-69). The question of whether or not this more positive attitude to getting involved can be traced to recent conservation interventions in Uzbekistan warrants further study.

4.5 Section 4 - Trade

In the literature on the illegal use of natural resources, Gavin *et al*. (2009) focus on four central questions that such research should answer:

1. What is the illegal resource use (i.e., what species and what extraction techniques)?
2. Where does illegal resource use occur?
3. Who extracts resources illegally, and
4. Why does illegal resource use occur (i.e., behavioural incentives)?

To answer these questions within both the general context of commodity chains and the more specific Darwin/SCAPES objectives, data were gathered on a wide variety of topics. These included the techniques used to procure the resources in question, the locations of these activities, the identities of those violators involved, and the incentives driving this illegal resource use. In addition, and as a means of defining those user groups operating at each link in the commodity chain, target questions were designed so as to try and account for the magnitude of illegal resource-use, in particular, the quantities of both meat and horn traded, the prevalence of this trade at different spatial scales, the number and 'type' of people involved, the size of incentives driving illegal activity, and the frequency of illegal activity (i.e. whether there were seasonal or long-term changes in quantities extracted, or locations of and participants in illegal extraction). However, identifying the different types of actors that trade along a commodity chain entails being able to extract sensitive information from those who are often involved on a first-hand basis, i.e. from the poachers and traders themselves. While it was assumed in pre-survey planning that more members of the communities would share their knowledge about the saiga trade, practical experience showed that breaking down barriers of suspicion proved to be a significant hindrance to efficient data collection.

4.5.1 Current Poaching Behaviour

Out of 132 HHs in Uzbekistan, four respondents admitted to being either current or ex-poachers, with another four HHs identified by others as potentially being so. Four out of the eighteen KIs admitted to being current poachers, two were 'licensed hunters', and one other (a ranger) was independently identified by a number of respondents as being involved. In Kazakhstan only ex-poachers were interviewed, although this might be a result of inefficient sampling and data collection rather than respondent fear. Because of the inability to identify those involved in poaching even at an individually-anonymous HH level, these small sample sizes meant that it has not been

possible to quantitatively assess those background factors that might influence such behaviour. Nevertheless, a wealth of information was gathered from these 27 KIs, and when supplemented with occasional data from HH interviews, it provides a broad overview of commodity chain dynamics.

While there are no exact data concerning the number of saiga poachers on the Uzbek Ustyurt, recent expert opinion puts the total at a conservative 12-15 people, broken down in the survey villages as follows; 3-4 Jaslyk, 5-6 Karakalpakia, 1 - Bostan, 3-4 - Kubla na Ustyurt, with people from Moynak occasionally partaking (Bykova & Esipov, 2011). Of the four questionnaire respondents in this survey who admitted to researchers that they were either current or ex-poachers (with another four HHs identified by others as potentially being so), two were from Jaslyk, and two were from Karakalpakia. Of the four Uzbek KIs who admitted to being current poachers, two were from Jaslyk, one was from Karakalpakia, and one was from Kyr-kyz.

Recent information on saiga mortality due to poaching on the Uzbek Ustyurt states that 151 saigas, (48 males and 103 females) were killed by local men between April 2010 and April 2011 (Bykova & Esipov, 2011). According to this report, which was based on key informant interviews, most hunters were from Karakalpakia village. In order to assess the effectiveness of hunting during this period, the patterns and off-take of one hunting group (2 persons, 1 motorcycle) were analyzed. Hunting trips were organized every month from February to June, with the number of trips dependent on weather and personal reasons (health, etc.) rather than saiga numbers. The maximum number of saigas killed per hunt was 10 individuals, and the average 4.25. The total number of saigas killed during one year by this small group could be as much as 135 animals, highlighting the high levels of experience and efficiency among some of these hunters. As expected, their preference is for males, with adult females being hunted for meat. These hunters claim never to kill young or pregnant females and calves. Such figures are reinforced by a Kazakh KI estimate from this current study of maximum off-takes for a similar hunting group as eight animals in summer and twelve in winter (**0602**).

Just as the Uzbeks consider the saiga to be part of their 'natural livestock' (**0106**; **0202**), so too are the Kazakhs proud of their nomadic past and what this entails. The hunting tradition remains strong, and although many KIs considered poaching to have decreased in the last few years (**0603**; **0701**; **0802**), still poachers are said to come to the Ustyurt from distant communities to hunt, spending up to ten days or more on the steppes. These poachers may go hunting in small groups, with 2-3 motorbikes, for example, but if actively seeking meat, then cars may also be used to ensure that meat can be transported. 10-15 corpses can be strapped to the back of 3 Ural motorbikes (**0801**), whereas a UAZ jeep can take 70 saiga corpses, and a tented GAZ, 82 (**0901**). In contrast to Uzbek practices, it appears that hunters to the Kazakh Ustyurt come from further afield to poach saigas, with the smaller settlements of Oporny (Mangistau Oblast), Saxaul (Kyzylorda Oblast), Sargyz and Kulsary (Atyrau Oblast), and the bigger town of Shalkar (Aktobe Oblast) being regularly mentioned as hubs of involvement (see **Figure 9** below) (**0602**; **0603**; **0701**; **0801**). These 'outsiders' do not always fit the assumed stereotypical demographic, belonging less to the impoverished sub-sections of society than to a class of better-off livestock owners who '*love easy pickings*' (**0801**). This respondent went on to describe them as '*keen, middle-aged hunters who have turned their hobby into a business*'.

Figure 9. Map of Kazakhstan, with the Ustyurt boxed, main destinations for horn in red (Beyneu, Shalkar, Aktobe and Almaty) and *oblast* borders in green, **1**= Atyrau, **2**= Manggystau, **3**= Aktobe and **4**= Kyzylorda.

While the majority of KIs referred to horn being the main object of the hunt, some claimed that the threat of anti-poaching patrols might well impact behavioural patterns, with fear of capture stimulating the decision to take the horn, strip as much of the meat as possible and then discard the body, a practice still occasionally documented in Uzbekistan (**0001**).This is in accordance with reports from previous studies, which suggest that saigas are currently hunted in the proportions of 40% horn and 60% meat, although the same report reiterates that hunting for horn is nevertheless considered to be a bigger threat to remaining populations, again because of the selective targeting of adult males (Kuhl, 2006).

4.5.2 The Trade in Horn

Although poaching continues, there are historical incidences of both dramatic decrease and increase in the price of horn across all saiga range states, which may well be the consequence of an over-supply in the market stimulating a drop in value. In 1991, for example, the price of saiga horn in Russia declined from $600/kg to between $30-60/kg in mid-1994 (TRAFFIC, 2004). Since then, the price of horn has varied, ranging from UZS25 000 to UZS70 000 ($20–60), sometimes reaching UZS100 000 ($80) per kg. However, in 2006, prices had increased and horns were sold for UZS140 000 – 165 000 ($120–130) per kg (Bykova & Esipov, 2006). Of the many estimates received in this survey, current prices in Uzbekistan ranged from UZS 500,000 to 1,500,000/kg ($250-750), the maximum value being given by a current poacher as the price horns might change hands for in Nukus (**0108**). Prices in Kazakhstan were similar, although always quoted in dollars. Little information was given about prices higher up the chain, although one Kazakh KI claimed that one kilogramme of horns could change hands in Almaty for the unlikely sum of $4000 (**0602**).

Normally, three to five pairs of adult male horns weigh one kilogramme (Fadeev & Sludsky, 1982; Ishunin, 1987, *cited in* TRAFFIC, 2010). However, according to informants on both sides of the border, males aged three or more years are encountered only rarely (**0103**, **0302**, **0702**), and figures from Kalmykia in the Russian federation suggest that one kilogramme can now comprise as many as eight to twelve pairs of small horns (TRAFFIC, 2007). It is worth recalling mean monthly incomes (KZ - $560; UZ - $340), and more pertinently, those at the lower end of the spectrum (<$100), in comparison to local horn prices exceeding $250/kg, which may represent 4-10 dead saigas. However, when the catch per unit effort (CPUE) of horn decreases as male saigas become less available there

may be some truth in Kuhl (2006), and Bykova & Esipov's assertion (2004) that meat sales may be the primary incentive for hunting, with horns as a welcome by-product.

