



CONVENTION ON MIGRATORY SPECIES

Distribution: General

UNEP/CMS/COP11/Inf.21
16 July 2014

Original: English

11th MEETING OF THE CONFERENCE OF THE PARTIES

Quito, Ecuador, 4-9 November 2014

Agenda Item 23.3.1

ASSESSMENT OF GAPS AND NEEDS IN MIGRATORY MAMMALS CONSERVATION IN CENTRAL ASIA

1. In response to multiple mandates (notably Concerted and Cooperative Actions, Rec.8.23 and 9.1, Res.10.3 and 10.9), CMS has strengthened its work for the conservation of large mammals in the central Asian region and *inter alia* initiated a gap analysis and needs assessment, including status reports of prioritized central Asian migratory mammals to obtain a better picture of the situation in the region and to identify priorities for conservation. Range States and a large number of relevant experts were engaged in the process, and national stakeholder consultation meetings organized in several countries.
2. The Meeting Document along with the Executive Summary of the assessment is available as UNEP/CMS/COP11/Doc.23.3.1.

Assessment of gaps and needs in migratory mammal conservation in Central Asia

Report prepared for the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Financed by the Ecosystem Restoration in Central Asia (ERCA) component of the European Union Forest and Biodiversity Governance Including Environmental Monitoring Project (FLERMONECA).

Maria Karlstetter and David Mallon



FLERMONECA
Forest and Biodiversity Governance
Including Environmental Monitoring



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Acknowledgements

Many individuals contributed their time and expertise to this assessment. We would like to thank everyone who responded to the questionnaires, provided valuable information during interviews and/or supported the review of species and stakeholder assessments.

Special thanks go to the GIZ ERCA Coordinators who critically supported the stakeholder surveys on the ground, namely Lira Joldubaeva (Kyrgyzstan), Dana Yermolyonok (Kazakhstan), Sabrina Ulmasova (Tajikistan), Gulbahar Abdurasulova (Turkmenistan), and Grigoriy Samoylov (Uzbekistan).

Further, we would like to thank Christiane Röttger (CMS), Aline Kühl-Stenzel (CMS), and André Fabian (GIZ) for their constructive feedback and comments on this assessment and their advice.

Executive summary

This assessment of gaps and needs of migratory mammal conservation in Central Asia aims to support the development of the Central Asian Mammals Initiative (CAMI) of the Convention on the Conservation of Migratory Species of Wild Animals (CMS). In order to develop and enhance synergies for a strengthened CMS implementation in the region it is recommended that the purpose of and justification for an additional instrument, such as the Programme of Work under the CAMI, should be to serve as a:

- i) Guiding framework to support the integration of missing aspects in already existing work programmes and action plans of the various stakeholders and initiatives
- ii) Coordination mechanism, highlighting and prioritising gaps on a regional scale
- iii) Platform for enhanced knowledge exchange and the promotion of synergies
- iv) Tool for fundraising

The findings of this assessment were discussed at the 18th Scientific Council Meeting (1-3 July 2014, Bonn, Germany) and informed the preparation of a Programme of Work presented for adoption at the 11th Conference of the Parties to CMS (4-9 November 2014, Ecuador).

This process was financed and supported by the Government of Switzerland and the European Union (EU) within the framework of the Ecosystem Restoration in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) component of the EU Forest and Biodiversity Governance including Environmental Monitoring Project (FLERMONECA), implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

The context

The vast semi-deserts and grasslands of the Central Asian region, encompassing Afghanistan, Bhutan, western China, northern India, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, parts of the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan, support one of the world's last remaining areas for large mammal migrations. Aggregated migrations in the region occur in species such as saiga *Saiga* spp., Mongolian gazelle *Procapra gutturosa*, chiru *Pantholops hodgsonii* and kulan *Equus hemionus* (Harris *et al.* 2009) while a range of other species conducts long-distance movements regularly or on occasion, including wild camel *Camelus bactrianus*, cheetah *Acinonyx jubatus* and snow leopard *Uncia uncia*. Facing varying environmental conditions across space and time defining habitable areas, and fluctuating ecological requirements, these species depend on moving freely over long distances and across international borders. They follow seasonal and shifting patterns of green vegetation often over large expanses of deserts, steppes and grasslands and escape snow, predators and parasitic insects. Their cyclical grazing has positive effects on grassland forage and ecosystem processes.

CMS is concerned with species of wild animals that move across national boundaries, defining migratory species as “the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries” (CMS 1979).

Parties to CMS recognise that the populations of many Eurasian migratory mammals and the ecosystems in which they live have an unfavourable conservation status, and the maintenance/restoration of their habitats are a crucial area of action for the Convention (UNEP/CMS/Recommendation 9.1); several of these species are included in the Appendices of CMS (see below). The UNEP/CMS Secretariat works together with many countries and organisations to support their conservation, *inter alia*, through the Memoranda of Understanding (MOU) Concerning Conservation and Restoration of the Bukhara Deer (Bukhara deer MOU) and the MOU Concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope (Saiga MOU). For the successful management of these species throughout their ranges international collaboration is required which has led to the proposal for the CAMI. The CAMI aims to provide a coherent strategy for improving

the long term conservation status of migratory mammals and their habitat in Central Asia by strengthening regional cooperation and the implementation of the Convention in the region.

The CAMI is in line with current strategic developments at CMS, namely the Future Shape Process. The elaboration of new instruments under the aegis of CMS should take into account the outcomes of this Process.

The CMS Central Asian Mammals Initiative

In 2005, at the Eighth Meeting of the Conference of the Parties to the CMS (COP8) the Scientific Council was requested, in cooperation with the UNEP/CMS Secretariat, Mongolia and other concerned Parties to initiate the Central Eurasian Aridland Concerted Action and Associated Cooperative Action (UNEP/CMS/Recommendation 8.23); the Action was adopted at COP9 (UNEP/CMS/Recommendation 9.1) in 2008. Recommendation 9.1 foresees the development of an Action Plan and status reports for all species concerned while taking into account, and linking to, other existing Convention instruments as well as actions already taken by Range States and Convention partners. It encourages the Secretariat to pursue efforts to bring Range States of the Central Eurasian fauna that are not yet Parties into the Convention, and to liaise with other concerned conventions to enhance synergies. Further, it appeals to Range States and other interested countries to support the development of an MOU or other binding or non-binding instruments to complement the Action.

In 2011, the Secretariat prepared a draft Central Eurasian Aridland Mammals Action Plan, intended to stimulate discussion and identify further action needed to finalise the document in consultation with Range States and other stakeholders, and to agree on next steps towards its implementation. The document was discussed at the 17th Scientific Council Meeting in 2011, and has become the basis for developing a coherent strategic framework for the conservation of migratory mammals in the Central Asian region: the Central Asian Mammals Initiative (CAMI).

Methodology

This assessment is based on a review of literature, and the results of a stakeholder survey conducted in 10 countries (see below). The survey targeted key government representatives including CMS National Focal Points, CMS Scientific Councillors, CMS MOU Focal Points, Action Plan Contact Points and/or other authorities relevant for the conservation and management of migratory mammals. Further national and international non-governmental organisations, scientific institutions and experts were invited to contribute.

The survey consisted of three parts: i) an assessment of current threats to selected species, ii) current conservation measures taken by governmental and non-governmental stakeholders, and iii) gaps and needs for the conservation of migratory mammals in Central Asia, and options for enhanced synergies. It was conducted in the form of online questionnaires and face-to-face interviews held by the GIZ coordinators of the ERCA component of the EU FLERMONECA project in the countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. Further interviews were held with single stakeholders upon request.

Priority species and geographical scope

The CAMI is open to all large mammal species that would benefit from a transboundary approach to conservation and management. For this assessment 14 priority species were selected, which are open for discussion among the stakeholders, as is the selection of the initial ten countries considered by this survey (see below).

The criteria for selecting the species were chosen as follows (Latin species names follow the taxonomy of Wilson & Reeder 2005, which is used by the CMS as reference and differs for some species from the taxonomy used by the International Union for Conservation of Nature IUCN Red List):

- i) Listing on the Appendices of CMS:

Appendix 1: Bukhara/Yarkand deer *Cervus elaphus yarkandensis* (also listed on Appendix II), wild camel *Camelus bactrianus*, wild yak *Bos grunniens*, snow leopard *Uncia uncia*, cheetah *Acinonyx jubatus*

Appendix 2: saiga *Saiga tatarica* and *S. borealis mongolica*, argali *Ovis ammon*, Mongolian gazelle *Procapra gutturosa*, goitered gazelle *Gazella subgutturosa*, kulan *Equus hemionus*, kiang *Equus kiang*

- ii) Other long-distance migrants of Central Asia not listed under CMS: chiru *Pantholops hodgsonii*
- iii) Species which have transboundary populations (today or possibly in future due to range expansion currently limited by fences) and have more or less the same range as species listed above: Przewalski's horse *Equus caballus przewalskii*, Tibetan gazelle *Procapra picticaudata*

The distribution of the selected priority species defined the geographical scope of this assessment. Of prime importance were countries already involved in CMS instruments (MOUs, Action Plans) such as the five Central Asian countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, the common political history of which has resulted in wildlife management approaches that are still similar to a large extent. Other countries included Afghanistan, China (particularly Qinghai, Tibet, Xinjiang, Gansu, and Inner Mongolia), the Islamic Republic of Iran, Mongolia and the Russian Federation. Several of the selected species also occur in Bhutan, India, Nepal, and Pakistan however, with only few exceptions, these populations are small. Nonetheless, the CAMI explicitly invites other Central Asian countries to contribute to the process and join the Initiative if interested.

Species assessment

Of the species selected, three are listed as Critically Endangered on the International Union for Conservation of Nature (IUCN) Red List: wild camel, the Asian subspecies of cheetah, and saiga antelope; four are listed as Endangered: snow leopard, kulan, chiru and Przewalski's horse; two as Vulnerable: wild yak and goitered gazelle; two as Near Threatened: argali and Tibetan gazelle; and two as Least Concern: Mongolian gazelle and kiang. The Bukhara/ Yarkand deer is not listed on the subspecies level (Least Concern on species level).

Highly mobile long-distance migrants include saiga, Mongolian gazelle, kulan, chiru, and wild camel, while cheetah and snow leopard undertake long-distance movements on occasion. Those making shorter migrations/ movements (to our current knowledge), which however would critically benefit from transboundary cooperation, include argali, Bukhara/ Yarkand deer, goitered gazelle, and Przewalski's horse. While Tibetan gazelle, kiang and wild yak are relatively sedentary, cross-border movements do exist within some populations of these three species; however, populations outside China are small, making transboundary cooperation less relevant for their conservation.

State of species knowledge and commonalities of threats

The knowledge available on the assessed species varies considerably. Reliable knowledge throughout the species' range seems to be available only for the reintroduced and intensely studied Przewalski's horse. Fairly good knowledge on most or all populations was reported to exist for Bukhara/ Yarkand deer, saiga antelope, Mongolian gazelle, and to a lesser extent for kulan/ onager and argali. Knowledge on goitered gazelle, snow leopard and cheetah is patchy and even bigger gaps exist for wild camel, wild yak, chiru, kiang and Tibetan gazelle. Of all categories assessed, for most species factors driving movements seems to be least understood.

Threats receiving the highest scores by respondents combined for all species were habitat loss, degradation and fragmentation caused by livestock grazing/ grazing competition, overgrazing and barriers to migration. Other important factors causing habitat loss were human presence and disturbance and industry and infrastructure development. Particularly for highly mobile, long-

distance migrants, barriers to movements were assessed to represent high or critical threats. Habitat loss caused by industry and infrastructure development was assessed as critical for Mongolian gazelle and wild camel; loss of habitat caused by livestock grazing/ grazing competition was critical for the Przewalski's horse.

Illegal hunting ranked high for all species; although ranking lower overall, illegal international trade was assessed as high threat for several species (cheetah, snow leopard, saiga, Mongolian gazelle). Also high ranking was drought, alongside with severe cold/ snow and disease/ mass mortality. Other critical threats for single species included interbreeding between wild and domestic species (wild camel and wild yak), low offspring recruitment (wild camel), retribution killings (cheetah) and depletion of wild prey (cheetah and snow leopard).

Habitat

The most important habitat types (following the World Wide Fund For Nature's definition of ecoregions) for migratory mammals in Central Asia are deserts and xeric shrublands, temperate grasslands and shrublands, montane grasslands and shrublands and temperate coniferous forests. Several of these ecoregions have been identified as Global 200 sites whose biodiversity features are distinct and irreplaceable or which were considered the best example of a biome within a realm. These include the western Himalayan temperate forests in Afghanistan, India, Nepal and Pakistan; the Altai-Sayan montane forests in China, Kazakhstan, Mongolia and the Russian Federation; the Daurian steppe in China, Mongolia and the Russian Federation; the Qinghai-Tibet Plateau steppe in Afghanistan, China, India, Pakistan and Tajikistan; the middle Asian montane steppe and woodlands in Afghanistan, China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan; the eastern Himalayan alpine meadows in Bhutan, China, India, Myanmar and Nepal; and the Central Asian deserts in Kazakhstan, Kyrgyzstan, Uzbekistan and Turkmenistan.

Stakeholder review

A multitude of stakeholders work on or deal with issues relevant to the conservation of migratory mammals in the Central Asian region and a large number of frameworks, instruments and initiatives exist, with a lot of thematic overlap. Besides responsible governmental departments, non-governmental stakeholders, such as international donors, United Nations organisations, international conventions, national and international organisations, and national and international scientific institutions provide support to the implementation of a range of national and international programmes and initiatives of relevance to the conservation of migratory mammals.

A vast number of national and international corporations work in the extractive industry and associated infrastructure sector, which are major stakeholders in forming the future of migratory mammals in the region. Besides large industrial mining often led by international corporations, the impact of small scale artisanal mining, e.g. for gold, should not be overlooked.

Several multilateral and multi-donor regional transport infrastructure development initiatives are underway aimed at modernising and expanding the transport network of the Central Asian region with potential negative impacts for migratory mammals. Heavy used roads and railroads (particularly when fenced) threaten the connectivity of critical habitat and cause barriers to movements. New roads and railroads make previously remote and often inaccessible land reachable, encourage the establishment of new settlements and facilitate illegal hunting and trade of endangered wildlife.

Another important stakeholder of the private sector is the tourism industry, including national and international trophy hunting companies. Community based ecotourism can generate sustainable income from consumptive (i.e. sustainable hunting) and/or non-consumptive use (e.g. photo-tourism) of wildlife or pristine landscapes and thus provide an incentive for their conservation.

Review of current management and conservation instruments

Stakeholders have developed a range of instruments, which support the conservation of migratory mammals, which partly overlap in scope and provide opportunities for synergies. Besides the CAMI, three instruments exist under CMS addressing Central Asian mammals listed on CMS Appendices, namely the Bukhara deer and Saiga MOUs and the International Single Species Action Plan for the Conservation of the Argali. Several other instruments have been developed under other Multilateral

Environment Agreements (MEAs), such as the Convention on Biological Diversity, Convention on International Trade in Endangered Species of Wild Fauna and Flora, and United Nations Convention to Combat Desertification.

In addition, there are various national species specific conservation strategies, bi- and multilateral agreements on the transboundary management of certain species, and national captive breeding programmes and protected areas which are of relevance to the conservation of migratory mammals in Central Asia. Three multilateral initiatives covering several of the assessed countries are the Regional Environmental Action Plan for Central Asia, the Aral Sea Basin Programme, and the Global Snow Leopard and Ecosystem Protection Program.

Further, international financial institutions, the private sector, government agencies and civil society organisations have developed a series of performance standards and principles for avoiding, mitigating, restoring and offsetting negative impacts from development.

Commonalities of conservation measures

According to the stakeholder survey results, saiga, snow leopard and argali seem to receive the greatest attention by non-governmental stakeholders, whereas the majority of these seem to work in Kazakhstan, Mongolia, Tajikistan and Kyrgyzstan.

The majority of stakeholders reported conducting research on species population monitoring; second ranking was research on species biology for governmental representatives and on the socio-economic background for non-governmental respondents, the latter representing a sharp difference between the two groups. Less attention by both groups was paid to research on climate change impacts on species and on local people.

A large number of stakeholders reported conducting awareness raising and education targeting the general public; only targeting governmental authorities ranked higher in the group of non-governmental respondents. Targeting adults in local communities ranked higher than targeting children and it seems that governments pay greater attention to the private sector compared with non-governmental stakeholders.

In the group of governmental respondents, measurements taken to support law enforcement focused rather evenly on rangers, police, border security, customs and local communities, while in the responses received from non-governmental stakeholders, there were distinct differences. The majority reported supporting and collaborating with rangers and local communities versus the remaining groups.

Both governments and non-governmental respondents seem to focus much of their capacity development efforts on science, legislation and protected areas, whereas science was clearly favoured by non-governmental stakeholders. Great attention was further given to supporting sustainable livestock grazing and mitigation of human-wildlife conflicts. Also high ranking among non-governmental respondents was capacity support for sustainable hunting and for mitigating impacts from industry and infrastructure development. Similar to the results obtained for research, comparably little emphasis seems to be placed on supporting climate change adaptation for species and local communities.

While the majority of non-governmental stakeholders reported supporting sustainable livelihoods for communities, this was the area receiving least attention from governmental respondents in the category of community support. Comparably few stakeholders reported to take other conservation measures, such as captive breeding, and translocation and reintroduction.

Financial means

Information on annual governmental funding for 2013 allocated to migratory mammal conservation in Central Asia was received from Afghanistan, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan. Outstanding was the investment of Kazakhstan in saiga conservation with a reported annual budget of US\$ 4,500,000. Financial means for other species, such as kulan, goitered gazelle, Bukhara deer and argali were in the range of approx. US\$ 440,000 per species. The reported amounts in other countries were as follows: Tajikistan – US\$ 700,000 for argali, US\$ 200,000 for the Tajik National Park and Zorkul State Nature Reserve, US\$ 150,000 for Bukhara deer;

Afghanistan – US\$ 100,000 for argali and US\$ 190,000 for snow leopard; Kyrgyzstan – US\$ 100,000 not allocated to a particular species; Islamic Republic of Iran – US\$ 25,000 for cheetah and US\$ 10,000 for kulan; Uzbekistan – US\$ 20,000 for saiga.

From non-governmental stakeholders, information on their 2013 budget totalled US\$ 4,100,000 for all organisations and countries combined. From this amount Kazakhstan received the largest share of financial support, totalling US\$ 950,000 mainly supporting work on saiga conservation.

Obstacles and successes/ supporting factors

Key obstacles identified by respondents of the stakeholder survey included illegal hunting and trade, competition with livestock and overgrazing, economic development/ industry and infrastructure development, weak law enforcement and low human and institutional capacity, insufficient transboundary cooperation and communication, socio-economic drivers, poor governance and lack of legal security, and poor scientific knowledge on migratory mammals.

As successes and supporting factors respondents mentioned the positive engagement of local communities in conservation efforts, good cooperation, networking and improved communication between stakeholders, increased efforts in research and the integration of findings in decision-making processes, governmental interest and willingness to invest in conservation and collaboration (also transboundary), improved/ revised and elaborated legal frameworks, increased efforts and investment in targeted law enforcement, increased public and international awareness of and advocacy for migratory mammal conservation, and successful attempts to develop economic incentives for species conservation.

The assessment of the legal framework revealed a series of gaps in relevant legislation. Of particular concern were issues with legislation concerning hunting, livestock grazing, industry and infrastructure development and the involvement of communities. Harmonisation of national legislation with relevant international conventions was regarded as insufficient. However, several countries mentioned their legislation on varying issues is currently under revision and the majority of respondents expected positive changes.

The role of CMS

The vast majority of respondents supported and welcomed the role CMS plays in fostering a transboundary dialogue and also saw a role for the Convention in fostering dialogue with the private sector, supporting the development of best practice guidelines/ training manuals in local languages, and the revision of legal frameworks. However, some raised concerns over whether the capacity of CMS in terms of funding, staffing and political influence was enough to make a meaningful contribution and questioned if this would make best use of what the Convention has to offer.

A particular strength of CMS was seen in its neutral role of convening meetings to provide a platform for inter-governmental discussions. However, CMS requirements were often poorly translated into national legislation and representation in the region was considered weak. Some respondents proposed to put in place national CMS representatives to support close and regular communication and collaboration. The lack of an institutional presence in regions where the Convention works was also raised as an issue during the CMS Future Shape Process. Several options were proposed during the Process to enhance CMS' global presence, among others by increasing synergies with other relevant MEAs and institutions and by developing its local presence in the regions.

Options for enhanced synergies

Frequently mentioned options for enhanced synergies between the various governmental and non-governmental stakeholders included the implementation of joint actions, regular themed technical workshops, exchange visits between countries, and the establishment of a communication platform/ coordination mechanism for conservation measures to support the exchange of information.

Several information sharing portals concerning migratory mammals in Central Asia have been recently established or are under development with mixed results. As a database is only as good as the information that is fed into it, stakeholders would need to be willing to commit to an extra burden of reporting if a further platform were established under the CAMI. If the database is not being kept up-to-date it will likely lose attention very quickly. Language barriers cause additional

difficulties in maintaining an international database and keeping it relevant for all users. Other, more simple options suggested by respondents, would be electronic mailing lists which have proven to be successful in sharing information elsewhere.

Conclusion

A multitude of stakeholders work on conserving migratory mammals in the Central Asian region and a large number of frameworks, instruments and initiatives exist. Highly motivated and enthusiastic individuals from governments, scientific, national and international organisations invest in a myriad of projects often collaborating closely on the ground and beyond national borders. A lot has been learned from past work and good expertise and experience in conservation measures is available for the region. Progress has been achieved in some fields, and promising engagement has been made with non-environmental sectors, such as customs, border security, the private sector, and not least local communities.

However, there is a lot of thematic overlap in responsibilities of MEAs and the scope of work of governmental and non-governmental organisations. While this encourages different approaches to tackle issues from varying angles, there is a need to enhance the sharing of lessons learned, successes as much as failures, combine strengths from various sectors (also non-environmental, such as the sustainable development and animal husbandry sectors) and upscale.

Being situated under the auspices of UNEP, in conjunction with other MEAs CMS is well placed to lobby for and influence higher level decision-making, such as at the WTO and/or other UN organisations. Non-governmental stakeholders play an important role for supporting localised conservation measures. Ultimately however, the conservation of migratory mammals in Central Asia requires a strong commitment from governments for concerted action on the scale required.

Introduction

The vast semi-deserts and grasslands of the Central Asian region¹ support one of the world's last remaining areas for large mammal migrations. Aggregated migrations in the region occur in species such as saiga *Saiga* spp., Mongolian gazelle *Procapra gutturosa*, chiru *Pantholops hodgsonii* and kulan *Equus hemionus* (Harris *et al.* 2009) while a range of other species conducts long-distance movements, including wild camel *Camelus bactrianus*, cheetah *Acinonyx jubatus* and snow leopard *Uncia uncia*. Facing varying environmental conditions across space and time defining habitable areas, and fluctuating ecological requirements, these species depend on moving freely over long distances (Jonzén *et al.* 2011) and across international borders. They follow seasonal and shifting patterns of green vegetation often over large expanses of deserts, steppes and grasslands and escape snow, predators and parasitic insects (Kaczensky *et al.* 2006, Schaller *et al.* 2006, Kaczensky *et al.* 2008, Harris *et al.* 2009, Olson *et al.* 2010, Singh *et al.* 2010). Their cyclical grazing has positive effects on grassland forage and ecosystem processes (e.g. by increasing grassland production and raising nitrogen mineralisation, Frank 1998).

Changes in resource availability can be predictable or unpredictable, resulting in different migratory responses (Harris *et al.* 2009). Movements can range from seasonally recurring and predictable migration patterns along geographic or environmental gradients (typical 'migrants' such as saiga), to less regular movements in response to environmental fluctuations. The latter is characterised by between-year variability in the geographic location of reproductive events (typical 'nomads' such as Mongolian gazelle, Jonzén *et al.* 2011). Besides these typical mass migrants, many other ungulates such as the Bukhara or Yarkand deer *Cervus elaphus yarkandensis* and argali *Ovis ammon* and predators such as snow leopard *Uncia uncia* and Asiatic cheetah *Acinonyx jubatus* need room to roam in response to changing environmental conditions, to follow prey or escape predation or at other critical times in their life cycles. Many of these species' populations are transboundary.

While the expanse, remoteness and difficult terrain of Central Asia have still left large parts of the region untouched by modern civilisation, migratory mammals are in decline (Harris *et al.* 2009), with some species having undergone dramatic population reductions in recent decades. Principal threats include overhunting, habitat degradation and loss due to overgrazing by livestock and conversion to agriculture and industry development, and barriers to movements such as fences and heavily used roads and railroads that exclude animals from forage and water, hinder genetic transfer between populations and cause casualties (Harris *et al.* 2009).

There is little understanding of the impact of climate change on migratory mammals in Central Asia, which possibly causes changes to the length, timing and location of migration routes. While populations may be able to adapt to changes in local climatic conditions, additional impacts from poaching, human development and agriculture may interact with the effects of climate change to reduce their ability to adapt to the changed conditions (Robinson *et al.* 2005). As such, based upon threats that reduce the snow leopard's resilience and ability to adapt, the species has been assessed to be highly vulnerable to climate change, which is possibly exacerbated by the interaction of these threats with climate change (McNamara 2010).

The Convention on the Conservation of Migratory Species of Wild Animals (CMS, see below) is concerned with species of wild animals that move across national boundaries, defining migratory species as "the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably

¹ The terms 'Central Asia' and 'Central Asian region' when in reference to the CMS Central Asian Mammals Initiative refer to the wider Central Asian region encompassing Afghanistan, Bhutan, western China, northern India, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, parts of the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan. Stakeholders reviewed under this assessment use varying definitions of the term.

cross one or more national jurisdictional boundaries”² (CMS 1979). With over 150 countries having signed one or more of the associated instruments (26 in May 2014), CMS is becoming increasingly important for international collaboration, as the only treaty addressing animal migrations on land, in the sea and in the air (Kurvits *et al.* 2011). The Convention provides an international policy framework to facilitate collaboration amongst stakeholders targeting issues such as the removal of barriers to migration (Lkhagvasuren *et al.* 2011, Olson 2013) and the building of transboundary ecological networks (e.g. UNEP/CMS/Resolution 10.3, UNEP/CMS 2011o).

Parties to CMS recognise that the populations of many Eurasian migratory mammals and the ecosystems in which they live have an unfavourable conservation status, and the maintenance/restoration of their habitats are a crucial area of action for the Convention (UNEP/CMS/Recommendation 9.1); several of these species are included in the Appendices of CMS (see below). The UNEP/CMS Secretariat works together with many countries and organisations to support their conservation, *inter alia*, through the Memoranda of Understanding (MOU) for the conservation of the saiga antelope³ and the Bukhara deer⁴. For the successful management of these species throughout their ranges international collaboration is required (Kurvits *et al.* 2011) which has led to the proposal for the CMS Central Asian Mammals Initiative (CAMI, see below). The CAMI aims to provide a coherent strategy for improving the long term conservation status of migratory mammals and their habitat in Central Asia by strengthening regional cooperation and the implementation of the Convention in the region.

The CAMI is in line with current strategic developments at CMS, namely the Future Shape Process (**Box 2**). The elaboration of new instruments under the aegis of CMS should take into account the outcomes of this Process (UNEP/CMS/Resolution 10.9, UNEP/CMS 2011g), which is aimed at restructuring the functioning of the CMS Family (the Convention and its existing instruments) in response to concerns raised about an inconsistency between the rapid growth of the Convention in recent years and the lack of human and financial means at its disposal (Lee *et al.* 2010). A set of prioritised activities was endorsed (UNEP/CMS/Resolution 10.9, UNEP/CMS 2011g) to promote the future organisation and the strategic development of the CMS Family. An emphasis is placed on grouping, merging or expanding agreements with common characteristics (Lee *et al.* 2011b).