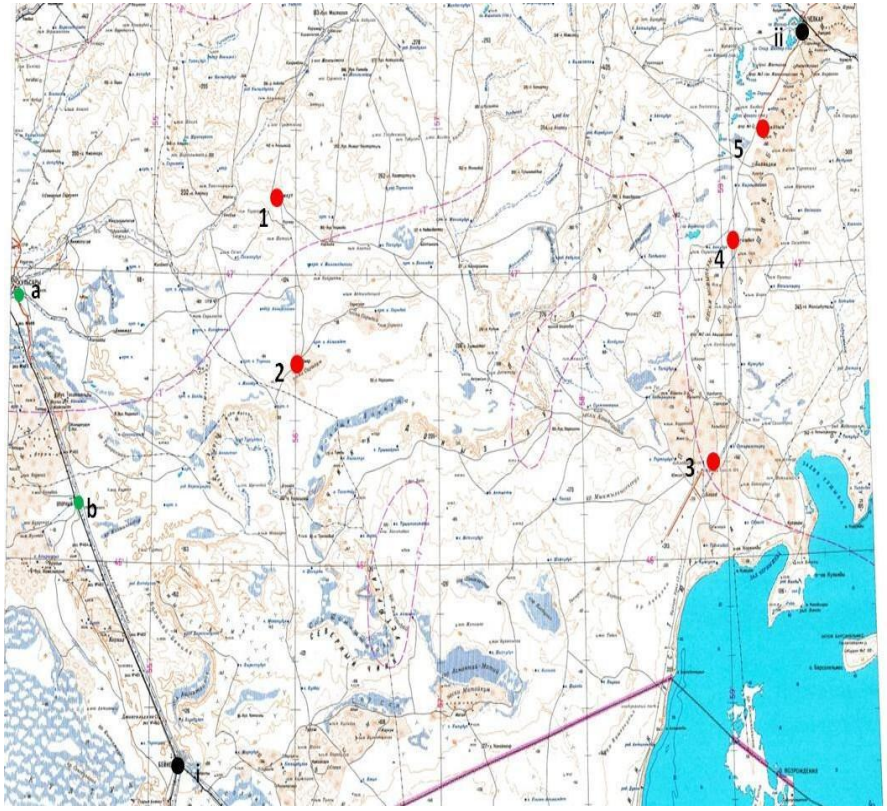
4.5.3 The Trade in Meat

Prices for saiga meat seem to vary depending on the season. In the past decade these have ranged from UZS800 to 1500 ($0.65- 1.2) per kg in 2004, from UZS2000 to 2500 ($1.6–2) per kg in 2006 (Uzbek estimates from Bykova & Esipov), and are now quoted by respondents as being between UZS 4000 to 7000 ($2.3-4) per kg, and around KZT 500 ($3.50) per kg in Kazakhstan. In both Kazakhstan and Uzbekistan, prices of saiga meat are approximately 1.5–2 times lower than that of beef, mutton or camel, and considerably lower than chicken (UZS 25,000, or $20 per bird), which in Uzbekistan appears to only be consumed by the pregnant or the infirm. In Uzbekistan, the prices are generally higher in summer, when availability of saiga meat is lower, and cheaper in winter, as supply increases during the period of migration. One carcass costs from $8 to $16 in Uzbekistan, and in Kazakhstan from $35 to 50 depending on sex and thus size (**0801**). In Kazakhstan, it was mentioned that orders for multiple carcasses (up to 20 at a time) could be placed in advance with local hunters to see a family through the winter (**0602**), and also that poachers from both Sargyz and Kulsary would come to Diar to hunt specifically for meat with 5-10 cars at a time (**0603**). These prices do however appear to be rising, with one informant in Jaslyk stating that a 50% increase had occurred over the past two years, correlated with rising prices for gasoline (**0101**). In the last twelve months in Uzbekistan, fuel has risen from UZS 1000 to 3000 per litre. For a motorbike, this same informant explained, a round trip to reach the dwindling herds could cost UZS 60-90,000/$35-52 (25-30 litres, or 200 km), and he then reiterated the oft-heard assertion that '*the meat is the gas, the horn is the profit*'. Kulsary in Kazakhstan was twice identified as being a destination for meat, with orders being made both for multiple carcasses during the winter months (**0601**), and also with a specific market seller identified as selling the meat '*behind the counter*', and potentially under the auspices of the local police (**0603**). Asked to specify a reason why people bought saiga meat, certain informants said they bought it because it was cheap, but many also pointed to its recognized nutritional value (in keeping with the general paradigm that holds 'wild' meat as being superior to domestic).

In Uzbekistan, saiga meat is normally sold by the hunters themselves, handed out post-hunt to family or neighbours, and with a handful of exceptions, only rarely by traders or in public. These exceptions are on the local trains that ply the route between Kungrad and the border in Uzbekistan, where its lower price means that it is often used as an ingredient in goulash sold by the women who work the route (**0106**). Bykova & Esipov (2006) report that dishes made with saiga meat are openly sold year-round in roadside restaurants (*chaikhona*) along the route from Kungrad to Beyneu. Likewise, the extensive network of familial relations that exist between ethnic Kazakhs of both countries mean that meat may be passed from Uzbekistan to Kazakhstan (and again in particular to Beyneu), where it commands a higher price (**0202**). In the same report Esipov & Bykova state that saiga meat has been found as far afield as Urgench market, in Khorezm province, 600–700 km from Ustyurt plateau. In Jaslyk, one KI told researchers he could buy saiga meat for them immediately if desired, and that it is the police themselves who advise traders not to sell it openly (**0106**).

4.5.4 The Commodity Chain - Uzbekistan

In Uzbekistan, KIs were asked explicitly to define the commodity chain as best they could. These links are shown below, alongside relevant HH data, and several routes defined by destination alone. The main indication here is that the flow of commodities seems to follow one main route, with slight variations along the chain. This is via Beyneu or Shalkar (in Kazakhstan, see Figures 10a & 10b), to Aktobe, Almaty and thence to China. The suggestion that Chinese (or occasionally Koreans) are



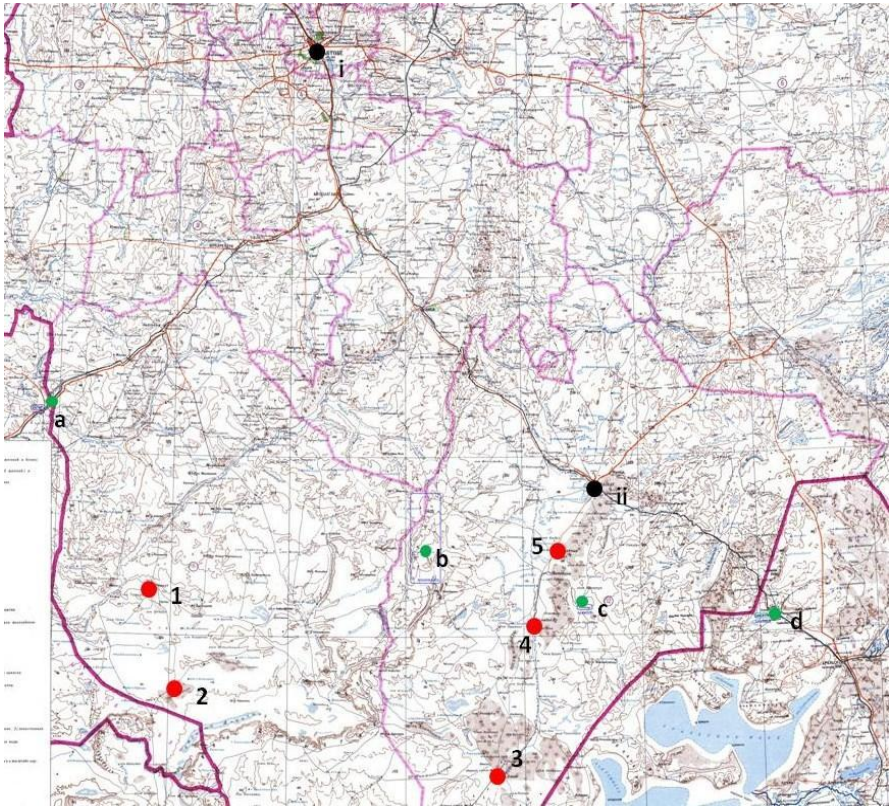


Figure 10 a **b**

Figure 10 a). Map of Kazakh survey sites, **1**= Aimaut, **2**= Diar, **3**= Bosoi, **4**= Begimbet, **5**= Akkaitym, central points on the local trade route, **i**= Beynau, **ii**= Shalkar, and newly identified (but not visited) poaching hubs, **a**= Kulsary, **b**= Oporny

b) Larger scale map showing Kazakh survey sites, **1**= Aimaut, **2**= Diar, **3**= Bosoi, **4**= Begimbet, **5**= Akkaitym, and central points on the local trade route, **i**= Aktobe, **ii**= Shalkar, and newly identified (but not visited) poaching hubs, **a**= Sargyz, **b**= Shoshakol, **c**= Alatozy, **d**= Saxaul

involved at locals levels of the trade, in Beyneu, for example, was heard on several occasions in Uzbekistan, but never in Kazakhstan itself.

4.5.5 The Commodity Chain - Kazakhstan

The main routes for horn poached in Kazakhstan seem to be via Akotbe, with Shalkar a connection if poachers happen to live in any of those communities that line the road between Shalkar and Bosoi. Indeed, open advertising for horn in Aktobe is apparently common, with one HH survey respondent stating that he knew of a young man in Aktobe market who would buy horns at KZT 60-70,000/kg ($400-500) (HH Qu. no. **12**), a claim also reiterated by KI **0701,** who stated that it was easy enough to find numbers to call if one had the horns to sell. Just as a number of Kazakh villages, at varying distances from the Ustyurt were identified as harbouring poachers, so too were they said to contain traders of one form or another (see **Figures 10a** & **b**). It is unlikely that these are 'new' developments, but rather that they simply weren't identified in previous studies, as was the case with other isolated communities on the western side of the Ustyurt (e.g. Aimaut and Diar) which had not been surveyed before. Kulsary, (which seems to have gained 'town' status relatively recently on account of its proximity to TC Oil, a US company), Sargyz and Saxaul were mentioned in this context, with poachers coming to both hunt and ask at individual HHs for horns to buy (**0602**; **0701**). Likewise, Saxaul was also designated as a destination for horns on the route to Aktobe (**0801**; **0901**). KI **1001** claimed that buyers have also come from Chimkent and Saryagash (Kyzylorda Oblast). It is widely recognised, however, that regardless of the country or region where the horns were poached, "*all roads from the steppes lead to Almaty"* (**0602**).

As a rule, horns purchased by middlemen in both countries are traded along the chain to Kazakhstan and from there onto China. There appear to be networks of traders positioned in all big cities, including Nukus, Kungrad, Khojeili and Tashkent (UZ), and Beyneu, Shalkar, Aktobe and Almaty (KZ). As expected, it was difficult to procure reliable information on these traders, who traditionally keep their identities secret. "*Why would they tell us who they deal with*?" One KI asked. "*If they did, we could cut them out of the deal altogether*" (**0501**). In Kazakhstan, they rarely seem to inform villages in advance of when they will be coming, preferring to arrive and visit HHs individually to ask if there are horns for sale, having determined in advance if there are local policemen present. However, it was claimed that despite the secrecy with which these people operate, the links between them in the chain are well-established, with details gathered of where exactly in Aktobe some of these traders live (*Moskva* and *Malyshka* private-sector districts, on the outskirts of the town), alongside a reiteration that these individuals have been involved in the trade for many years, with one of them, an Azerbaijani, able to permanently relocate to Germany on account of the profits he made (**0602**).

Only in Kazakhstan was it claimed that buyers paid in kind for horns, again calling in advance and delivering bikes[6], guns, ammunition, or even children's clothes in exchange for horn (**0602**; **0701**). In Uzbekistan, it was claimed that some middlemen might place a direct order for horns with the poachers themselves, only coming to make payment when 10-20 kg have been accumulated (**0405**). This KI went on to reiterate that horns from the Uzbek side of the border are usually transported through Beyneu and then on to Almaty by train (the fastest way to cross the border), although private cars are also said to make the same journey, avoiding custom posts by travelling off-road (**0202**). Trains were also mentioned as being one mode of transportation onwards from Aktobe to Almaty, and that carriage guards are involved in this (**0602**).

[6] This KI claimed that 3kg of horns could be exchanged for a new Ural Motorbike, worth KZT 200-250,000 ($1370-1701).

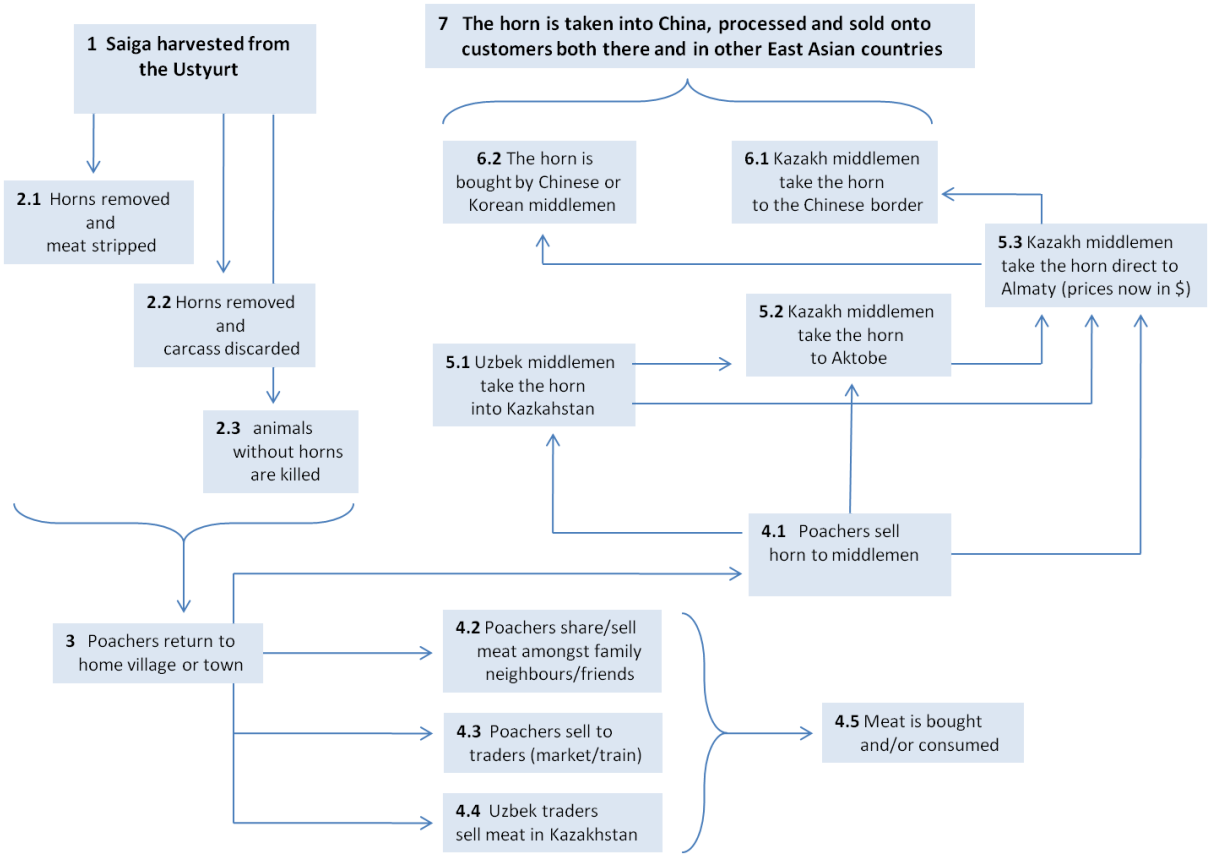


Figure 12. Stages in the saiga product commodity chain through off-take, transport, exchange, conversion, distribution, and final use. The important implication here is that all horn trade from the Ustyurt will pass through Kazakhstan at some point along the chain.

As was expected, there seemed to be little knowledge of what might to happen to the horns once they arrive in Almaty, although it was mentioned that they might be bought by Kazakhs who live on the Chinese border, rather than by ethnic Chinese themselves (**0405**). To put this in the wider context, TRAFFIC reported in 2007 that whereas in previous years (1999 to 2001) the horns were normally transported to Beijing via Moscow, they are nowadays exported directly to Urumchi in China, which has become the main entry point for a variety of goods exported (legally and illegally) from Kazakhstan to China. While there are no reliable estimates on the actual volume of this illegal trade to China, some estimate it to be hundreds of kilogrammes of saiga horns per year (TRAFFIC, 2007).

Generally, it would appear that there are spatial differences in poaching activity between countries, with it being more widespread in Kazakhstan than in Uzbekistan, in part because of the larger saiga population, and of equal importance, as a result of greater access to vehicles and weapons.

4.5.6 Actors in Poaching and the Trade

Attempts to identify those involved in the trade at different points along the chain met with a widespread reluctance to talk, with most respondents stating that middlemen kept their identities secret. Less 'direct' questions elicited better responses, such as those focusing on reasons for both poaching behaviour and involvement in the trade, and potential means of reducing these. As expected, income was cited as being the main driver of poaching behaviour (51% overall) with diet mentioned more than tradition or recreation (**Figure 13**). Although HHs were asked to list as many supplementary reasons as they liked, it is worth noting that 73% did not do so. But KI responses from

Kazakhstan suggest that the main drivers there have less to do with providing a main source of income and more with supplementing pre-existing ones. Indeed, it was regularly stated, despite findings to the contrary, that poaching had little to do with poverty (defined in Kazakhstan as limited livelihood options).

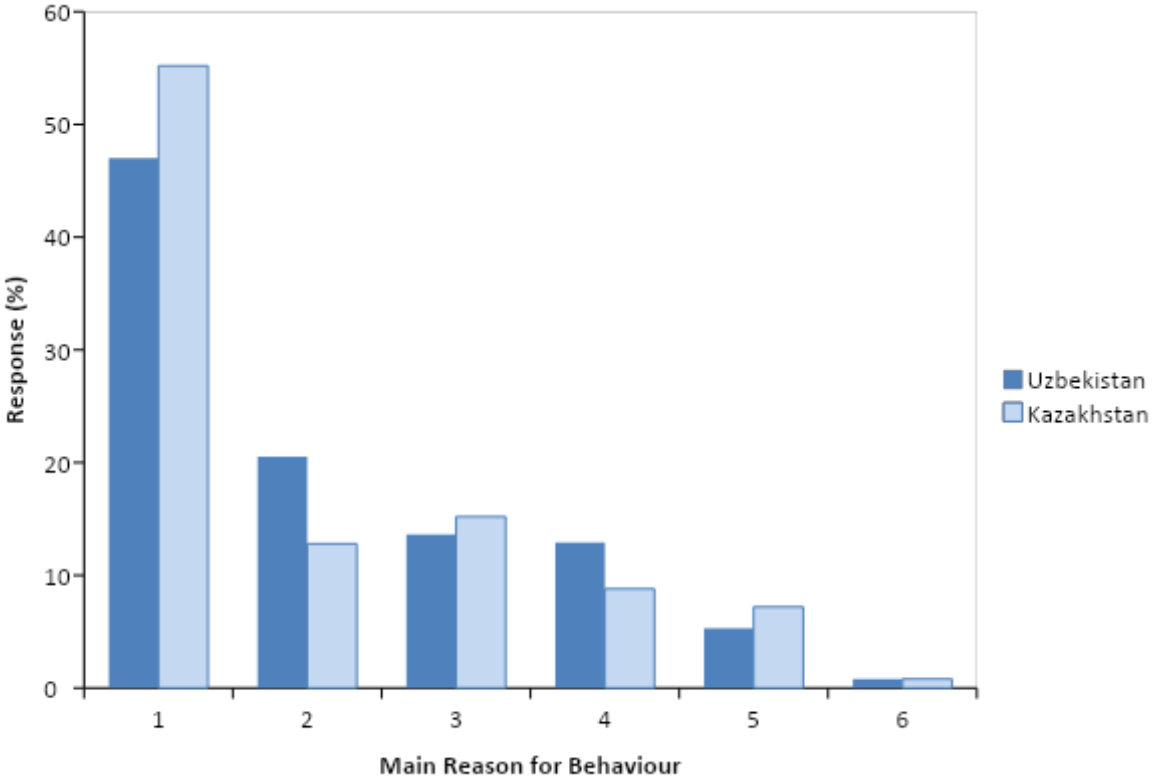


Figure 13. Overall responses (%) for drivers of poaching behaviour, sample size = 257. 1= Main Income Source; 2= Diet Supplement; 3= Income Supplement; 4= No response; 5= Recreation; 6= Tradition .

Likewise, when looking at supplementary factors influencing poaching, 15% of HHs pointed to 'other' factors (including recreation/entertainment) influencing poaching (**Figure 14**), and ten HHs in Uzbekistan claimed that 'risk' appeal (an oft-heard gambling metaphor) also played a significant role. When asked whether or not these circumstances differed at all between the trade in meat and that of horn, 71% and 72% stated that there was no difference in underlying causes or motivations for meat and horn respectively.