This gaps and needs assessment of migratory mammal conservation in Central Asia aims to support the development of the CAMI by providing recommendations for developing and enhancing synergies between the different stakeholders and instruments available. In order to do so, we selected a set of priority species and analysed their conservation status, threats, distribution/movements and habitats based on a review of literature and communication with experts. A stakeholder survey targeting experts was conducted to analyse commonalities of threats. Following a review of stakeholders and relevant conservation instruments in the region, a further survey was conducted targeting CMS National Focal Points and National Contact Points for individual CMS species agreements, non-governmental organisations and experts. This survey addressed commonalities of conservation efforts, gaps and needs and options for enhanced synergies. The assessment closes with a recommendation for a purpose of and justification for an additional instrument under the CAMI in order to develop and enhance synergies for a strengthened CMS implementation in the region.

The findings of this assessment were discussed at the 18th Scientific Council Meeting (1-3 July 2014, Bonn, Germany) and informed the preparation of a Programme of Work presented for adoption at the 11th Conference of the Parties to CMS (4-9 November 2014, Ecuador). This process was financed and supported by the Government of Switzerland and the European Union (EU) within the framework of the Ecosystem Restoration in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) component of the EU Forest and Biodiversity Governance including

² It is noted, however, that some of the species currently listed under CMS only cross borders sporadically; snow leopards and cheetahs for example do not cyclically and predictably cross national boundaries.

³ CMS MOU Concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope

⁴ CMS MOU Concerning Conservation and Restoration of the Bukhara Deer

Environmental Monitoring Project (FLERMONECA), implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

The CMS Central Asian Mammals Initiative

In 2005, at the Eighth Meeting of the Conference of the Parties to the CMS (COP8) the Scientific Council was requested, in cooperation with the UNEP/CMS Secretariat, Mongolia and other concerned Parties to initiate the Central Eurasian Aridland Concerted Action and Associated Cooperative Action⁵ (UNEP/CMS/Recommendation 8.23, UNEP/CMS 2005a); the Action was adopted at COP9 (UNEP/CMS/Recommendation 9.1, UNEP/CMS 2008b) in 2008. Recommendation 9.1 foresees the development of an Action Plan and status reports for all species concerned while taking into account, and linking to, other existing Convention instruments as well as actions already taken by Range States and Convention partners. It encourages the Secretariat to pursue efforts to bring Range States of the Central Eurasian fauna that are not yet Parties into the Convention, and to liaise with other concerned conventions to enhance synergies. Further, it appeals to Range States and other interested countries to support the development of an MOU or other binding or non-binding instruments to complement the Action.

In 2011, the Secretariat prepared a draft Central Eurasian Aridland Mammals Action Plan (UNEP/CMS 2011a), intended to stimulate discussion and identify further action needed to finalise the document in consultation with Range States and other stakeholders, and to agree on next steps towards its implementation. The document was discussed at the 17th Scientific Council Meeting in 2011 (UNEP/CMS 2011I), and has become the basis for developing a coherent strategic framework for the conservation of migratory mammals in the Central Asian region: the Central Asian Mammals Initiative (CAMI).

The CAMI has been initiated to strengthen and coordinate the conservation of migratory large mammals in the region. A strong focus of the Initiative is on developing and strengthening synergies between stakeholders and initiatives to reduce the administrative burden of the Convention in servicing the multiple agreements and MOUs under its mandate (see **Box 2**) and to increase effectiveness of the implementation of the Convention and its instruments. The creation of synergies is particularly important where conservation measures or lessons learned (positive and negative) are relevant for more than one species. The development and effective implementation of the CAMI thus requires a cross-sector and multi-stakeholder dialogue and partnership involving all relevant interest groups and countries in order to build a consensus and coherent strategy with actions that are jointly implemented and monitored.

⁵ The Action was proposed to eventually cover all threatened migratory megafauna of the temperate and cold deserts, semi-deserts, steppes and associated mountains of Central Asia, the Northern Indian sub-continent, Western Asia, the Caucasus and Eastern Europe.

Box 2: The CMS Future Shape Process

In response to concerns raised about an inconsistency between the rapid growth of CMS in recent years and the lack of human and financial means at its disposal, the Parties to the CMS launched the co-called Future Shape Process (Lee *et al.* 2011b). The period from 2006-2010 saw exponential growth of the CMS Family with the creation of 12 new agreements, 11 of which receive only voluntary contributions. Since entering into force in 1983, the CMS has provided the framework for a total of 7 legally binding agreements and 19 MOUs.

In 2008, during the Ninth Meeting of the Conference of the Parties to the CMS (COP9) an inter-sessional process was set up to examine the Future Shape of the CMS Family with the objective of strengthening the Convention's "contribution to the worldwide conservation, management and sustainable use of migratory species over their entire range" (UNEP/CMS/Resolution 9.13, UNEP/CMS 2008a). An ad hoc working group on the Future Shape Process was established which was instructed, among others, to take into account possibilities and options to deliver a more integrated conservation programme under a broad umbrella of CMS Multispecies Initiatives and, in this context, consult with related agreements and MOUs to see how such an approach could bring synergies and benefits (UNEP/CMS/Resolution 9.13, UNEP/CMS 2008a).

During the following COP10 in 2011, a set of prioritised activities was endorsed (UNEP/CMS/Resolution 10.9, UNEP/CMS 2011g) to promote the future organisation and the strategic development of the CMS Family, with an emphasis on grouping, merging or expanding agreements with common characteristics. It is hoped that this will lead to savings, help achieve greater coverage, increase the number of Parties, help realise synergies, identify gaps and enable a habitat and regional approach for the CMS (Lee *et al.* 2011b). Six Activities in particular assist in this respect:

- | | |
|-------------|--|
| Activity 6 | Coordinated strategic plans for the CMS Family |
| Activity 8 | Identify opportunities for cooperation and coordination at the local and regional level through the creation of synergies based on geography |
| Activity 10 | Strengthen the coordination and servicing of MOUs |
| Activity 11 | Seek opportunities to coordinate meetings between institutions, working groups and across the CMS Family agreements |
| Activity 12 | Actions to prioritize the growth of CMS and the CMS Family |
| Activity 15 | Enhanced collaboration between CMS agreements via projects, programmes or Secretariats based on either geography or on species clusters |

The wider socio-ecological and political setting of the Central Asian region

Located at the crossroad of Europe, Asia, and the Middle East, the Central Asian region not only harbours a unique assemblage of wildlife and plants from these three regions, it is also located at the intersection of the spheres of influence of several major powers (Fritzsche *et al.* 2011) requiring a constant balancing of conflicting interests. The region's large mineral resources and transboundary water resources (predominately the Syrdarya, Amudarya and their tributaries) play a crucial role in economic development. Due to the shared water resources, agriculture and energy production are closely interlinked between many of the Central Asian states and impact a wide range of economic, social and environmental issues. The nexus of water and energy creates strong interdependencies between upstream and downstream countries, causing tensions which are aggravated by a growing population and changing climate (Fritzsche *et al.* 2011, Valieva 2013).

Despite recent rapid economic growth in some countries, the rural population in large parts of Central Asia is impoverished and dependent on subsistence farming and livestock herding (<http://www.ruralpovertyportal.org>, <http://web.worldbank.org>); unemployment rates are often high⁶. Ethnic tensions, border disputes, and military conflicts among others threaten political stability

⁶ The United Nations Development Programme Human Development Indices in 2012 for Afghanistan: 0.374 (rank 175), China: 0.699 (rank 101), Islamic Republic of Iran: 0.742 (rank 76), Kazakhstan: 0.754 (rank 69), Kyrgyzstan: 0.622 (rank 125), Mongolia: 0.675 (rank 108), Russian Federation: 0.788 (rank 55), Tajikistan: 0.622 (rank 125), Turkmenistan: 0.698 (rank 102), Uzbekistan: 0.654 (rank 114).

in the region. Not least, the region suffers from a variety of frequent natural disasters, such as earthquakes, floods, landslides, mudslides, debris flows, avalanches, droughts and extreme temperatures (Gupta *et al.* 2009).

Many ecosystems and natural habitats are under threat. Land degradation, deforestation and loss of biodiversity are affecting agricultural productivity, food security and livelihoods. The region is facing depletion of freshwater resources and degradation of aquifers, loss of soil fertility and vegetation cover, while uncontrolled agriculture, illegal logging, unsustainable mining practices, and overgrazing have resulted in the destruction of wetlands, steppes and pristine forests (<http://www.undp.org>).

Central Asia is warming faster than the global average; climate change impacts may well converge with resource exhaustion and growing demand for water, food and energy (Maas *et al.* 2012). Temperatures are anticipated to rise significantly in the Himalayan highlands including the Qinghai-Tibet Plateau, China, and arid regions of Asia. While mean winter precipitation will likely increase, summer precipitation is predicted to decrease in western and Central Asia; a projected decrease in mean precipitation in the region is anticipated to be accompanied by an increase in the frequency of very dry spring, summer and autumn seasons (Cruz 2007). A long term change of temperature stretching over a period lasting until 2050 may reduce the runoff of both the Syrdarya and the Amudarya by 6-10% and 10-5% respectively (Ibatullin *et al.* 2009). The frequency of extreme events, such as floods, is predicted to increase.

Central Asia's geo-economic location between the major and growing world markets of Europe and South-East Asia carries the potential for the region to become a major transit corridor for international trade flows (Kulipanova 2012). It is expected that the potential transit capacity will almost double in the period 2009-2020 (Vinokurov 2009). Large parts of the region have well extended transport infrastructure inherited from pre-Soviet and Soviet times and are situated at the intersection of several international road and railway routes. However, much of this infrastructure is aimed towards serving the Russian Federation (Kulipanova 2012). To handle increased volumes of cargo, regional governments are promoting large investments to modernise and expand the region's existing transport infrastructure (Kulipanova 2012), with the potential cost of fragmenting habitats and populations of migratory mammals. Similarly, the network of oil and gas pipelines is expanding (McKeigue 2012), posing a threat to migratory mammals during the construction period, when open trenches are too deep and wide to be crossed.

However, realising the risks associated with climate change and unsustainable natural resource use and development, several countries are promoting a transition to a "green economy"⁷ aiming at reducing carbon emission and pollution, and enhancing energy and resource efficiency, while preventing the loss of biodiversity and ecosystems services. In a recent study aiming to develop a better understanding of future security and environmental risks in Central Asia and recommendations on how to minimise these, transition to green economy has been identified as a priority area for action (Maas *et al.* 2012). A green economy that also takes into account the needs of migratory wildlife could as well help safeguard one of the world's treasures, the wildlife and wild places of Central Asia.

Methodology

Assessment methodology

This assessment is based on a review of literature, and the results of a stakeholder survey conducted in 10 countries (see below). The survey targeted key government representatives including CMS National Focal Points, CMS Scientific Councillors, CMS MOU Focal Points, Action Plan Contact Points and/or other authorities relevant for the conservation and management of migratory mammals.

⁷ UNEP has defined green economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities; an economy which is low carbon, resource efficient and socially inclusive (<http://www.unep.org>).

Further national and international non-governmental organisations, scientific institutions and experts were invited to contribute.

The survey consisted of three parts: i) an assessment of current threats to selected species, ii) current conservation measures taken by governmental and non-governmental stakeholders, and iii) gaps and needs for the conservation of migratory mammals in Central Asia, and options for enhanced synergies (Annex 1). It was conducted in the form of online questionnaires and face-to-face interviews held by the GIZ coordinators of the ERCA component of the FLERMONECA project in the countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. Further interviews were held with single stakeholders upon request.

A total of 109 people from 70 governmental and non-governmental organisation/ institutions/ departments were contacted, out of which 80 stakeholders responded (24 of which were governmental representatives) from 57 organisations/ institutions (18 of which were governmental departments). 'Governmental' stakeholders in this report exclusively refer to representatives of the governments of the 10 countries considered by this assessment (see below) and not to representatives of governmental organisations/ institutions of other countries (e.g. foreign aid agencies), which are treated here as non-governmental stakeholders. A list of respondents is provided in Annex 2. As such, the response rate was 73% for people contacted and 81% for organisations/ institutions.

Priority species

The Central Eurasian Aridland Concerted Action targets species listed or not listed under CMS, migratory or not (Devillers 2008, Recommendation 8.23, UNEP/CMS 2005a) and the CAMI is open to all large mammal species that would benefit from a transboundary approach to conservation and management. For reasons of practicality, we had to limit the scope of this assessment in order to keep the amount of information and stakeholders manageable. As such a set of priority species was selected with a particular focus on CMS listed species. The final selection for inclusion in the CAMI is open for discussion among the stakeholders, as is the selection of the initial ten countries considered by this survey (see below).

In order to establish criteria for selecting priority species, we first assessed the status of large mammal species of the wider Central Asian region that have transboundary populations in the countries of Afghanistan, Bhutan, China, India, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan (Annex 3). Out of these, 14 priority species were chosen, based on the following selection criteria:

- i) Listing on the Appendices of CMS:

Appendix 1: Bukhara/Yarkand deer *Cervus elaphus yarkandensis*⁸ (also listed on Appendix II), wild camel *Camelus bactrianus*, wild yak *Bos grunniens*, snow leopard *Uncia uncia*, cheetah *Acinonyx jubatus*

Appendix 2: saiga *Saiga tatarica* and *S. borealis mongolica*, argali *Ovis ammon*, Mongolian gazelle *Procapra gutturosa*, goitered gazelle *Gazella subgutturosa*, kulan *Equus hemionus*, kiang *Equus kiang*

- ii) Other long-distance migrants of Central Asia not listed under CMS: chiru *Pantholops hodgsonii*
- iii) Species which have transboundary populations (today or possibly in future due to range expansion currently limited by fences) and have more or less the same range as species listed above: Przewalski's horse *Equus caballus przewalskii*, Tibetan gazelle *Procapra picticaudata*

⁸ In this report we follow the taxonomy of Wilson & Reeder (2005), which is used by the CMS as reference since adoption by CMS Parties at COP9. Where different taxonomy is used by the International Union for Conservation of Nature (IUCN), information on taxonomy is provided in footnotes.