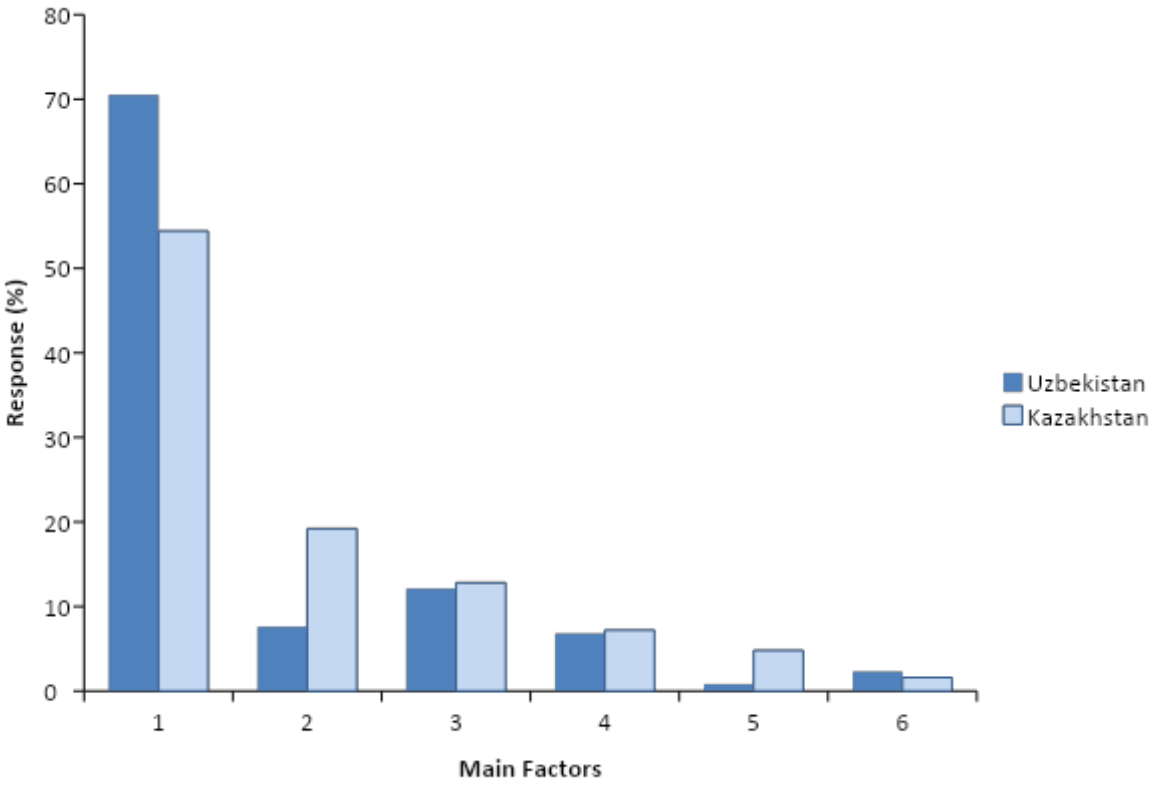


Figure 14. Overall responses (%) for factors influencing poaching behaviour, sample size = 257. 1= unemployment; 2= Other; 3= no response; 4= Law enforcement; 5= Social pressure; 6= legal protection.

4.5.7 Identifying Local Levels of Involvement – The Randomized Response Technique

In section 4, a 'Randomized Response Technique' (RRT) was used. RRT techniques are a method of ensuring anonymity for the respondent when answering sensitive questions. Depending on the outcome of a randomization device (e.g. picking a coloured object from a bag), the respondent has to answer a sensitive question or give an automatic "yes" or "no" answer. Due to its statistical efficiency, the forced response' model was used to estimate the proportion of rule-breakers in the RRT sample (Lensvelt-Mulders, 2004):

$$\alpha = \frac{\theta - \delta}{P1}$$

where α is the estimated proportion of the sample who have broken the rule, θ is the proportion of all responses which are 'yes', δ is the probability of being required to say 'yes', and P_1 is the probability of having selecting the sensitive question. From this it could be concluded that 11% of respondents came from a HH where saiga meat had been eaten in the last year, 5% from a HH where meat had been bought or sold, 3% from a HH where horn had been bought or sold, and 2% from HHs that had hunted saiga (no.= 234). However, it is necessary to bear in mind that the standard errors around these figures are likely to be large.

4.6 Policy Responses - Law Enforcement.

As reiterated time and time again by those surveyed, it is difficult to remedy a situation when active involvement in it is taking place at all levels. Indeed, previous reports on the trade in these two range

states (and in the others as well) have indicated that government officials are involved in the illegal hunting of and trade in saiga antelope products and that they co-operate with poachers (TRAFFIC, 1995; Bykova & Esipov, 2004; TRAFFIC, 2007), and this study further reinforces this. A number of both HH respondents and KIs in both countries surveyed claimed that rangers (UZ) and *Okhotzooprom* personnel (KZ) were involved. Of the five HH respondents who did so in Uzbekistan, two admitted to being either poachers or ex-poachers themselves, suggesting first-hand knowledge to back up such a claim. One KI (another self-confessed poacher) claimed that it was the rangers/police themselves who came with their own cars and motorbikes from Kungrad district, took local poachers with them and hunted to order for the public prosecutor (**0108)**. Furthermore, one KI claimed that if a poacher is caught having killed saigas, the rangers keep one in every two of the corpses and return the gun with the motorbike to the poacher; suggesting that there is always a means of negotiating one's way out of trouble (**0108**).

While the role played by officials other than rangers in Kazakhstan was also mentioned, it wasn't as commonly expressed as in Uzbekistan. However, informant **0901**, a retired police officer from Begimbet settlement, Kazakhstan, who had himself arrested many poachers in the past, claimed that police officers are involved. But while general opinion deemed the enforcement of existing regulations and laws ineffective, it was also recognised by these same informants (and by communities in general) that those government officials tasked with the control of poaching activities in the saiga range areas were underpaid and insufficiently equipped for the job, especially in Uzbekistan. Furthermore, it was recognized that all strata of society buy saiga meat, not only local inhabitants, but even those in positions of authority (**0203**). In Kazakhstan, horn buyers are reportedly known to be associated with those in positions of respect and power (**1001**). '*What is the point of listing a species in the Red Book'*, one Uzbek informant said, '*if even hunting inspectors are involved in poaching*' (**0202**)?

4.7 Policy Responses - Social Interventions

In order to improve the sustainability of livelihoods in the Ustyurt region, this study attempted to identify potential areas for enhancement for those local people who might otherwise engage in saiga poaching. Alternative livelihood options were explored in order that the results can be fed into a community small-grants programme being implemented under a USAID SCAPES funded initiative. There is a precedent for using alternative livelihoods scheme for saiga conservation, with an explicit focus on poorer households (**Box 1**). The poorer sub-sections of society are more likely to rely on hunting and trade as a component of their livelihoods, and so will be most affected by an increase in law enforcement effectiveness, and are likely to be the potential targets for this programme. In an economically-deprived region like the Ustyurt, people's livelihoods and their asset bases are fundamentally affected by shocks and seasonality over which they have limited or no control. However, an understanding of livelihoods in this region cannot be gained without detailed social analysis. The FG data may provide a useful overview of these communities.

In Kazakhstan, the Committee of Forestry and Hunting together with the UNDP and the World Bank are in the process of attempting to involve the rural population in alternative activities to those which encroach on saiga habitat or impact on the animals themselves (CMS, 2010). Initial ideas include establishing small enterprises to process livestock products, arranging guesthouses for visitors of protected areas (PAs), to manufacture souvenirs and organize PA excursions (CMS, 2010). However, these currently focus on populations other than the Ustyurt. Likewise, on numerous occasions HHs in Uzbekistan mentioned that the government is in the process of providing private businesses/enterprises with small loans (UZS 5-10 million; $3000-6000), with 100 such loans promised to Jaslyk and Karakalpakia for things like hair-dressers and shoe makers. These respondents went on to identify a common impediment, that while the intent to get involved exists, the capacity to do so does not. No one, they said, knows how to write business plans.

Box 1. Rotating cows in Kalmykia

In 2005 in Kalmykia, Russia, a livestock bank was created with the objective of linking local livelihood enhancement with the cessation of saiga poaching around the Chernye Zemli Reserve. Land and facilities available at the Centre for Wild Animals of the Republic of Kalmykia's Yashkul Saiga Breeding Centre were used to establish a small herd of a premium local breed of pasture cattle (Kalmykian Red cattle), which then formed the basis of a rotating cow fund, linking village cooperation in reducing poaching to concrete support for poor families. Target villages were located around the reserve where poaching was occurring, and village committees were involved in allocating cows to families, based on need. Continued participation in the scheme was conditional on the village fulfilling its obligations to report all instances of poaching to the local authorities. The families were given further help in marketing dairy produce, including subsidising the provision of dairy products to local schools. This was linked with publicity about the scheme in the local media and through leaflets, talks and posters, particularly in the target villages and schools. Experience from this 'rotating cows project', has shown how well-received it was by those households involved, especially via this provision of milk for local schools and orphanages (SCA, 2011; EJ Milner-Gulland, *pers.comm*). This experience shows that alternative livelihood schemes can be positively received, if they:

a) are locally owned and managed (the scheme was initiated and run by in-country organisations and through existing administrative structures, with minimal support from the UK),

b) chime with local people's needs (the scheme was identified as the way forward following responses obtained to the livelihood component of the detailed socio-economic survey carried out as part of Kuhl's (2009) research, suggesting that a key livelihood constraint for the poorest families was the lack of livestock, and one cow could fulfil a family's needs),

c) generate substantial social capital in the region (there was a particularly positive reaction to the clear message that saiga conservationists had listened to, and cared about the welfare of, local people, particularly disadvantaged children, and not just saigas),

d) catch the imagination so that there is local media interest (the idea of a rotating cows scheme was seen as novel and imaginative).

Figure 15. Kalmykian red cow (pic EJMG); a family receiving one of the cows (a widow with children and an elderly relative to support (pic Anna Lushchekina).

The main drawback of the scheme was that there was some requirement for ongoing capital investment in order to keep it going (it folded after a few years due to lack of continued external funding for things like veterinary aid and winter fodder). As the cows are explicitly given to poor families and not to poaching families, the issue of moral hazard is avoided, but at the expense of necessarily directly targeting poachers - if the scheme had continued then it would have naturally reached out to poachers, given that the social survey had identified poverty as the strongest predictor of poaching activity. This scheme's conditionality (its link between benefits received and poaching stopping) was weak and only at the village, not the individual level, with no real prospect of sanctions if poaching continued (in fact, it did continue). The only sanction actually applied was not starting the scheme in a known poaching village that did not appear prepared to stop. Finally, with all conservation interventions there is a need to consider how monitoring success can be carried out, and particularly how the outcome of the intervention can be measured. In this case, the scheme generated positive attitudes, but there was no attempt to measure whether behaviour had changed as a result.

When asked in the questionnaires to consider potential methods for reducing both poaching saigas and trading in their products, a varied set of responses were given, with increased income to local people and higher penalties being considered the best means of mitigation, with 28% and 23% of HHs citing them respectively (**Figure 15**).

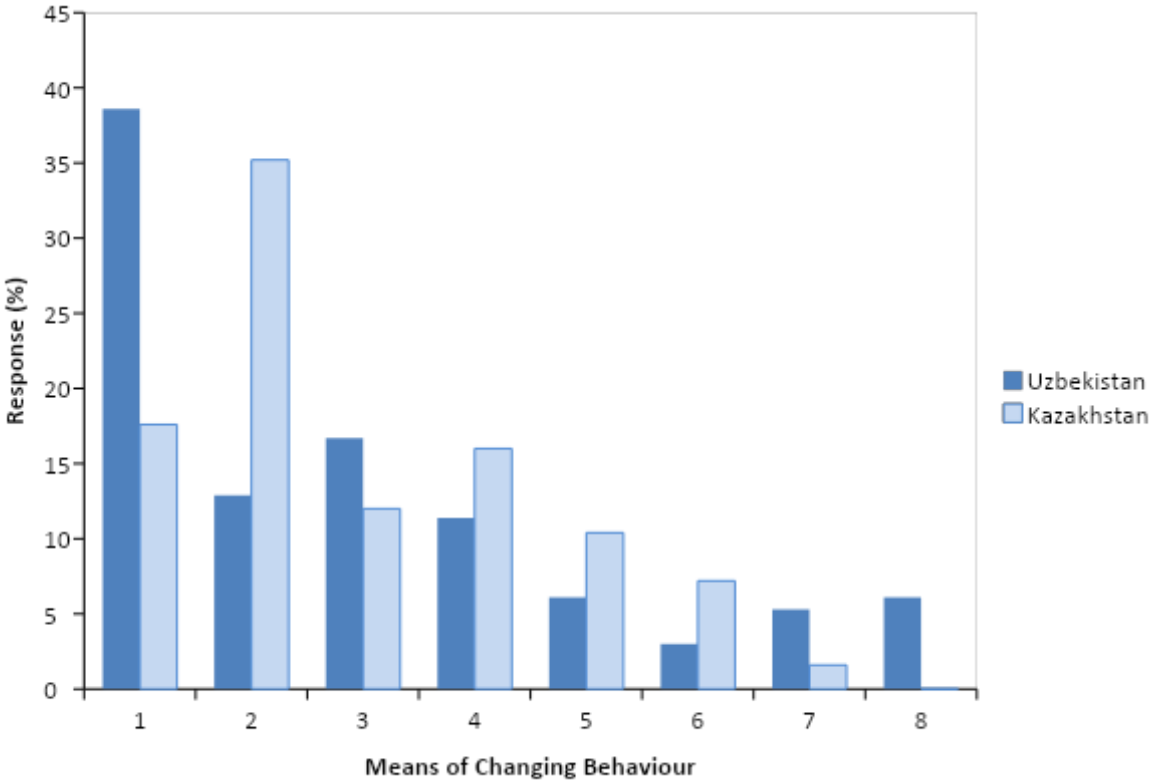


Figure 15. Means of reducing illegal behaviour, with response %s divided by country (Uzbekistan, no.= 132; Kazakhstan, no.= 125). 1= Increased income; 2= Higher penalties; 3= Different job; 4= no response; 5= personal decision; 6= other; 7= Higher chance of capture; 8= social disapproval.

Perhaps of most interest in the above figure is simply the geographical spread of these responses; in Uzbekistan it is increased income that is thought more likely to reduce illegal behaviour, and in Kazakhstan, higher penalties. Likewise, alternative employment and social disapproval also stimulated low responses in both countries, a point worth considering.

KI informants **0602** and **0902** both claimed that a defining factor in poaching in Kazakhstan was the lack of diversions in villages; that young men simply had nothing to fill their time. Youth, culture and internet clubs were proposed as potential solutions to this. However, it is worth bearing in mind that such suggestions come from those outside the trade, and in Uzbekistan, for example, two active poachers claimed that they would stop immediately if provided with an alternative income source (**0107**; **0109**). If the latest, low poaching figures from Uzbekistan are to be believed it might well be possible to target these key individuals/HHs themselves for livelihood enhancement schemes. This does, however, presuppose that HHs have been correctly identified and that some way of monitoring compliance can be ensured. It is also worth bearing in mind the response given to Kuhl in her 2005 case study of a Bosoi poaching group, when individuals independently stated that in order to switch to an alternative livelihood option, a minimum monthly income comparable to that which could be earned from poaching would have to be assured (KZT 30,000-40,000/$221-295). Furthermore, at least one of the group members was not able to find an alternative source of income because he had been in prison in the past, and there is also the moral dilemma of giving benefits to people simply because they are involved in an illegal activity.

Whatever the scale of the intervention, it is necessary to build on existing circumstances and skill-sets so as to supplement existing livelihood options, especially where the remote location of many of these villages, with poor, arid soils entails that there are few other options for income generation. In Uzbekistan, where 22% of HH respondents were without livestock, the potential to link livestock enhancement activities to saiga conservation actions in a similar way may well be possible. But the suitability of such initiatives is dependent on the possibility of both short-term external funding and long-term sustainability. In Kazakhstan, FGs identified one-off investment in things such as salination equipment, roads, or amenities such as clubs, while in Uzbekistan respondents mentioned subsidized poultry farming as a potential area for rolling investment. Although poultry is considered to be inferior meat on a day-to-day, subsistence level, it could nevertheless generate income for the more deprived families, which could in turn reduce these HH's need to buy cheaper saiga meat in place of beef or mutton. However, given the popularity of saiga meat, it is likely that many villagers would still buy it for its perceived 'wild' and 'nutritional' values. It is also worth bearing in mind that according to the UNEP aridity index (Middleton & Thomas, 1992) much of the Ustyurt is classified as a drought zone, susceptible to degradation and desertification. More generally, livestock numbers on the Uzbek side were reported by shepherds to be decreasing as a result of drought and salinity impacting on the abundance of fodder and fodder prices. Climate change is likely to exacerbate existing issues of drought as predicted changes in this region include a 2 degree temperature rise and a 13% decline in vegetation productivity (Singh & Milner-Gulland, 2011).

A recognized problem with these types of intervention concerns the difficulties of clarifying causal links between the desired change and the project activities themselves, without having sufficient contextual information. In terms of livelihood enhancement, even the qualitative data gained through FGs can fail to track subtle changes in community awareness or behaviour, or increased empowerment that might well be crucial to conservation success. But monitoring of any kind can require considerable investment of both time and effort (not to say funding), especially when tailored to the very specific project needs that occur on the Ustyurt. Furthermore, monitoring of activities and outputs must then be extended to results-based monitoring (whether there has been an actual decline in poaching activity and a subsequent increase in saiga populations). Therefore a key recommendation of this study is that both baseline studies and ongoing monitoring must involve intensive and extended periods of fieldwork in the target villages, in order to gain the trust of local people and obtain reliable and grounded information on where saiga-related activities fit into individual households' livelihoods strategies. This is required both before and during any planned

livelihood interventions, and will involve substantial investment of researcher time. In this study we were not able to carry out such research due to budget and time constraints.

The positive attitudes to the environment and its wildlife exhibited by HHs in this study indicate that the ground is fertile for interventions aimed at both enhancing livelihoods and fulfilling conservation objectives. Engaging local people, particularly the poorer sections of the community, in activities promoting sustainable rural development is also a means of promoting pride in their natural environment. Many Uzbek households expressed interest in the role that horn plays in east Asian markets, and in particular the fact that the end product is one that they themselves (the rightful 'owners' of the saiga) do not profit from. Several HHs in Karakalpakia suggested that the Asian demand for saiga horn was part of the more widespread (and intentional) destruction of Uzbek natural resources by 'the Chinese' for their own benefit, which also included local mineral extraction and the ecological problems it causes. Furthermore, the majority of these respondents claimed that Kazakh action on the border prevents saigas from reaching Uzbek soil; a local belief that might well impact negatively on community-level conservation projects linked to species preservation. However, questionnaire responses showed that many of these HHs were willing to participate in some form or other, which could well be a result of previous work undertaken in these Uzbek communities. If current awareness raising programmes could incorporate a more explicit focus on the linkage between the end product, its sale, and the exploitation of the saiga, then a greater percentage of local communities might come to realize the extent that 'their' saiga are being exploited to feed a foreign market. That they *themselves* are being exploited in the same way. *The saiga is our natural livestock*, one HH respondent said. *We should do a better job of looking after it*.