Of the selected 14 species, CMS lists seven for priority action either under Concerted⁹ (wild camel, snow leopard, wild yak) or Cooperative¹⁰ Action (kulan, goitered gazelle, Mongolian gazelle, argali). For species listed for priority action, CMS encourages and assists Parties to take action to implement the provisions of the Convention and improve their conservation status (UNEP/CMS/Resolution 10.23, UNEP/CMS 2011b).

Geographical scope

The distribution of the selected priority species defined the geographical scope of this assessment. Of prime importance were countries already involved in CMS instruments (MOUs, Action Plans) such as the five Central Asian countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, the common political history of which has resulted in wildlife management approaches that are still similar to a large extent. Other countries considered by this assessment included Afghanistan, China (particularly the Qinghai, Tibet, Xinjiang, Gansu, and Inner Mongolia), the Islamic Republic of Iran, Mongolia and the Russian Federation. Several of the selected species also occur in Bhutan, India, Nepal, and Pakistan however, with only few exceptions, these populations are small. Nonetheless, the CAMI explicitly invites other Central Asian countries to contribute to the process and join the Initiative if interested.

Table 1 gives an overview of the 10 selected countries' accession to CMS, the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the United Nations Convention to Combat Desertification (UNCCD), as well as the status of their National Biodiversity Strategies and Action Plans (NBSAPs) required by CBD accession.

Table 1: Status of accession to CMS, CBD, CITES and UNCCD, and on the preparation of NBSAPs as of 27th of March 2014.

	CBD (year joined as party)	NBSAPs (year of completion/ adoption)	CITES (year joined as party)	CMS (year joined as party)	UNCCD (year joined as party)
Afghanistan	2002	under development	1986	Process to join underway	1996
China	1993	1994, 2010	1981	–	1997
Islamic Republic of Iran	1996	2006	1976	2008	1997
Kazakhstan	1994	1999	2000	2006	1997
Kyrgyzstan	1996	1998, 2002, 2014-2024 under development	2007	2014	1997
Mongolia	1993	1996	1996	1999	1996
Russian Federation	1995	2001	1992	–	2003
Tajikistan	1997	2003	Process to join underway	2001	1997
Turkmenistan	1996	2002, under revision	–	–	1996
Uzbekistan	1995	1998	1997	1998	1996

⁹ Concerted Actions are conservation measures undertaken for species or groups of species as identified in decisions of the COP. Species tend to be listed on CMS Appendix I (UNEP/CMS 2011f).

¹⁰ Cooperative Actions are projects or institutional arrangements implemented by Parties cooperating for the conservation of species or groups of species as identified in decisions of the COP. Species tend to be listed on CMS Appendix II (UNEP/CMS 2011f).

Species assessment

A brief overview of the conservation status of the 14 priority species and their inclusion in CMS or other multilateral conservation instruments is provided in **Table 2**; available information on population estimates in the selected target countries is given in **Table 3**, however should be treated with care as no reliable data is available for the majority of species. Detailed species assessments follow thereafter.

Table 2: Conservation status of priority species in Central Asia and their inclusion in CMS or other multilateral conservation instruments. IUCN = International Union for Conservation of Nature, LC = Least Concern, NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critically Endangered, CMS AP = CMS Action Plan, MTIWP = Medium Term International Work Programme, GSLEP = Global Snow Leopard and Ecosystem Protection Program.

Common name	Latin name	IUCN Red List	CITES Appendix	Annex	CMS Appendix	CMS MOU (year in effect)	Multilateral Action Plan
		category and trend (assessed in 2008 if not stated otherwise)					
Bukhara/Yarkand deer	<i>Cervus elaphus yarkandensis</i>	LC ↑ on species level; status on subsp. level not assessed	II	B	I/II*	2002	CMS AP, MTIWP planned
Wild camel	<i>Camelus bactrianus</i>	CR ↓	–	–	I	–	–
Wild yak	<i>Bos grunniens</i>	VU ↓	I	A	I	–	–
Asiatic cheetah	<i>Acinonyx jubatus venaticus</i>	CR →	I	A	I**	–	–
Snow leopard	<i>Uncia uncia</i>	EN ↓	I	A	I	–	GSLEP Program
Saiga antelope	<i>Saiga tatarica</i> and <i>S. borealis mongolica</i>	CR ↓ (actually increasing)	II	B	II	2006 S.t. <i>tatarica</i> / 2010 S.t. <i>mongolica</i> under discussion	CMS AP, MTIWP (2011-2015) draft CMS AP
Argali	<i>Ovis ammon</i>	NT ↓	I/II***	A/B***	II	–	–
Mongolian gazelle	<i>Procapra gutturosa</i>	LC ?	–	–	II	–	–
Goitered gazelle	<i>Gazella subgutturosa</i>	VU ↓	–	–	II	–	–
Kulan	<i>Equus hemionus</i>	EN ↓	I/II****	A	II	–	–
Kiang	<i>Equus kiang</i>	LC →	II	A	II	–	–
Chiru	<i>Pantholops hodgsonii</i>	EN ↓	I	A	–	–	–
Przewalski's horse	<i>Equus caballus przewalskii</i>	EN ↑ (2011)	I	–	–	–	–
Tibetan gazelle	<i>Procapra picticaudata</i>	NT ↓	–	–	–	–	–

*Populations in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Afghanistan.

**Excluding populations in Botswana, Namibia & Zimbabwe.

*** *O.a. hodgsonii* and *O.a. nigrimontana* I/A, all other subsps. II/B.

**** *E.h. hemionus* and *E.h. khur* I, all other subsps. II.

Table 3: Population estimates (and year assessed) for priority species in the selected target countries. The names of Range States that are Parties to the Convention are capitalised (e.g. KAZAKHSTAN). ? = unknown population status. Population estimates should be treated with caution as information on reliability is often missing.

Common name	Afghanistan	China	Islamic Republic of IRAN	KAZAKHSTAN	KYRGYZSTAN	MONGOLIA	Russian Federation	TAJIKISTAN	Turkmenistan	UZBEKISTAN	Global population estimate	Source/ reference
Bukhara/Yarkand deer	?	4,000–5,000 (1991)	–	>400 (2011) MOU Signatory	–	–	–	290 (2011), of which are ca. 140 trans-boundary with Uzbekistan MOU Signatory	120 (2011) MOU Signatory	1,200 (2011) of which are ca. 140 trans-boundary with Tajikistan, MOU Signatory	5,900-6,900	China: Lovari <i>et al.</i> 2008, all others: Pereladova 2013
Wild camel	–	600 (2004)	–	–	–	350 (2004)	–	–	–	–	850	Hare 2008
Wild yak	–	15,000 (1995)	–	–	–	–	–	–	–	–	15,000	Harris & Leslie 2008
Cheetah	–	–	60-100 (2007)	–	–	–	–	–	–	–	60-100	Durant <i>et al.</i> 2008
Snow leopard	100-200? (2003)	2,000-2,500 (2003)	–	100-110 (2001)	150-500 (2001)	500-1,000 (2000)	70-90 (2012)	180-200 (2003)	–	20-50 (2003)	4,500-7,000	Jackson <i>et al.</i> 2010, Snow Leopard Working Secretariat 2013
Saiga antelope	–	–	–	187,000 (2013) CMS MOU Signatory	–	12,000 - 16,000 (2014) CMS MOU Signatory	7,000 (2012) CMS MOU Signatory	–	only in severe winters CMS MOU Signatory	few resident; mainly in winter CMS MOU Signatory	206,000-210,000	Kazakhstan: Grachev 2013, Mongolia: WWF Mongolia unpublished report based on Distance sampling, Russian Federation: Kühl 2010
Argali	300? (2010)	20,000-32,000? (2004)	–	14,150 (2010)	16,900 (2010)	19,700 (2009)	700 (2010)	23,700 (2010)	–	1,800 (2008)	100,000	UNEP/CMS 2011k
Mongolian gazelle	–	during heavy snows and droughts in eastern part of Mongolia 80,000? (2008)	–	–	–	1,000,000-3,000,000? (2008/2009)	3,500 (2011)	–	–	–	1,000,000-3,000,000	China: Mallon 2008c, Mongolia: Mallon 2008c, Lkhagvasuren <i>et al.</i> 2009, Russia: Kiriliuk 2011

Common name	Afghanistan	China	Islamic Republic of IRAN	KAZAKHSTAN	KYRGYZSTAN	MONGOLIA	Russian Federation	TAJIKISTAN	Turkmenistan	UZBEKISTAN	Global population estimate	Source/ reference
Goitered gazelle	?	?	4,000 (2001)	low thousands	extremely few	60,000 (early 1990s)	-	?	?	?	120,000-140,000 (2001)	Mallon 2008a Kazakhstan: Plakhov <i>et al.</i> 2012, S.V. Sokolov pers. comm. 2011; Turkmenistan: V. Lukarevskiy and O. Pereladove pers. comm. 2014; Islamic Republic of Iran: Hemami & Momeni 2013, Iranian Department of Environment unpubl. data 2013; Mongolia and parts of adjacent China: Lhagvasuren <i>et al.</i> unpubl. data from 2009, Ransom <i>et al.</i> 2012; China: Yang 2007, Q. Cao pers. comm. 2014 based on Chu 2008.
Kulan/onager	-	4,500 (2014)	530 (2013)	3,000 (2012)	-	20,000-30,000 (2009/12)	-	-	800 (2014)	?	28,830-38,830	Shah <i>et al.</i> 2008
Kiang	-	56,500-68,500 (1980s-1990s)	-	-	-	-	-	-	-	-	56,570-68,620	Shah <i>et al.</i> 2008
Chiru	-	150,000? (2004)	-	-	-	-	-	-	-	-	150,000	Mallon 2008b
Przewalski's horse	-	120 (2011)	-	-	-	300 (2011)	-	-	-	-	420	Boyd & King 2011
Tibetan gazelle	-	100,000? (1998)	-	-	-	-	-	-	-	-	100,000	Mallon & Bhatnagar 2008

Bukhara/Yarkand deer *Cervus elaphus yarkandensis*

Conservation status

The Bukhara¹¹ or Yarkand deer *Cervus elaphus yarkandensis*¹² is a Central Asian subspecies of the red deer. Historically it inhabited the riparian forests (called tugai) along the river valleys of Amudarya and Syrdarya, Murgab and Tejen, Zeravshan, Ili and Chu, and the Tarim and Karakax rivers. During Soviet times large-scale deforestation took place and the vast majority of the fertile riverbanks was converted into agricultural land. In combination with intense irrigation causing rivers to shrink and over-hunting the Bukhara deer was severely reduced in numbers and became locally extinct in many sites of its former range (UNEP/CMS 2005b). By 1999 less than 350 (UNEP/CMS 2011n) animals were estimated to have survived in Central Asia (excluding populations in Afghanistan and China).

The red deer is listed as Least Concern on the species level on the IUCN Red List; its status on the subspecies level is likely more threatened. In 2006 the Bukhara deer became listed on Appendix I and II of CMS for populations in Kazakhstan, Kyrgyzstan¹³, Tajikistan, Turkmenistan, Uzbekistan and Afghanistan (UNEP/CMS 2005b). The whole species is listed on Appendix II of CITES since 1975 and on Annex B of the Wildlife Trade Regulations since 2013. The Bukhara deer is included in the red data book of all range countries. Since the year 2000, population numbers have stabilised and there has been an upward trend in recent years. The global population (except Afghanistan and China) was estimated in 2011 to be around 1,900 (Pereladova 2013). Population numbers in Afghanistan are unknown; the Yarkand deer in China was estimated in 1991 at 4,000-5,000 (Lovari *et al.* 2008).

Already in 2002 the CMS MOU Concerning Conservation and Restoration of the Bukhara Deer¹⁴ (Bukhara deer MOU) came into effect, which is accompanied by an Action Plan. Signatory Range States include Kazakhstan, Uzbekistan, Tajikistan and the non-CMS Signatory country of Turkmenistan. Cooperating organisations which have signed the MOU include the World Wide Fund For Nature (WWF), the International Council for Game and Wildlife Conservation (CIC) and the UNEP/CMS Secretariat. The First Meeting of the Signatories was held in 2011 during which it was decided to develop a Medium Term International Work Programme (UNEP/CMS 2011n) following the model of the CMS Saiga MOU (see below). National reports have to be submitted to CMS every two years.

There are captive breeding facilities in Kazakhstan and Uzbekistan and there have been a series of reintroductions in recent years. Uzbekistan allowed hunting of three animals in 2013.

Threats

Main threats to the Bukhara deer are illegal hunting and loss of natural habitat (UNEP/CMS 2011n). Although most of the remaining tugai forest is under protection nowadays, illegal logging is still of concern particularly where frequent electricity cuts in winter cause a high demand on firewood. Similarly, forest loss caused by fires (e.g. sparked by anthropogenic reed burnings) can have devastating consequences. Further, illegal grazing of livestock in protected areas leads to food competition and disturbance.

¹¹ The Bukhara deer *sensu stricto* includes populations of *C.e. yarkandensis* in Afghanistan, Kazakhstan, Tajikistan, Turkmenistan and Uzbekistan.

¹² Formerly listed as *Cervus elaphus bactrianus* under CMS.

¹³ Despite the mention of Kyrgyzstan by CMS, Bukhara deer does not occur there and the country is not part of the historical range of the species (O. Pereladova, pers. comm. 2014).

¹⁴ With the adoption of Wilson & Reeder (2005) as the standard nomenclatural reference for terrestrial mammals at CMS COP9, the nomenclature of the Bukhara deer has changed from *Cervus elaphus bactrianus* to *C.e. yarkandensis*. However, the Bukhara deer MOU still refers to the species as *C.e. bactrianus*. The Secretariat considers the current reference of the MOU as appropriate and proposes not to follow the new taxonomic reference, which would require an amendment to the MOU (UNEP/CMS 2011m).

The riparian forests are fed by and depend on the rivers they follow, which allow the growth of trees in an otherwise dry climate. With the development of intensive agriculture the river waters have dropped to alarmingly low levels at some sites (e.g. Tigrovaya Balka, Tajikistan). The impact of a changing climate towards an increase in temperature might further accelerate the fall of ground water levels and thus threatens the persistence of the tugai forests. The remaining tugai forests in Central Asia are highly fragmented and there is a risk of inbreeding in disconnected small Bukhara deer populations (UNEP/CMS 2011n).

Distribution and movements

The highest numbers of Bukhara deer *sensu stricto* are located in Uzbekistan, where the deer occurs in three protected areas, the Badai-Tugai State Nature Reserve (part of the Lower-Amudarya State Biosphere Reserve), the Kyzylkum State Nature Reserve (both connected to the Amudarya river) and the Zeravshan State Nature Reserve (Zeravshan river, **Map 1**). Most of these populations are transboundary with Turkmenistan; they are as well the only populations occurring in Turkmenistan. In Kazakhstan the species became extinct in the late 1960s. Through reintroductions, populations are now occurring again in the Karatchingil hunting concession and the Altyn-Emel National Park (Ili river) and Turkestan (Syrdarya). In Tajikistan the deer's main population lives in the Tigrovaya Balka State Nature Reserve, and the Farkhor and Khamadoni Districts (Panj river and tributaries). In Afghanistan, the Bukhara deer possibly exists in wetlands of the Amudarya near Imam Sahib, Kunduz Province, and the river islands of Darqad in Takhar along the border with Tajikistan (<http://www.lhnet.org>). Most likely these are transboundary populations with Tajikistan. Past reintroductions to Ajar Valley were hunted to extinction during years of conflict (<http://www.lhnet.org>). In China the Yarkand deer exists in three isolated populations in the regions around Xayar, Lopnur, and Qarqan, Xinjiang (Tumur *et al.* 2013).

The Bukhara deer is not a typical long-distance migrant but severe droughts and/or colds might cause it to search for better habitat outside its usual range (UNEP/CMS 2011n). Similarly, it is forced to move in the event of floods and fires. During the rutting season, young stags usually leave their native group. Movements typically occur along and across the rivers associated with tugai forest. As many of these form state borders, large parts of their range are transboundary (UNEP/CMS 2005b).



Map 1: Bukhara/Yarkand deer *Cervus elaphus yarkandensis* distribution. Information on Bukhara deer *sensu stricto* (populations in other countries than China) provided by O. Pereladova, pers. comm. 2014, based on Pereladova (2013); information on Yarkand deer (populations in China) derived from Tumur *et al.* (2013)¹⁵.

Wild camel *Camelus bactrianus*

Conservation status

The wild Bactrian camel *Camelus bactrianus*¹⁶ has undergone severe population declines and range reductions in past decades, mainly due to persecution as the species has been regarded to compete with domestic camels and livestock for food and water. According to Hare (2008) the global population was estimated at 850 in 2004, however, there is no robust information available about the current population size (Hare 2008, Wild Camel Protection Foundation). It is extinct in Kazakhstan.

IUCN lists the species as Critically Endangered and since 2002 the wild camel is listed on Appendix I of CMS (UNEP/CMS 2002b). It is protected under the national law of its range countries. Bilateral agreements to cooperate on the conservation of the species exist between China and Mongolia. There are captive breeding programmes in both countries.

Threats

Poaching, habitat loss, human disturbance and hybridisation with domestic camel are amongst the most important threats to the wild camel. The species has been over-hunted for subsistence and recreational purpose and to minimise competition with domestic camels and livestock (Mijiddorj 2002, Hare 2008). Increasing human encroachment and intense livestock grazing has likely led to rangeland degradation and an overall decline in habitat quality (Enkhbileg *et al.* 2006). Mining, both legal and illegal, and industrial and infrastructure development threaten to further deteriorate wild camel habitat (Hare 2008, Adiya 2008). Sharing its habitat with domestic camels, there is much

¹⁵ The geographic designations do not represent the opinion of the authors concerning the legal status of any country, territory or area, or concerning the delimitation of its frontiers or barriers.

¹⁶ IUCN considers the wild species of the Bactrian camel as *Camelus ferus*, while the domestic form is considered as *Camelus bactrianus*.

concern of interbreeding and disease transmission throughout the species' range (Blumer *et al.* 2002, Hare 2008, Silbermayr & Burger 2012). Further, low calf recruitment has been observed but reasons are not understood (Tulgat & Magash 2002, UNEP/CMS 2002b).

High levels of wolf predation on young camels have been reported, apparently caused by prolonged droughts forcing camels to concentrate at remaining water sources, making them an easy target (Clark *et al.* 2006). However, it is not known if wolves actually kill camels or scavenge on dead animals and, if they do kill camels, if those animals were already compromised by poor nutrition or other factors. Other threats include habitat fragmentation by the Mongolian–Chinese border fence, climate change, which might result in drying oases and deteriorating water and forage quality, and food shortages during increasingly frequent harsh winters (Clark *et al.* 2006, Hare 2008). Extreme shyness and a tendency for long-distance flight behaviour in combination with large home ranges may as well prove a limiting factor for population expansion (Kaczensky *et al.* 2014).

Distribution and movements

The current range of the wild camel is restricted to four small, remnant populations in northwest China and southwest Mongolia (Reading *et al.* 1999, **Map 2**). The largest population lives in China, specifically in the Gashun Gobi desert, Xinjiang Province, around Lop Nur, which was previously used as a test site for nuclear weapons. Smaller populations occur in Gansu Province and the Taklamakan desert and the ranges of Arjin Shan in Xinjiang Province. In Mongolia the species inhabits the Trans-Altai Gobi, including the foothills of the Edren range to Shiveet Ulaan, and the Hühk Tömörtei range to the state border with China (Reading *et al.* 1999, UNEP/CMS 2002b, Hare 2008). Movements of wild camels into China have been reported by border guards in the past, but seem to have ceased in the last decade, likely as a result of an upgraded border fence (Kaczensky *et al.* 2014).

Wild camels are highly mobile. Telemetry data from 2002-2007 revealed distances of up to 74 km covered by individuals within 21 h (Kaczensky *et al.* 2014). Although the animals showed range shifts over time, there was little indication of a generally applicable seasonal pattern. These long-distance movements suggest that wild camels could react quickly to local food or water shortages, or avoid adverse weather conditions and other threats (Kaczensky *et al.* 2014).



Map 2: Wild camel *Camelus bactrianus* distribution adapted from Hare (2008) according to information provided by R.P. Reading, pers. comm. 2014.

Wild yak *Bos grunniens*

Conservation status

Historically, wild yak *Bos grunniens*¹⁷ occurred throughout the Qinghai-Tibet Plateau, China (Gansu, Sichuan, Xinjiang, Tibet, Qinghai Provinces), northern India (Ladakh), Nepal and Bhutan (Schaller & Liu, 1996). It is assumed that populations have declined over 30% over the last 35 years and its range reduced by more than half in the past century (Schaller & Liu 1996), however, no reliable information on the species status is available. Harris & Leslie (2008) speculate a total population count to be close to 10,000 based on estimates of 15,000 in 1995 (Schaller & Liu 1996). The global population trend is downward in many areas and similar reductions are projected into the future. Wild yak in the southern Qiangtang (or Chang Tang), China, have been almost exterminated with the arrival of pastoralists since the 1960s. However, at least one area in Qinghai retained a high abundance of the species until at least 2007 (Harris *et al.* 1999). The species is considered extinct in both Nepal and Bhutan.

IUCN lists the wild yak as Vulnerable; it was listed in CITES Appendix I in 1975 and on CMS Appendix I in 1985 (UNEP/CMS 1985a). The lists the species under Annex A of their Wildlife Trade Regulations since 2013. Wild Yak is protected throughout its range (Harris & Leslie 2008).

Threats

Poaching, including commercial hunting, for meat was considered the most serious threat to wild yaks in the past and responsible for sharp declines (Schaller & Liu 1996). However, with the confiscation of weapons in most of the Qinghai-Tibet Plateau, poaching has declined as a threat to yak populations (Harris & Leslie 2008).

An increase in livestock herds and the intensity of pasture use has displaced wild yaks and ultimately reduced availability of wild yak habitat (Harris 2007). Wild yaks have limited tolerance for

¹⁷ Listed as *B. mutus* by IUCN.

disturbance from people and their livestock; they tend to move away from areas where livestock is herded.

Interbreeding between domestic and wild yaks present a threat to remaining populations (Harris 2007). Disease transmission from domestic livestock, either directly or via other wild species, may be an additional threat, although this has not yet been documented. Low offspring recruitment was observed by Schaller and Gu (1994) in a wild yak population in the Qiangtang National Nature Reserve in 1990, whereas it is unknown whether this was due to disease or to high levels of postpartum mortality.

Where wild yaks have maintained or increased in numbers, conflicts with pastoralists have increased caused primarily by abducted domestic female yaks and reported attacks on herders by wild yak bulls (Schaller *et al.* 2005, Tsering *et al.* 2006). This has the potential to increase retaliatory killings (Harris & Leslie 2008).

Distribution and movements

In China, the species occurs in scattered populations on the Qinghai-Tibet Plateau (Gansu, Qinghai, Xinjiang, Tibet Provinces), with the main populations remaining in the Qiangtang National Nature Reserve (Schaller & Liu 1996, Fox *et al.* 2004), as well as the Arjin Shan area of south-eastern Xinjiang, and Kekexili Nature Reserve in Qinghai and adjacent areas of the Kunlun Mountains, particular Yeniugou (Harris 2007, Schaller *et al.* 2007, **Map 3**). There are also isolated populations north and south of the main population, in west-central Tibet, south-central Qinghai, and western Gansu (Harris & Leslie 2008). In India, only very few wild yak remain, with some individuals occasionally crossing back and forth between the Ladakh region of Kashmir and areas controlled by China (Schaller & Liu 1996, Fox *et al.* 1991), making this a transboundary population.

Schaller & Gu (1994) observed wild yak tending to remain on or near hills. They roam widely making seasonal shifts for about 50 km or more and disperse when disturbed and during winter. They are often found on slopes near glaciated peaks, where there is fresh water and good plant growth along rivulets, and on terrain that enables them to shift seasonally up and down slopes for the most nutritious forage, descending into lower valleys in winter (Miller & Schaller 1996).



Map 3: Wild yak *Bos grunniens* distribution. Information taken from Harris & Leslie (2008).

Cheetah *Acinonyx jubatus*

Conservation status

In Asia, the cheetah, *Acinonyx jubatus*, subspecies *A.j. venaticus*, has lost almost all of its historic range, which within the last century extended from the shores of the Mediterranean and the Arabian peninsula, north to the northern shores of the Caspian and Aral Seas, and east through Uzbekistan, Turkmenistan, Afghanistan, Pakistan into central India (Mallon 2007). It is known to have survived only in the Islamic Republic of Iran where the subspecies is estimated at 60-100 (Hunter *et al.* 2007). Its range contracted rapidly during the second half of the 19th and the early 20th centuries and soon became fragmented mainly due to uncontrolled hunting of ungulate prey, especially goitered gazelle, and direct killings or live captures (which were trained to hunt for the aristocracy, Divyabhanusinh 1995, Mallon 2007). The species disappeared from most of Central Asia between 1950 and the mid-1980s (Mallon 2007) and is now regionally extinct in India, Iraq, Kazakhstan, Tajikistan, Turkmenistan and Uzbekistan, and parts of the Arabian Peninsula. Persistence in Afghanistan and Pakistan is unlikely, where it is considered extinct as well (Husain 2001, Durant *et al.* 2008).

IUCN considers the subspecies as Critically Endangered. The species is listed in CITES Appendix I since 1975 and the EU Wildlife Trade Regulations' Annex A since 2013. CMS listed the species on Appendix I in 2008 (except populations of Botswana, Namibia and Zimbabwe, UNEP/CMS 2008c). The cheetah is protected in the Islamic Republic of Iran; in Afghanistan it is listed on the country's Protected Species List (Durant *et al.* 2008). Hunting and trade are forbidden in both countries.

Wildlife biologists and nature conservationists have discussed possible reintroductions, however, these can be considered premature at this stage due to the lack of sites with an adequate prey base and obtaining appropriate stock for release (Breitenmoser 2002, Mallon 2007).

Threats

The key factor affecting cheetah numbers in the Islamic Republic of Iran is the reduction of prey species (particularly goitered gazelle and Indian gazelle *Gazella bennettii*) due to overhunting and loss of habitat. In addition, livestock grazing causes disturbance for the cat and wild ungulates alike and potential grazing competition with the later (Hunter *et al.* 2007). Domestic dogs accompanying

livestock herds present a likely direct threat to both, cheetahs and their prey (Durant *et al.* 2008). Cheetahs are also killed for sport, profit, or in retaliation of livestock losses, possibly confused for leopards (Hunter *et al.* 2007).

A further emerging threat is the potential fragmentation of the remaining population into discontinuous subpopulations caused by an increasing developmental pressure stemming from mining, oil extraction, roads and railways (Durant *et al.* 2008). Numerous major highways traverse the cheetah range in Iran, including through or adjacent to most protected areas where the species is found. Annually, at least 1-2 cheetahs are killed by vehicles on roads (Hunter *et al.* 2007). The fenced border between the Islamic Republic of Iran and Turkmenistan impedes earlier migrations from north-east Iran into southern Turkmenistan.