While it may well be the case that this exploitation of saiga antelopes is directly linked to the collapse of rural economies (resulting from the dissolution of the USSR in 1991), such activities have now, twenty years later on, become an engrained part of life for Ustyurt communities. Having an impact on this behaviour entails not only addressing the underlying drivers (which have been shown to be more complex and spatially heterogeneous than mere poverty alone), but also tackling the mechanics of the trade itself. While research and experience from conservation projects throughout the world have shown that integrated community-based approaches are required for both ethical and practical reasons (Pimbert & Pretty, 1995; Inamdar *et al*. 1999; Mainka & Trivedi, 2002), it is necessary to consider the geographical and behavioural differences that exist between the communities in the question. Just as breaking each link in the chain will need a different approach, so too does each village have different potential for specific interventions due, for example, to its location, size, levels of wealth and the distance to markets.

An in-depth assessment of specific villages in terms of individual suitability for an intervention is beyond the aims of this study. Once decisions are made as to where and when funds might be levered, a more detailed location-specific assessment would be required. However, this study has highlighted important trends that appear to be consistent with previous studies, namely that in Kazakhstan, where poaching occurs in more organised commercial groups, but with much lower household participation within villages, a stronger focus on law enforcement may be necessary, whereas in Uzbekistan, where poaching activity is often characterised by smaller groups and is more driven by poverty, then more individually-focused interventions may reap better rewards. Whatever is proposed, the long-term commitment of households to any such project will have to be ensured. For even if employment and income generated could compete with current poaching incomes, this would still not remove the temptation to supplement these incomes both now and in the future, particularly if, as hoped, the saiga population starts to recover.

5. Limitations & Recommendations

Attempts to map out commodity chains need to be embedded within a specific context of the good in question; in this case it is therefore necessary to consider a number of important features to the saiga trade that might not always be present with other illegal goods:

- it is broken down into a 'prized' component (horn) that is distributed to high-demand countries, and a lower-value component (meat) that is either traded locally, or sometimes even discarded altogether;
- this difference in financial 'value' does not necessarily reflect how and in what proportion these products are harvested and utilised at the village level;
- the chain passes through a number of provinces in each country in question;
- the commodity is actively diverted at various points in the chain to countries with high demand and high prices, and
- because the final commodity comes from a range of states, it may be difficult to determine the original supply country.

'*Don't spit into a well you might want to drink from'*. This oft-cited Kazakh proverb illustrates the main difficulty in pursuing information on illegal resource use. Attempts to identify the series of relations through which saiga products pass (the so-called 'commodity chain') were hindered greatly by the sensitive nature of this information and a general reluctance to share it. Furthermore, the geographic spread of both production and exchange (the 'all roads lead to China' syndrome) restricted researcher ability to identify these more distant links in the chain. This is particularly pertinent with regards to the transport of saiga horn towards and beyond larger cities, where the identity of those involved becomes less clear the further one moves away from the steppes and as the degrees of separation between original poacher and subsequent traders increase.

Questions which we were unable to obtain satisfactory answers, but which would be important to address in future include those relating to the behaviour of middleman entrepreneurs in Aktobe or Almaty, e.g. what levels of surpluses do they make? Do they re-invest them, i.e. back into the sub-sector or locality in the form of guns or motorbikes? How do they negotiate prices with both their village suppliers and their secondary buyers? Do profit levels differ from village to village? Such questions are particularly pertinent in Kazakhstan, where poaching efforts are better organised and the hunters themselves are often involved for reasons other than mere poverty alone. However, the aim of this study was to focus predominantly on the off-take and immediate movement of products, which was necessary at this stage due to the limited access researchers had to poacher and traders, but also because of the village-level geographical focus.

The data-gathering techniques used here were those best suited to answering the focal questions given the external constraints of time and budget. However, it must be recognised that the compromises have reduced the value of each specific piece of research in order to obtain information on a broad range of issues. Considerable incentives existed for respondents to withhold information on a number of topics under investigation. The most important lesson that should be taken away from this research, then, is that it takes time not only to build trust within communities, but also to even begin to understand the drivers behind such sensitive behaviour.

5.1 Achieving Darwin Objectives - Reducing the Trade through Livelihood Enhancement

While it has long been recognised that managing natural resources may depend upon influencing people's behaviour, those initiatives that intend to encourage such behavioural change are more likely to be efficient when they target key players in the behaviours of concern. Given the aforementioned difficulties, identifying the key groups to target with interventions aimed at changing behaviour can be challenging. And while there is a need for indicators which can act as reliable proxies for involvement in these various activities (St. John *et al*., 2011), our study has shown that the previously identified proxies of low income levels and motorbike ownership alone (Kuhl *et al*., 2009) do not achieve this.

Furthermore, while there is a lot to be said about the western development paradigm that identifies human agents as prisoners of circumstances beyond their control (poverty, lack of livelihood alternatives, etc) and thus forced into behaviour often inimical to underlying, altogether more positive 'attitudes', it might be prudent to look outside of this convenient box. While there are indeed high levels of unemployment in both range states, one Uzbek KI likened the hunt to a casino, providing the same illicit thrill as gambling (**0101**). "*No one here is starving*," another KI pointed out, implying that the drivers of this behaviour are more complex than poverty alone (**0106**).

Indeed, the oft-cited but simplistically formulated equation that improving livelihoods will reduce poaching is one that needs to be cross-examined; enhancing livelihoods and preserving the Ustyurt saiga population are not commensurate, and actively achieving the former will not necessarily secure success in the latter. The lure of relatively easy money will not disappear if well-being is improved for these rural communities. While many HHs saw the trade in saiga products as being a main source of income, enhancing livelihoods runs the risk of turning this trade into a supplement instead, and thus having little overall effect on the dynamics of the trade. The geographical differences emphasized in questionnaire responses as to how this kind of behaviour might be reduced (improved law enforcement in Kazakhstan; alternative income sources in Uzbekistan) indicate that interventions must be tailored not only to the countries in which they are to be initiated, but also to specific subsets within the communities themselves. However, providing these low level poaching HHs with a sustainable income source, perhaps through a pilot project, is unlikely to remove the financial temptation to hunt ($500/kg). Indeed, the situation on the Kazakh Ustyurt provides a stark reminder of how communities might engage in an illicit action not because their hand has been forced, but rather because they simply enjoy it. As is so often the case, strategies must be developed that add equal weight to both addressing root causes and preventing the resulting behaviour.

Amongst others, the Uzbek research team made the following recommendations based on their six weeks in the field:

- That additional income sources could be created for local communities (small grants for local enterprises such as poultry, brick building, computer services, etc);
- That educational awareness about saiga protection amongst the general Ustyurt population should be improved, and
- That there needs to be stronger control and regular monitoring of ranger/police work at local levels.

It is important to understand that if the spectrum of exploitation differs in scope across the region, then so too must solutions. This research suggests that the scale of saiga poaching activity varies according to individual backgrounds, with small-scale poaching in Uzbekistan compared to more organised larger scale activity in Kazakhstan, with outsiders playing a greater role in poaching itself, rather than simply as middlemen in the trading of horn. This trend is thought to be driven by larger

barriers to entry (in terms of hunting cost due to travel distance and winter conditions) in the smaller and more dispersed Uzbek Ustyurt saiga population, and also the lower impact of such costs to better-off hunters in Kazakhstan. If recent figures from Uzbekistan are to be believed, then the number of active poachers on the Uzbek side of the border is low, and thus any intervention aiming to enhance livelihoods could be targeted at individuals rather than at the communities in which they live.

But as aforementioned, to focus solely on livelihood enhancement runs the risk of being over-ambitious and thus ultimately under-achieving. Without the strengthening of national legislation pertaining to the (illegal) hunting, possession, purchase, sale, transport and trade of saiga antelopes and their parts and derivatives in Kazakhstan and Uzbekistan, and without ensuring that sanctions are sufficiently high to act as a disincentive for poaching and illegal trade and that offenders are prosecuted, it is likely that even the most specific of livelihood enhancement will fall short of its objective. The Darwin Initiative Project and the USAID-SCAPES Initiative do indeed, involve a range of activities that includes all of these elements.

5.2 Conclusion

In Uzbekistan, saiga horns have been in demand since the late 1980s, with the highest demand in the middle of the 1990s (TRAFFIC, 2004). By the early 1990s, the carcasses of killed saiga antelopes were being discarded and only the horns taken, with the majority of them flowing through Kazakhstan on the way to East Asia. While this survey failed to corroborate similar levels of poaching, it is evident from informant responses that if off-take has dwindled it is due less to changing patterns of poacher behaviour (or intent), but rather to shrinking saiga populations, with catch per unit effort decreasing as these herds become more fragmented and thus difficult to find. Given current high prices for horn and the ongoing demand for saiga meat as a cheap alternative to others, it may be the case that hunting trends soon follow those of Betpak-Dala, where the population has in recent years been too low to support large-scale commercial hunting (TRAFFIC, 2007). However in Betpak-dala ex-poachers also stated that they would return to hunting were the population to increase (Kuhl, 2007), and in fact there have been a number of recent cases of poaching in the region both as the saiga population has increased and as law enforcement has become more effective (reported in *Saiga News*).

Despite the efforts of governmental and non-governmental bodies, the illegal hunting of saiga antelopes on the Ustyurt plateau is still extensive. This research indicates that regardless of geography, the system of purchasing and subsequent illegal export of horn not only persists, but is also well organized and profitable. In an economically-deprived region such as the Ustyurt, the illegal hunting of saigas and the sale and export to Asia of their horns often serves as an important source of income, as does the sale of saiga meat for local consumption. However, utilising this knowledge to focus conservation interventions towards breaking the cycle entails both delivering abrupt shocks to the links themselves, alongside increasing understanding as to the way in which they are initially forged. In keeping with the global paradigm, the saiga antelope is caught in a downward spiral of diminishing supply and strong demand. But while management of the distant consumer base will have to take place by other means, tackling the Ustyurt saiga trade will need the implementation of rigorous species protection and enforcement, coupled with awareness-raising and capacity development in both countries, as well as carefully-targeted livelihood enhancement in those villages implicated in poaching.