Given the scarce prey base, there is considerable potential for competition over food with sympatric large carnivores (Persian leopard *Panthera pardus saxicolor*, striped hyaena *Hyaena hyaena*, grey wolf *Canis lupus*, caracal *Caracal caracal*, golden jackal *Canis aureus*). Further, all of these carnivores are potential cub predators while leopards and wolves are as well capable of killing adult cheetahs (Hunter *et al.* 2007).

There is a possible lack of genetic diversity in the entire species (UNEP/CMS 2008c), which might be aggravated by the low numbers of Asiatic cheetah. However, Charruau *et al.* (2011) found higher than expected levels of genetic diversity and suggested that the Asiatic cheetah was distinct from African populations.

Distribution and movements

In the Islamic Republic of Iran, the cheetah's range is restricted to the main desert areas around Dasht-e-Kavir (Farhadinia 2004, **Map 4**), with most important protected areas being the Kavir National Park, Touran National Park, Naybandan-e-tabas Wildlife Refuge, Dare Anjir Wildlife Refuge and Bafgh Protected Area (Hunter *et al.* 2007). One of the few areas outside the Islamic Republic of Iran where the species may still occur is the west of Afghanistan where it may exist as a vagrant. However, there are no recent confirmed records (A.W. Modaqiq, pers. comm. 2014).

Knowledge on movement patterns, area requirements, habitat preferences, feeding ecology and reproductive biology of the Asiatic cheetah is limited and scientific studies yet in its beginnings (Hunter *et al.* 2007). Findings from recent camera trapping surveys conducted in central Iran showed that the cat covers surprisingly large distances. A female cheetah, which was monitored over the course of three years, was found to migrate between two reserves, which are more than 150 km apart as the crow flies (Farhadinia *et al.* 2013).



Map 4: Cheetah *Acinonyx jubatus* distribution. Information taken from Durant *et al.* (2008).

Snow leopard *Uncia uncia*

Conservation status

The snow leopard *Uncia uncia*¹⁸ is suspected to have declined by at least 20% over the past two generations (16 years) due to habitat and prey base loss, and poaching and persecution. Losses to poaching were most severe in the former Soviet republics in the 1990s (McCarthy *et al.* 2003, Jackson *et al.* 2008). While conditions seem to have improved somewhat (Jackson *et al.* 2008), poaching and illegal trade are likely to continue in large parts of the snow leopard's range. Overstocking with livestock is widespread throughout the cat's range, causing declines in wild prey populations, and an increase in retributive killing when snow leopards prey on livestock (McCarthy *et al.* 2003). Current estimates of global populations range between 4,500-7,000 (Jackson *et al.* 2010).

IUCN lists the species as Endangered. The cat is listed in CITES Appendix I since 1975 and on Annex A of the EU Wildlife Trade Regulations since 2013. CMS has listed the species on Appendix I since 1985 (UNEP/CMS 1985b). The snow leopard is protected by national laws in all range countries (Snow Leopard Working Secretariat 2013).

In 2013, at the Global Snow Leopard Conservation Forum in Bishkek, Kyrgyzstan, representatives of all 12 snow leopard range countries adopted the Bishkek Declaration on the Conservation of the Snow Leopard, with the overarching goal to work together to identify and secure 20 snow leopard landscapes across the cat's range by 2020 (Snow Leopard Working Secretariat 2013). At the same meeting the Global Snow Leopard and Ecosystem Protection Program (GSLEP, see below) was endorsed, which builds on a foundation of 12 National Snow Leopard and Ecosystem Protection Priorities (NSLEPs) and five Global Support Components (GSCs). Partner organisations of the GSLEP Program are CITES, CMS, Fauna & Flora International (FFI), the Global Environment Facility (GEF), Global Tiger Initiative (GTI), the International Criminal Police Organization (INTERPOL), Nature and Biodiversity Conservation Union (NABU), Snow Leopard Conservancy (SLC), Snow Leopard Network (SLN), Snow Leopard Trust (SLT), TRAFFIC, United Nations Development Programme (UNDP), United

¹⁸ Formerly listed as *Panthera uncia* under CMS and listed as *P. uncia* by IUCN.

States Agency for International Development (USAID), Wildlife Conservation Research Unit (WildCRU), Wildlife Conservation Society (WCS), the World Bank (WB), and the World Wide Fund For Nature (WWF).

Threats

Snow leopard habitat has undergone extensive agro-pastoral land use changes, both within and outside protected areas. The inherently low wild ungulate density in snow leopard range, owing to relatively low primary productivity, is further exacerbated by prey declines due to poaching and competition with livestock (McCarthy *et al.* 2003, Jackson *et al.* 2008). The declining prey base has escalated livestock depredation leading to retribution killings (McCarthy *et al.* 2003, Jackson *et al.* 2008). Further, poaching for illegal trade represents a significant threat; even where trade was not the primary incentive for killing, it is usually the end result. Pelts appear to be the main snow leopard product in demand; other body parts found in trade include claws, teeth, meat and sexual organs of male cats (Theile 2003).

Habitat fragmentation and degradation due to the growth of human habitations and infrastructure development poses a serious threat to the quality of habitats and the genetic connectivity of snow leopard populations. Development projects spurred by mineral exploration and extraction, the need for major road and rail transportation networks, new gas and oil pipelines, and hydro-electric power facilities, are expected to grow significantly (Snow Leopard Working Secretariat 2013). Not least climate change might reduce snow leopard habitat in the future due to an upward shift in treelines (Forrest *et al.* 2012).¹⁹

Up to a third of the snow leopard range is along politically sensitive international borders, complicating transboundary conservation initiatives.

Distribution and movements

The snow leopard's geographic range, 60% of which is in China, runs from the Hindu Kush in eastern Afghanistan through the Pamir, Tian Shan, Karakorum, Kunlun, and the Himalaya mountain ranges to southern Siberia, where the range covers the Russian Altai, Sayan, and Tannu-Ola mountains and the mountains to the west of Lake Baikal (**Map 5**). Snow leopards are also found in the Mongolian and Gobi Altai and the Khangai mountains. In Tibet, China, it is found up to the Altyn-Tagh in the north. It is estimated that up to a third of the snow leopard's known or potential range is located either along or less than 50-100 km from international borders of the 12 range countries (Snow Leopard Working Secretariat 2013).

Dispersing cats have been known to traverse 20-65 km of open steppe and desert. There are records of snow leopards which dispersed up to 150-200 km from their normal haunts (Snow Leopard Working Secretariat 2013).

¹⁹ For a thorough, recent country specific assessment see the GSLEP Program (Snow Leopard Working Secretariat 2013).

encompasses as well *S. borealis mongolica*. MOU signatories are the CMS Parties of Kazakhstan, Mongolia, and Uzbekistan, and the Russian Federation and Turkmenistan (non-CMS Parties). Although not a Signatory to CMS or the CMS MOU, China has attended both Meetings of the Signatories and an initial dialogue with the Asian traditional medicine industry has been established. Cooperating organisations that have signed the MOU include FFI, the Frankfurt Zoological Society (FZS), CIC, the IUCN Species Survival Commission, WCS, WWF International, the Association for the Conservation of Biodiversity of Kazakhstan (ACBK) and the Saiga Conservation Alliance (SCA). The MOU includes an Action Plan; Medium Term International Work Programmes for periods of 5 years have been adopted at the Meetings of the Signatories to support the implementation of the Action Plan. National reports have to be prepared in advance of the Meetings of the Signatories.

Bi-lateral conservation agreements exist for transboundary saiga populations between Kazakhstan and Uzbekistan (signed/ratified in 2010), and Kazakhstan and the Russian Federation (signed in 2012). Captive breeding facilities are maintained in the Russian Federation and China; attempts have been made in Uzbekistan.

Threats

Despite the positive population trend in recent years, threats to the saiga continue to be imminent. The biggest single threat is illegal hunting for the horns of the males, a highly valued ingredient in a range of different traditional Asian medicines. The demand for saiga horn has not only depleted populations but has also led to heavily skewed sex ratios (Milner-Gulland *et al.* 2003), which are likely to impact fertility rates. Whilst most profit is made with the international illegal trade in saiga horn, hunting for meat plays an increasing role the scarcer males become.

A rise in mass mortality events likely due to diseases has taken a heavy toll on some subpopulations in recent years (occurring annually since 2010). While the occurrence of mass-die offs in saiga is recorded frequently in history their causation is not fully understood. While pasteurellosis is being discussed a changing climate possibly is a contributing factor (Kock 2011/2012).

A further yet far less defined threat stems from increasing extractive industry (primarily oil and gas) and associated infrastructure development in large parts of the antelope's range. The development potentially increases disturbance at critical times of the year (e.g. breeding and calving) and produces temporary barriers to migration (e.g. open pipeline ditches). Several railroad projects are currently under planning/ construction in Kazakhstan, which cross key saiga habitat. Further, with the entering into a customs union with the Russian Federation and Belarus, Kazakhstan has recently fenced its international borders, which impedes access to winter pastures in Uzbekistan and increases the risk of entanglement and fatal injuries during migration possibly leading to a further fragmentation of the population (Olson 2013).

The effect of climate change is not understood; it might be positive (e.g. expected warmer winters) and/or negative (e.g. detrimental changes in plant composition, hotter and drier summers).

Distribution and movements

Nowadays, the saiga antelope is separated into five subpopulations, four of which belong to *S. tatarica* (**Map 6**). The largest population inhabits central Kazakhstan (Betpak Dala), followed by populations in the Ural in Kazakhstan and the Russian Federation, Kalmykia in the Russian Federation and the Ustyurt Plateau region in southern Kazakhstan and north-western Uzbekistan (Mallon 2008d, Kühl 2010, Young *et al.* 2010, Grachev 2013). Two transboundary populations exist (Ural and Ustyurt). Only in severe winters animals migrate as far as Turkmenistan. The 5th population, *S. borealis mongolica*, is located in Mongolia; it splits again into two smaller populations. The Chinese population (*S. tatarica*) became extinct in the 1960s (UNEP/CMS 2006b).

Saiga are seasonal long-distance migrants (Singh *et al.* 2010) except for the Mongolian population. Their migration route typically follows a north-south direction with separated summer (northern) and winter (southern) ranges. The length of migration varies between the different populations and is influenced by weather and foraging conditions. If abundant, the species lives in large herds, up to thousands of individuals.



Map 6: Saiga *Saiga* spp. distribution. Information taken from Kurvits *et al.* (2011) and WWF Mongolia unpublished report.

Argali *Ovis ammon*

Conservation status

Argali *Ovis ammon* are the largest of the world's wild sheep, distributed widely throughout Central and Inner Asia and believed to be in significant decline (Harris & Reading 2008). Due to its impressive horns there is potential for substantial economic gains from commercial trophy hunting, which in some sites is used to support their management. An estimate of the global population lies around 100,000 (UNEP/CMS 2011k), however, recent reliable population data is not available for large parts of the species' range.

The species is listed on the IUCN Red List as Near Threatened and since 1995 the subspecies *O.a. hodgsonii* (Tibetan argali, China, India) has been listed in Appendix I of CITES. In 1997 *O.a. nigrimontana* (Karatau argali, Kazakhstan) was listed in Appendix I and all other subspecies in Appendix II²³. Similarly, the EU listed *O.a. hodgsonii* and *O.a. nigrimontana* on Annex A and all others on Annex B of their Wildlife Trade Regulations in 2013. Under CMS, argali was listed on Appendix II in 2011 (UNEP/CMS 2011k).

According to a study on Gaps and Options for Enhancing Argali Conservation in Central Asia (Rosen 2012) commissioned by CMS and GIZ, the combination of a MOU and Action Plan, similarly to the CMS Saiga MOU, appears to be the most suited and promising option for pursuing the conservation of the argali across its range. During a meeting of the Range States in 2012 a draft International Single Species Action Plan for the Conservation of the Argali (CMS Argali Action Plan) has been discussed and is currently being finalised (Mallon *et al.* 2014).

Argali is, as a species or in the context of a broader ban on hunting, formally protected from any extractive use in all of its Range States. Permits for trophy hunting on the basis of quotas are issued by the governments of Kyrgyzstan, Mongolia, Tajikistan and (sporadically) Uzbekistan. Until 2003 this was also practiced in China and Kazakhstan (Rosen 2012).

²³ Severtzov's argali is listed on Appendix II as *O. vignei severtzovi*.

Threats

Despite the argali's large geographical distribution and differing habitat characteristics, threats vary little across its range (Harris & Reading 2008). Main threats are illegal hunting for meat and horns fuelled by the influx of semi- and fully-automatic rifles during times of conflict (particularly in Afghanistan and Tajikistan). The horns are a much-valued trophy and while commercial trophy hunting schemes have shown to be beneficial for argali conservation in some countries (e.g. Tajikistan), they failed to be sustainable and provide sufficient revenues for conservation elsewhere (e.g. Mongolia, Harris & Reading 2008).

As domestic sheep and goats prefer similar habitat and fodder, a range of other threats stem from competition with livestock and include grazing competition, displacement/disturbance and disease transmission. As a result of over-grazing, habitat degradation and loss are prime reasons for the argali population decline. Adding to the grazing pressure, the collection of fuel wood is furthering the degradation of the land (such as *teresken Ceratoides papposa* in Tajikistan, which is also an important source of winter feed for argali).

Further, the rapidly developing mining industry and infrastructure network are of increasing concern. They cause habitat loss, disturbance and access to formerly remote and often inaccessible areas, thus facilitating illegal hunting. A fence along parts of the Tajik-Chinese border hinders migration.

Inbreeding and severe weather conditions represent serious threats for small and scattered populations (Harris & Reading 2008).

Distribution and movements

Argali occur in 11 countries, including north-eastern Afghanistan (Badakhshan), China (Gansu, Inner Mongolia, Qinghai, Tibet, Xinjiang and possibly western Sichuan), northern India (Ladakh, Sikkim, and Spiti), Kazakhstan (regions South Kazakhstan, Zhambyl, Almaty, Karaganda, east Kazakhstan and possibly Kyzylorda), Kyrgyzstan, Mongolia, northern Nepal (near the Chinese border), extreme northern Pakistan (Gilgit-Baltistan), the Russian Federation (Tuva and Altai Republics), Tajikistan (Sughd and Gorno-Badakhshan region) and Uzbekistan (Jizzakh, Samarkand, and Navoiy region, UNEP/CMS 2011k, **Map 7**). The species is separated into largely disconnected subpopulations, some of which differ morphologically. Currently 9 subspecies are recognised, however, sub-specific taxonomy remains contentious (Harris & Reading 2008). Several transboundary populations often involving more than two countries exist (e.g. between Kazakhstan, Mongolia, China and the Russian Federation; Tajikistan, China, Pakistan and Afghanistan).

Argali migrate seasonally to varying extents. Living mostly on alpine grasslands during summer, they often descend lower in winter, being sensitive to deep snow, particularly if forage is limited (Harris & Reading 2008). In addition to these vertical movements, in some areas they migrate due to a seasonal change in diet preferences (Rosen 2012). Before and during the rut argali males cover long distances in search of females (UNEP/CMS 2011k).



Map 7: Argali *Ovis ammon* distribution. Information taken from Harris & Reading (2008).

Mongolian gazelle *Procapra gutturosa*

Conservation status

Since the second half of the 20th century, the Mongolian gazelle's *Procapra gutturosa* range has been reduced to about one third of its original size due to land conversion for agriculture, livestock and economic development. Today the species is only found in the eastern portion of its historic distribution with scattered and isolated small populations in central and western parts of its former range. Population estimates are susceptible to large fluctuations due to disease and effects of severe winter conditions (Mallon 2008c). The last nationwide assessment in Mongolia was conducted in 2009 using distance sampling, which resulted in a minimum population estimate of 3 million (Lkhagvasuren *et al.* 2009), however, this number is disputed by many scientists (B. Lkhagvasuren, pers. comm. 2014). With herds of up to 10,000 animals strong, their mass migrations are one of the last great migratory spectacles in ungulates worldwide.

IUCN lists the species as Least Concern, however, an upsurge in illegal hunting in conjunction with adverse climatic conditions or outbreak of disease could result in population declines qualifying for a classification of Near Threatened or Vulnerable (Mallon 2008c). The species is protected by the national law of all range countries. In Mongolia, licensed hunting is allowed. Bilateral agreements to conserve gazelle habitat exist between Mongolia and China (UNEP/CMS 2002e). Reintroductions have been attempted in Mongolia with varying success (Lhagvasuren & Milner-Gulland 1997, UNEP/CMS 2002e). The gazelle is extinct in Kazakhstan.

Threats

Over-hunting is among the prime reasons for the species' decline. Mongolian gazelles are an important economic resource in all range countries and have been hunted for their meat, hide and more recently horn used in Asian traditional medicines as substitute for saiga horn (see above, Wingard & Zahler 2006). In Mongolia, in the past, animal products were primarily destined for the export market but are nowadays mostly consumed within the country (UNEP/CMS 2002e). Besides the licenced legal harvest²⁴, illegal hunting has been of increasing concern.

Animal husbandry as an important part of Mongolian economy has led to widespread food and water competition between livestock and wildlife and degraded rangeland (UNEP/CMS 2002e). Plans for renewed conversion for agriculture in the gazelle's current range exist (B. Lkhagvasuren, pers. comm. 2014).

Fenced railroads and national borders between Mongolia and China, and Mongolia and the Russian Federation represent impassable obstacles or have become deadly traps for gazelles during migration (Ito *et al.* 2005, Olson *et al.* 2009, Lkhagvasuren *et al.* 2011). Economic development and the recent boom in the extractive industry sector in Mongolia demand an expansion of the country's infrastructure network. While this is threatening to disrupt gazelle migration it is furthering the fragmentation of the population (Ito *et al.* 2013) and prevents natural re-colonisation of its historic range (UNEP/CMS 2002e) if not mitigated appropriately.

Severe winters and outbreaks of disease result in sporadic heavy mortality (Mallon 2008c), the latter potentially caused to some extent by disease transmission from livestock (Nyamsuren *et al.* 2006).

Distribution and movements

The Mongolian gazelle is a long-distance migrant. Most of its population is nowadays found in the eastern Mongolian steppes, concentrated in the Provinces of Dornod, Sukhbaatar, Khentii, Dornogobi and Umnugobi. Only small, scattered populations remain in central, southern and western Mongolia (Lhagvasuren 2000, UNEP/CMS 2002e, **Map 8**). In the Russian Federation, the gazelle has recently re-established a resident population in the Daursky Zapovednik, which was formed after an influx of thousands of gazelles from Mongolia in 2001/2002 and 2009/2010 due to droughts and harsh winters and supported by conservation measures taken by the reserve (Kiriliuk 2011).

A large portion of the population was believed to migrate south into China during winter (UNEP/CMS 2002e), however, the construction of solid barbed fences along the Chinese-Mongolian border, has severely hindered these seasonal migrations (B. Lkhagvasuren, pers. comm. 2014).

Seasonal shifts in range use suggest gazelles take advantage of changing pasture conditions; escaping snow in winter and tracking vegetation quality in summer. They lack consistency in using the same seasonal ranges in successive years, which is characteristic of a nomadic movement strategy (Olson *et al.* 2010, Mueller *et al.* 2008).

²⁴ From 2010, the government of Mongolia reduced the number of licences/quotas and at the same time increased the price for the licences resulting in an almost halt in licensed hunting in 2012 and 2013 (B. Lkhagvasuren, pers. comm. 2014).



Map 8: Mongolian gazelle *Procapra gutturosa* distribution adapted from Mallon (2008c) according to information provided by B. Lkhagvasuren, pers. comm. 2014.

Goitered gazelle *Gazella subgutturosa*

Conservation status

Despite the goitered gazelle's *Gazella subgutturosa* vast historic distribution (see below), over-hunting throughout its range has drastically diminished global populations from the second half of the 20th century onwards. In Kazakhstan estimated numbers dropped from 200,000 to less than 10,000 from the mid-1930s to late 1970s, in Azerbaijan from 13,000 to 4,000 during 1989-1999, in Uzbekistan from 8,000-10,000 to 5,000 during the 1970s and early 1980s, in Turkey from 3,000 to 300 during 1968-1978, and in Tajikistan from 200 to 70-80 during 1986-1996 (UNEP/CMS 2002d). Continued declines are widely reported. The range of the species is steadily shrinking with surviving populations becoming increasingly fragmented. Former populations in Armenia, Georgia, Kuwait, Kyrgyzstan, Pakistan and Turkmenistan have gone extinct or are on the verge of extinction (UNEP/CMS 2002d, Mallon 2008a). Global numbers were roughly estimated at 120,000-140,000 in 2001 (Mallon 2008a, Mallon & Kingswood 2001) but populations throughout the range have decreased since then.

The species is listed as Vulnerable under IUCN and became listed on Appendix II under CMS in 2002 (UNEP/CMS 2002d). It is legally protected in most of its Range countries. Hunting and trade is allowed in the Islamic Republic of Iran.

Reintroductions have taken place (e.g. Georgia, Azerbaijan and Turkey). There are captive populations in Pakistan, Syria, Tajikistan, Turkey and Uzbekistan.

Threats

The main threat to the goitered gazelle is illegal hunting for meat (and to a lesser extent for trophies) and habitat loss. Illegal commercial hunting with vehicles using bright lights during the night to blind animals have led to mass killings in many parts of the gazelle's range. Further, increasing habitat use for livestock grazing and conversion for agricultural purpose have resulted in grazing competition and disturbance; forcing the species to move to poor-quality grazing land in terms of food and access to drinking water.

Infrastructure and to a lesser extent extractive industry development exacerbates the fragmentation and isolation of existing populations with detrimental implications for reproduction.

The species is susceptible to the effects of severe winter conditions causing frozen snow covers that prevent access to forage (Mallon 2008a).

Distribution and movements

The global distribution of the goitered gazelle is the largest of all antelope species worldwide, ranging from the deserts of the Arabian Peninsula and the mountain valleys of Transcaucasia to the steppes of Central Asia, Mongolia and China (UNEP/CMS 2002d, **Map 9**). Range countries include Afghanistan, Azerbaijan, Bahrain, China, the Islamic Republic of Iran, Iraq, Jordan, Kazakhstan, Kyrgyzstan, Mongolia, Oman, Pakistan, Saudi Arabia, Syria, Tajikistan, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan and Yemen (Mallon 2008a). However, it has recently been proposed that populations from the Arabian Peninsula should be separated as *G. marcia* (Wacher *et al.* 2011) The largest remaining population of the species is thought to live in Mongolia, the second largest in the Islamic Republic of Iran (Mallon 2008a). Several of its populations are transboundary.

They migrate seasonally in search of pasture and water (Mallon 2008a). Migrations also occur at times of hardship, e.g. during harsh winter conditions and droughts (UNEP/CMS 2002d).



Map 9: Goitered gazelle *Gazella subgutturosa* historic distribution according to Mallon (2008a); nowadays the species occurs patchily within this range but no detailed information on current distribution range is available.

Kulan/ onager *Equus hemionus*

Conservation status

The Asiatic wild ass *Equus hemionus* (locally referred to as k(h)ulan, khur, or onager) may have lost as much as 70% of its range since the 19th century and is now regionally extinct in many of its former range countries primarily due to competition with livestock for pastures and water and severe over-hunting (Bannikov 1981, Moehlman *et al.* 2008). Its global population is estimated to have declined by more than 50% over the past two decades to a rough estimate of 30,000 (Moehlman *et al.* 2008) and has left dwindling and fragmented populations scattered across Eurasia (Kaczensky *et al.* 2011b).

The species is listed as Endangered by IUCN. CITES has listed the subspecies *E.h. hemionus* (Mongolian kulan) and *E.h. khur* (Indian khur) in Appendix I and all other subspecies in Appendix II since 1975. The full species is listed on Annex A of the Wildlife Trade Regulations since 2013. CMS listed the species on Appendix II in 2002 (UNEP/CMS 2002c). The wild ass is under national protection in China, the Islamic Republic of Iran, India, Kazakhstan, Mongolia, and Turkmenistan.

Free ranging populations of wild asses have been successfully re-established via reintroductions in Kazakhstan, Turkmenistan (spreading into Uzbekistan) and Israel²⁵ (Kaczensky *et al.* in prep.). The total population stemming from reintroductions numbers approx. 3,500 and has re-established the species in Kazakhstan (further initiatives are presently discussed here) and Israel and somewhat re-expanded its range in Turkmenistan (and Uzbekistan). However, many reintroduction initiatives failed to establish populations in the long term (Kaczensky *et al.* in prep).

Threats

Main threats to the kulan stem from illegal hunting for meat, hides, and fat (which like the liver is believed to have apparent medicinal properties, Bannikov 1981, Wingard & Zahler 2006), competition with humans and livestock over water and pasture use (Kaczensky *et al.* 2006) and retaliation killings due to crop depredation (primarily in India and the Islamic Republic of Iran, S. Esmaeili, pers. comm. 2013, Moehlman *et al.* 2008). Other threats include habitat loss as a result of human settlement and cultivation, overgrazing and degradation, and limited access to open water sources (the mere presence of people and their livestock at water points can limit or block access for kulan, Denzau & Denzau 1999, Kaczensky *et al.* 2006, Kaczensky *et al.* 2010).

Of increasing concern is the continued habitat fragmentation furthered by linear infrastructure development (mostly roads and railways) associated with the booming extractive industry sector (Lkhagvasuren *et al.* 2011). Fenced and/or high volume traffic corridors can be expected to create serious movement barriers and cause casualties if not mitigated. Kulan have been shown to be unable to cross fences (e.g. along the border between Mongolia and China or Iran and Turkmenistan, or fenced transportation corridors like the Ulaanbaatar-Beijing railway), have long flight distances from vehicles in areas with high poaching pressure, and suffer from vehicle collisions (e.g. from July 2009 - July 2013, 24 kulan were killed by traffic in Israel; Israel Nature and Parks Authority unpubl. data 2013).

Small, isolated populations are demographically and genetically vulnerable and prone to extinction, particularly in habitats prone to environmental extremes (Kaczensky *et al.* 2011a, Saltz *et al.* 2006). Kulan have become largely confined to semi-desert and desert areas with a high variability in water and pasture availability. To cope with this unpredictable environment and track the scarce resources available, kulan need to have access to large tracts of land. This is particularly true in times of weather extremes, when kulan need to outrun summer droughts or extreme winters (Kaczensky *et al.* 2011a&b).

Distribution and movements

Today, the kulan primarily occurs in Mongolia and northern China, India, Kazakhstan, Turkmenistan, the Islamic Republic of Iran and Israel (**Map 10**). Additional animals can be found in Uzbekistan (semi-captive and vagrants from Turkmenistan) and the Ukraine (semi-captive). The most abundant subpopulation of the species lives in the southern part of Mongolia, likely representing >70% of the global population. The population was once continuous with kulan in northern China, particularly in the Xingjiang Autonomous Region. Kulan in Inner Mongolia²⁶ and Gansu province²⁷ seem to have

²⁵ Kulan also have been reintroduced to several semi-reserves, some of the larger ones being the Dzheiran Ecocenter (also known as Bukhara Breeding Centre; Bahloul *et al.* 2001). In 2013, the population numbered about 100 wild asses. In 2012, five wild asses were released in the much larger (204 km²) part of the Ecocenter with the aim to restore the wild ass in the south-western Kyzylkum Desert (N. Soldatova unpubl. data). Kulan were also released in the Azovo-Sivashskiy National Park on the Birjutschii peninsula (Ukraine). This population is presently estimated at 92 individuals (O. Yaremchenko, pers. comm. 2014).