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7 Appendices

7.1 Household Questionnaire (Russian Version)

Опрос домовладений по вопросам торговли объектами животного мира

Дата:	**Название селения:**
Спутниковая навигационная система (GPS):	**Имя нумератора:**
Время начала опроса:	**Время завершения интервью:**

[Read out] Доброе утро/день. Меня зовут (имя интеревьюера), я приехал из (место рождения интервьюера). Это (если присутствует второй интервьюер), из (место рождения интервьюера).

(и если необходимо, это Адам из Англии. Он научный сотрудник Империал Колледжа в Лондоне).

Мы работаем на НПО Фауна и Флора Интернэшнл и хотим попытаться понять как вы живете здесь на плато Устюрт. Мы будем проводить различные исследования, чтобы установить взаимосвязь между местными сообществами и окружающей средой, в частности с дикими животными которые обитают вместе с вами на Устюрте.

Сегодня мы собираем информацию об отдельных домовладениях. Под домовладение мы понимаем место под одной крышей, где вы живете, питаетесь и спите. Мы не будем спрашивать ваше имя, ваши ответы будут абсолютно конфиденциальны и анонимны для других членов общины. Опрос займет примерно 25 минут. Вы хотели бы принять в нем участие?

1.1 Пол респондента :

a. Мужской b. Женский

1.2 Возраст респондента

1.3 Ваша национальность?

a.Каракалпак b. Узбек
c. Казах d. Русский e. Другая национальность

1.4 Каков ваш образовательный уровень?

a. Начальное образование
b. Среднее

c. Среднее профессоинально-техническое
d. Высшее образование
e. Без образования

1.5 Количество членов в семье (живущих в одном доме)

Мужчин_____ Женщин_____ Всего _____
Взрослых (16-50)_____ Пожилых (>50)_____ Детей (<16)_____

1.6 Род занятий каждого члена семьи (включая респондента)

	Пол	**Возраст**	**Статус**
1			
2			
3			
4			
5			
6			
7			

a. работает (указать)
b. безработный (без профессии)
c. безработный (профессия – указать)
d. государственная пенсия
e. школьник (-ца)
f. студент
g. домохозяйка
h. другое (указать)

1.6 Сколько лет Вы прожили в данном селении?

1.7 Если Вы родились не здесь, где Вы жили раньше?

1.8 Каковы причины переезда?

Раздел 2 – Знание о животного мира, соответствующих правил и положений

2.1 Видели ли Вы следующих животных за последние 5 лет (*показать изображение на карточке*)?

Вид	**Видел / не видел**	**Расстояние от вашего дома**
Лисица		
Джейран		
Сайгак		
Волк		
Черепаха		
Балобан		
Дрофа-красотка		
Заяц		
Кабан		

2.1 Если Вы видели сайгаков, видели ли Вы детенышей или молодых сайгаков?

a. Да b. Нет c. Не знаю

2.3 Заметили ли Вы изменения в численности любых из указанных видов диких животных за последние пять лет?

a. Да b. Нет c. Не знаю

2.4 Если да, как бы Вы охарактеризовали эти изменения и почему они, по вашему мнению, могли произойти?

a. Я видел меньше b. Я видел больше

Вид	**Изменения**	**Причина изменений**
Лисица		
Джейран		
Сайгак		
Волк		
Черепаха		
Балобан		
Дрофа-красотка		
Заяц		
Кабан		

2.5 Какие организации (правительственные или неправительственные) отвечают за сохранение диких животных в данной местности (регионе)? Что они делают?

Название организации	**вовлеченность/ответственность**

2.6 Пожалуйста, опишите правила и положения, применимые к мерам по охране дикой природы в данном районе так, как вы их понимаете

Вид	**Правила и законы**
Лисица	
Джейран	
Сайгак	
Волк	
Черепаха	
Балобан	
Дрофа-красотка	
Заяц	
Кабан	

Раздел 3. Отношение

3.1 Мы хотели бы, чтобы вы отреагировали на ряд утверждений, используя шкалу, которую мы представим:

a) Окружающая среда на Устюрте в настоящее время находится в хорошем состоянии.

b) Охота на любое животное приемлема, если она ведется на устойчивой основе.

c) Мне безразлично, если в стране сайгаков больше не будет (т.е. они вымерли в границах этой страны).

d) Государство должно улучшить охрану сайгака.

e) Люди, застигнутые на месте убийства животного, находящегося под охраной, должны понести суровое наказание.

f) Только удовлетворив потребности местного населения государство должно побеспокоиться об охране дикой природы.

g) Я готов выступить в качестве добровольца для оказания помощи в сохранении поголовья сайгаков.

3.2 Если бы Вы согласились с данным утверждением, что бы Вы сделали персонально для сохранения поголовья сайгака (можно дать несколько вариантов ответов)?

a. Оказал бы помощь в сборе экологических данных по популяциям сайгака
b. Участвовал бы в мероприятиях по повышению осведомленности людей относительно статуса сайгака
c. Организовал бы/стал бы инициатором мероприятий по повышению осведомленности относительно статуса сайгака
d. Рассказал бы о деле сохранения сайгака семье/друзьям
e. Пожертвовал бы энную сумму денег _____ (сумов/в год)
f. Другое (укажите).

Раздел 4 - Охота и торговля объектами дикой природы

4.1 Какие виды наиболее часто становятся объектами торговли?

4.2 На какие виды животных люди охотятся наиболее часто (но не на продажу)? Например, для собственных нужд, в подарок, для развлечения и т.д.

4.3 Происходит ли торговля дикими видами (*имеются в виду виды упоминаемые в пунктах 4.1 и 4.2*) на местном уровне (региональном/национальном)?

вид	**Продукция**	**Местный уровень (поселок)**	**Региональный**	**Национальный**

4.4 Участвуют ли жители этого поселка в торговле (покупке/продаже) животными (*имеются в виду виды упоминаемые в пунктах 4.1 и 4.2)?*

a. Да b. Нет c. Не знаю

4.5 Если да, сколько людей по вашему мнению принимает в этом участие?

4.6 Каковы характерные признаки этих людей (возраст, пол, профессия, национальность, местный житель/приезжий, уровень доходов, социальный статус и др.)?

4.7 Собирают ли люди старые рога сайгака в степи? Если да, сколько примерно в течение года (отдельные, непарные)?

4.8 Отметили ли Вы какие-либо изменения в торговле объектами животного мира за последние пять лет?

a. Да b. Нет c. Не знаю

4.9 Если отметили, каковы они и почему они произошли?

Вид	**Тип изменений**	**Причина изменений**

4.10 Имея в виду сайгака, каковы могут быть причины охоты на эти виды? Укажите основную причину, и все имеющиеся причины

a. Основной источник доходов
b. В качестве дополнения к другим источникам доходов
c. В дополнение к пропитанию в семье
d. Традиция/ Культурное значение
e. Развлечение

4.11 Какие вторичные причины могли внести свой вклад в охотничье поведение? (разные ответы). Какие факторы стимулируют охоту. Укажите основной фактор (только один) и любые дополнительные факторы.

a. Безработица (недостаток вариантов добывания средств к жизни)
b. Недостаточное правоприменение
c. Недостаточная юридическая защита
d. Социальное давление (семья/другие селяне/посредники)?
e. Другое (опишите)

4.12 Они такие же для торговли, продажи и покупки рогов? Если нет, в чет отличие?

4.13 Они такие же для торговли, продажи и покупки мяса? Если нет, в чет отличие?

4.14 Какой путь, по вашему мнению, может оказаться наиболее эффективным для снижения незаконной охоты и торговли в данном районе? Пожалуйста, выберете 3, и наиболее важный из трех.

a. Рост доходов на нынешней работе или средств к существованию
b. Другая работа или способ добывания средств к жизни (например?)
c. Социальный пресс осуждения со стороны соседей и семьи
d. Более высокий риск быть схваченным
e. Более строгое наказание
f. Человек, решивший для себя, что незаконная охота – это плохо
g. Другое

4.15 Упражнение на основе игральных костей

Ел ли кто-нибудь из вашего домовладения мясо сайга за последние 12 месяцев?
a. да b. нет

Покупал или продавал кто-нибудь из вашего домовладения мясо сайгака за последние 12 месяцев? a.да b. нет

Покупал или продавал кто-нибудь из вашего домовладения рога сайгака за последние 12 месяцев? a.да b. нет

Охотился ли кто-нибудь из вашего домовладения на сайгака за последние 12 месяцев?
a. да b. нет

Раздел 5 – Зарабатывание средств на жизнь и доходы

5.1 Основные средства к существованию в семье (приносящая доход деятельность /источники (возможны несколько ответов)):

Деятельность /источник	**Объем средств, заработанных в год (в государственной валюте)**	**В какой период осуществляется эта деятельность (по месяцам)**

5.2 Имеется ли в вашем домовладении скот?

a. Да b. Нет

5.3 Если да:

Тип скота	Сколько голов	Название (местонахождение) пастбищ	В какие месяцы скот выпасается вне территории селения в год?	Причина выбора данного места

5.4 Имеется ли в вашем домовладении транспортные средства?

a. Да b. Нет

5.5 Если да, пожалуйста, укажите,

Тип транспортного средства	**Количество во владении**	**Год приобретения**	**Цена**
Мотоцикл			
Полноприводный (не городской автомобиль)			
Городской автомобиль			
Автобус, мини автобус, и т.д.			
Трактор			

5.6 Как бы Вы описали экономическую ситуацию, сложившуюся в вашей семье за последние 12 месяцев по сравнению с другими семьями в селении?

a. Очень плохая b. Плохая c. Нормальная d . Хорошая
e. Очень хорошая f. Не знаю

7.2 Focus Group (Russian Version)

Руководство для обсуждения вопросов по получению средств существования с целевой группой

Дата:
Название селения:
Состав целевой группы:

№	Пол	Возраст	Образование	Род занятий	ФИО
1					
2					
3					
4					

Ознакомьте участников с целью сессии и установите регламент (~2 часа)

Структура общины

1) Сколько людей и/или семей живут в общине?
   - *Примечание: Не обязательно указывать точное число жителей, вместо этого можно указать приблизительное число.*

2) Каков средний размер семьи (состав / количество людей)?

3) Некоторые семьи беднее, а некоторые более состоятельны, чем другие. Какие термины (или ярлыки) используются для описания различных социально-экономических групп внутри общины?
   - *Например: очень малообеспеченные – малообеспеченные – среднего достатка – состоятельные – очень состоятельные*

4) Каким образом эти группы различаются? Что является показателем бедности или преуспевания семьи?
   - *Задача может быть облегчена, если Вы начнете с упоминания крайних статусов (очень бедные и очень богатые в вышеприведенном примере)*

   Некоторые примеры индикаторов средств к жизни приведены ниже.
   *(**Примечание** – этот список следует использовать в качестве подсказки при*

ведении дискуссии. Важно, чтобы участники предложили свои собственные индикаторы, под руководством ведущего только в случае необходимости).
***Человеческий** – здоровье, питание, образование, знания и навыки, способность работать;*
***Социальный** – семья, группы, организации/сети, официальные и неофициальные институты, механизмы участия ив принятии решений;*
***Натуральный** – земля и продукция, скот, водные ресурсы, древесные и лесные продукты, дикие животные;*
***Физический** – инфраструктура, например, дороги, транспортные средства, кров, обеспечение водой, энергия, коммуникации; инструменты и технологии, такие как семена, удобрения, оборудование;*
***Финансовый** – зарплата (и тип занятости), сбережения, кредит, денежный перевод, пенсии.*

5) Каково приблизительное распределение семей в социально-экономических группах?

Упражнение по ранжированию семей по уровню заработанных средств к жизни

a) Какой способ добывания средств к жизни наиболее распространен и почему?

b) Какой наиболее популярен? Почему? Кто больше всего пользуется этим способом?

c) Кто вовлечен в разные способы добывания средств к существанию (мужчины/женщины, молодые/пожилые, различные социальные и экономические группы, т.е. более бедные, менее бедные и т.д.)?

Доступность услуг и поддержки

1) Какие официальные и неофициальные организации и ассоциации имеются в селении (например, правительственные, религиозные, различные общинные группы)? Чем занимается каждая из этих групп?

2) Какие (другие) услуги доступны в общине? (например, транспорт, электро- и водопроводное снабжение, рынки, сельскохозяйственные службы, здравоохранение, образование и т.д.).

3) Все ли люди / группы имеют одинаковый доступ к этим услугам? Какова плата за эти услуги? Доступна ли она всем?

Препятствия и возможности

1) Каковы основные препятствия /трудности в селении (в настоящее время или в недалеком прошлом)? Что стало причиной их появления?

2) Бывают ли самые тяжелые или легкие периоды в году (в плане рабочей нагрузки, пищевых ресурсов, доходов, расходов и т.д.)?

3) Кого в наибольшей степени затрагивают эти проблемы? Затрагивают ли они одни семьи (людей) в большей степени, чем другие? Кого? Почему? Каким образом?

4) Имеется ли какая-нибудь поддержка в решении этих проблем? Кто оказывает эту поддержку? Какая это поддержка? Кому оказывается поддержка? Каким образом оказывается эта поддержка?

5) Стали ли некоторые аспекты жизни более сложными? Если да, почему? Какие группы людей затронуты в большей мере? Почему? Каким образом?

6) Есть ли улучшение в каких-либо аспектах? Каким образом и почему произошло улучшение? Для каких групп населения?

7) Что еще можно сделать? Кем? Для кого? Каким образом?

7.3 Key Informant Interview (Russian Version)

Опрос ключевых информаторов – дополнение к торговле

Дата:	**Название селения:**
Номер интервью:	**Имя:**
Код	**Номер**

***Примечание**: Многие из следующих далее вопросов составлены в расчете на "гипотетических охотников и продавцов", а не на самих респондентов. Когда информант поднимает интересный вопрос при обсуждении, интервьюер должен попытаться оценить их понимание и восприятие темы обсуждения, добиваясь дальнейших комментариев/обсуждения.*

Общая практика/поведение

1. Какие виды являются объектами охоты в данном районе? Почему? (Можно включить численность, легкость добычи, экономическую важность, и т.д.)

Вид	Причина охоты	Используемый метод охоты	В какие месяцы ведется охота

2. В целом, легко ли охотиться на эти виды каждый год? (вопрос имеет отношение не к скрытному характеру животного, но к оценке изменений в численности…). Если имеются изменения, что могло стать их причиной? Как это может повлиять на охотничье поведение?
3. Играет ли сезон важную роль в любом из указанных видов охоты? Если да, то почему?
4. Сколько раз в неделю (месяц?) люди охотятся (в среднем)?
5. Охотятся ли эти люди поодиночке или группами на эти виды?
6. Если они охотятся группами, то из скольких человек может состоять группа?
7. Люди охотятся ради собственного потребления или реализации?

8. Охотятся ли люди для кого-то вне семьи (например, по заказу посредников)?
9. Если да, то для кого (как часто, почему, где, и т.д.)?

Торговля мясом сайгака

10. Можете ли Вы описать процесс торговли мясом сайгака? Каков процент занимает мясо в рационе местных домовладений?
11. Какова причина этого?
12. Какова доля мяса, реализуемого в селах, по сравнению с реализацией мяса вне селений?
13. Где находятся эти внешние рынки?
14. Каким образом реализуется мясо (открыто или частным образом)?
15. Кто вовлечен и на каком уровне (посредники, посторонние или местные жители)?
16. Кто вовлечен в торговлю мясом сайгака

а) национальность
б) род занятий
в) пол
г) возраст
д) образовательный уровень
е) уровень доходов
ж) социальное положение
з) другое

17. Торговые пути - в регионе и на международном уровне?
18. Каким образом его перевозят?
19. Каковы цены на разных этапах торговли?
20. Каковы эти цены в сравнении с ценами на мясо домашнего скота?

21. Заметили ли Вы какие-нибудь изменения в следующих пунктах за последние пять лет?
    - Количестве добытых сайгаков?
    - Объеме потребляемого мяса на местном уровне?
    - Объеме торговли мясом, как в селении, так и вне данного селения?
    - Объеме торговли рогами?

22. Если да, то как бы Вы охарактеризовали эти изменения? Каковы могут быть причины этих изменений?
23. Каковы основные причины:
    а) охоты,
    б) торговли мясом,
    с) торговли рогами?
24. Вовлечены ли посредники в торговлю рогами или мясом? Являются ли они посторонними или местными жителями? Если они посторонние люди, то откуда они? Что это за люди?
25. Где реализуется, по вашему мнению, продукты из сайгака? Каковы цены на рога или мясо (на кг или единицу)?

Местонахождение (рынок, ж/д, дома и др.)	**открыто или частным образом**	**Реализация продуктов по месяцам**	**Мясо** (туша/кг/валюта)	**Рога** (кг/валюта)

26. Различны ли торговые маршруты для различных типов продуктов из сайгака? В чем состоит отличие?

Продажа рогов сайгака

27. Можете ли Вы описать процесс торговли рогами сайгака. Каким образом их реализуют (открыто или частным образом)?
28. Кто вовлечен и на каком уровне (посредники, посторонние или местные люди)?
29. Кто вовлечен в торговлю рогами сайгака?

а) национальность
б) род занятий
в) пол
г) возраст
д) образовательный уровень
е) уровень доходов
ж) социальное положение
з) другое

30. Торговые пути - в регионе, и на международном уровне (например, Нукус, Кунград, Ташкент, Бейнеу)?
31. Каким образом их перевозят?
32. Каковы цены на разных этапах торговли?

Охота на сайгака

33. Как далеко люди удаляются от своего поселка для охоты на сайгака?
34. Сколько сайгаков можно добыть в течение одного выезда (зимой/летом)?
35. Можете ли Вы описать используемые методы охоты (когда, как, как часто, сколько человек в группе и т.д.)?
36. На каких животных ведется охота - самцов, самок, взрослых, молодых особей? (дать % изъятия по каждой категории, например 5% самцов). Существует ли разница между сезонами?

	Лето	Зима
Взрослые самцы		
Взрослые самки		
Молодые		

37. Какие группы людей принимают участие в добыче сайгака

а) национальность
б) род занятий
в) пол
г) возраст

д) образовательный уровень
е) уровень доходов
ж) социальное положение
з) другое

Законодательство

38. Знают ли люди, что охота на сайгака и торговля этим животным нелегальны?
39. Знают ли они, что сайгак внесен в Красную Книгу Узбекистана?
40. Если знают, то каким образом запрет на охоту и торговлю дериватами сайгака, а также включение этого вида в Красную Книгу, повлияли на охоту и торговлю этим животным?
41. Какой тип воздействия оказывают правоохранительные органы, правила и законы по отношению к сайгаку? Воздействуют ли они на охоту и торговлю?
42. Каким образом местные жители воспринимают исполнение закона?
43. Какие меры должно предпринять государство для снижения нелегальной охоты на сайгака?
44. Какие меры следует предпринять для снижения нелегальной торговли продуктами из сайгака?
45. Каким образом можно убедить охотников и торговцев прекратить охоту на сайгака и торговлю его дериватами?
46. Могли бы Вы представить меня кому-нибудь еще кто может ответить на эти вопросы?

Возраст	**Пол**	**Образовательный уровень**	**Род занятий**