²⁶ Estimated at approx. 100 in 2007; Q. Cao pers. comm. 2014 based on Bi 2007.

become very rare and exchange between Mongolia and China has become largely impossible with the upgrading of the fence along the international border (Kaczensky *et al.* 2011b, Kaczensky, unpubl. data). The next largest subpopulation is the Indian khur in the Little Rann of Kutch. The species has also survived in isolated populations in the Badkhyz Preserve (Turkmenistan) and at Touran National Park and Bahram-e-goor Reserve (Islamic Republic of Iran).

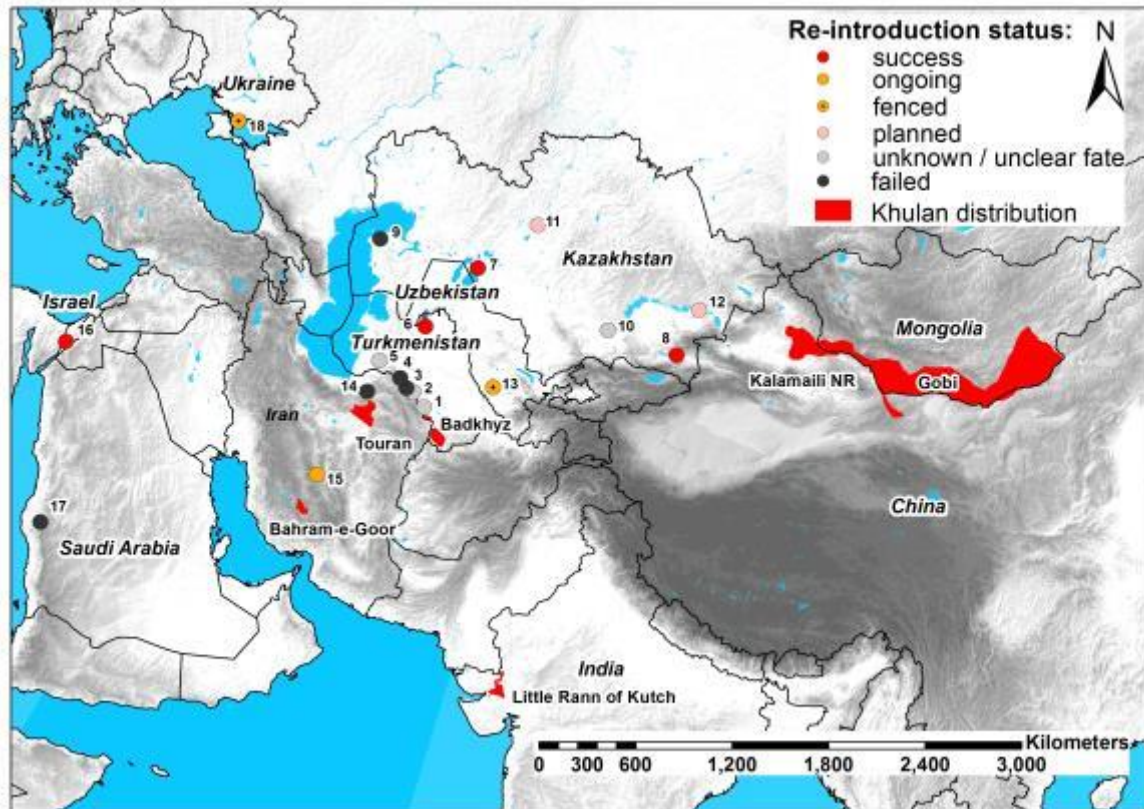
Populations have been successfully re-established through reintroductions in Kazakhstan in two locations²⁸. One on the former Barsa-Kelmes Island in the Aral Sea and one in Altyn Emel National Park in southeastern Kazakhstan. In Turkmenistan a total of approx. 200 wild asses were transported from Badkhyz to six different reintroduction areas within Turkmenistan (Lukarevski & Gorelov 2007, Kaczensky *et al.* in prep.). Although, population development in several of the reintroduction regions was initially positive, only the reintroduction to Kaplankyr Reserve near Sarykamish lake has been a true success²⁹ with animals now also spreading into adjacent Uzbekistan. In Israel, wild asses were first reintroduced in Maktesh Ramon Reserve (Saltz & Rubenstein 1995), and then at the Paran Wadi (Blank 2007). At present there are three main population nuclei, one each around the original release sites and one in the Negev Highlands (natural expansion); the total population is >200 animals (Davidson *et al.* 2013).

Kulan are among the most mobile of terrestrial mammals. In the Mongolian Gobi collared animals covered average straight line distances of 11.9 km (Kaczensky *et al.* 2006) or cumulative distances of 21.8 km (Kaczensky unpubl. data) within 24 hours. Kulan movements do not seem to follow easily predictable patterns (classical migration), but are rather nomadic, which is likely the result of the unpredictability in the availability of pasture and water in space and time (Kaczensky *et al.* 2006, Kaczensky *et al.* 2008, Kaczensky *et al.* 2011b).

²⁷ Estimated at approx. 10 in 2006; Q. Cao pers. comm. 2014 based on Bi 2007.

²⁸ Efforts to re-establish the kulan in the Andasayskiy reserve are ongoing, but the status is unclear. The reintroduction to the Aktay Buzachinskiy reserve on the eastern shore of the Caspian Sea most likely has failed. Further reintroduction sites are presently discussed, particularly to the central Kazakh steppe within the framework of the Altyn Dala Conservation Initiative.

²⁹ Several other sites likely are still home to small numbers of wild ass, but in three areas wild ass went extinct, and in one area the state of the population is unknown (V. Lukarevskiy and O. Pereladova pers. comm. 2014).



Map 10: Asiatic wild ass *Equus hemionus* distribution and reintroduction sites. Source: Kaczensky *et al.* (in prep).

Kiang *Equus kiang*

Conservation status

Kiang or Tibetan wild ass *Equus kiang*³⁰ populations have been decimated by hunting in the past resulting in local extinctions or scattered populations in some parts of their former range (Schaller 1998). However, successful wildlife protection measures in China, such as strict control of illegal hunting and confiscation of firearms since the late 1990s, have resulted in population increases in some areas (Schaller *et al.* 2005). The kiang is widely distributed and with global population estimates ranging roughly between 50,000 and 70,000 (albeit no recent global population information is available, Shah *et al.* 2008) it is considered as Least Concern by IUCN.

The kiang is listed in CITES Appendix II since 1975 and on Annex A of the Wildlife Trade Regulations since 2013. Due to its former taxonomic inclusion in *Equus hemionus* (see above) it became listed under CMS on Appendix II in 2002 (UNEP/CMS 2002c). The species is under national protection in China, India and Pakistan (Shah *et al.* 2008).

Threats

Prime threats to the species are conflicts with livestock over food and water, human disturbance and possible disease transmission. However, because the status and trends of kiang populations are poorly known, threats and/or their intensity may vary throughout the entire kiang population. It appears there is much regional variation in population decline or increase (Schaller *et al.* 2005, Shah *et al.* 2008).

Of serious consequence might be the widespread perception that kiang compete with livestock for forage at a degree at which it should be culled (Schaller *et al.* 2005, Tsering *et al.* 2006, Harris 2007). Changes in traditional rangeland use policy are increasing human presence and movements in key

³⁰ Formerly included in *Equus hemionus* under CMS.

wildlife areas, along with increasing livestock numbers (Fox & Tsering 2005, Schaller *et al.* 2005, Schaller *et al.* 2007). Rangelands are often fenced from wildlife, which not only prevent kiang to gain access to key resources, but may also cause injuries and casual deaths (Schaller *et al.* 2005). Fencing further intensifies land use and exacerbates problems of overgrazing. Poaching continues in some places (Shah *et al.* 2008).

Mining will likely be a significant future land use in western Tibet, China; gold mining operations are already in place in remote locations and organised mineral exploration is underway throughout the region (Harris *et al.* 1999, Schaller *et al.* 2005). Infrastructure development is of concern in some parts of the species' range (Shah *et al.* 2008).

Distribution and movements

The distribution of the kiang is centred on the Qinghai-Tibet Plateau, China, and extends into extreme northern parts of Pakistan, India, Nepal and possibly Bhutan (**Map 11**). Within this broad range, kiang distribution has become increasingly fragmented, and at present, most of the populations are found in protected areas or in areas under army jurisdiction (Shah *et al.* 2008).

In China the species is found in much of Qinghai, in southern Gansu, in southern Xinjiang, and in most of Tibet (Xizang). In Pakistan, at the westernmost edge of the species' distribution, kiang are largely restricted to a belt stretching along the Oprang and Muztagh Rivers, close to the Pakistan-China border. In India, kiang occur in the Ladakh area of Kashmir, and in northern Sikkim. In Nepal kiang are restricted to a few areas along the border with China. There have been no reports from Bhutan, but their presence is possible in the extreme north and northwest of the country (Shah *et al.* 2008).

Kiang can aggregate in herds of several hundred on good pastures (Schaller & Gu 1994, Tsering *et al.* 2006). No regular migration pattern has been observed (Schaller 1998), however, they make local and seasonal movements between different habitat types, often dispersing in small groups into hilly terrain in summer, and concentrating in basins and flat terrains during winter in response to food availability and severe climatic conditions (Schaller 1998, Harris & Loggers 2004).



Map 11: Kiang *Equus kiang* distribution. Information taken from Shah *et al.* (2008).

Chiru *Pantholops hodgsonii*

Conservation status

Numbers and distribution of chiru *Pantholops hodgsonii* both decreased sharply in 1980s-1990s to an estimated 75,000 in China (Schaller (1998), mainly as a result of commercial hunting for their underfur. Improved protection measures have reduced the rate of illegal hunting in the past 20 years (Kang 2010), however, several incidences of illegal international trade in the species' underfur were reported in 2012/2013, which indicates that poaching is still of concern (A. Kang, pers. comm. 2014). Most recent estimates of the total population are at 150,000 (from 2004, Mallon 2008b), however, these figures are speculative and rigorous population estimates over the entire chiru range are urgently needed (Mallon 2008b). The species is extinct in Nepal.

IUCN lists the chiru as Endangered. CITES has listed the species in Appendix I since 1979 and it is listed on Annex A of the Wildlife Trade Regulations since 2013. There is no listing under CMS. The species is legally protected in China and India.

Threats

Starting in the late 1980s and culminating in the mid-1990s (Schaller 1998, Fox & Tsering 2005) the chiru was hunted in large numbers leading to a severe population decline (estimated at 20,000) because of its underfur (shahtoosh). The wool has traditionally been transported to Kashmir in India, where it is woven into a fine fabric used to make luxury shawls for sale on the international market for as much as \$15,000 each (Schaller 1998, Schaller *et al.* 2005). Measures to restrict illegal hunting and smuggling of the product have become increasingly effective, though poaching and illegal trade is still persisting in some areas. The horns of the males have been traditionally used as gun rests (Harris 2007), and to a limited extent in Asian traditional medicine (Mallon 2008b).

Other important threats that have emerged in the past 10 years include an increasing demand for livestock grazing associated with human exploitation in remote and previously unused areas (Fox & Tsering 2005), fencing of pastures on the Qinghai-Tibet Plateau (Kang 2010), and road building (facilitating the above and illegal hunting). The recently constructed Golmud-Lhasa railway and highway have negative impacts on the migration behaviour of chiru in the eastern part of its

distribution range (Xia *et al.* 2007). Engineering measures, including underpasses for the Golmud-Lhasa railway, now appear to be having some beneficial effects (Xia *et al.* 2007, Mallon 2008b).

Chiru are also vulnerable to severe winter conditions (Mallon 2008b).

Distribution and movements

Formerly distributed across the whole Qinghai-Tibet Plateau, China, the chiru's range has decreased particularly in the east (Schaller 2007) and the species is now absent from all or most of the eastern plateau; the main stronghold of the chiru is in the remote Qiangtang area of the northern Tibetan Autonomous Region of China (Schaller *et al.* 2007, **Map 12**). A small number occur seasonally in northeast Ladakh, in the extreme north of India (Fox *et al.* 1991). This population is transboundary with China.

A few small chiru populations are sedentary, making only local movements, but most animals are seasonal migrants, covering distances of over 300 km. They spend autumn and winter along the northern margin of the alpine steppe where forage is abundant, in May, pregnant females with their female offspring of the previous year migrate north, often in large herds numbering several hundred individuals, to give birth in the desert steppes (Schaller & Gu 1994, Miller & Schaller 1996). Most yearling males separate from their mothers before migration and join adult males, most of which move north only part way (Schaller & Gu 1994).

Drivers of migration are not fully understood. Females move north during a critical period of nutritional stress (late gestation and early lactation) to give birth in an area with severe weather and sparse vegetation of small variety. After giving birth they rapidly return south to more equitable pastures. Schaller *et al.* (2006) speculate that escape from predators, parasitic insects, and people with their livestock may all play a role.



Map 12: Chiru *Pantholops hodgsonii* distribution. Information taken from Mallon (2008b).

Przewalski's horse *Equus caballus przewalskii*

Conservation status

The Przewalski's horse or takhi *Equus caballus przewalskii*³¹ was extinct in the wild, with the last individual seen in 1969 north of the Takhin Shar Nuruu in the Dzungarian Gobi desert in Mongolia. Reasons for the species decline were hunting and competition with humans and their livestock over forage and water. Additionally, harsh winters likely impacted already decimated small populations. Since the 1990s, reintroduction efforts have started in Mongolia, China, and Kazakhstan with varying success (**Map 13**). Today, Mongolia is the only country where truly wild populations exist within its historic range (Boyd & King 2011). All Przewalski's horses alive today are descendants from 14 individuals, of which two were crossbreeds with domestic horses (International Takhi Group). There are now approx. 300 free-ranging reintroduced and native-born Przewalski's horses in Mongolia and another 120 in China being released seasonally (Boyd & King 2011). Captive bred populations albeit in large reserves exist in France, Uzbekistan, Hungary and the Ukraine (Boyd & King 2011).

IUCN lists the species as Endangered and it is protected by national law in Mongolia and China. CITES lists the wild horse as *E. przewalskii* under Appendix I since 1975 and it is listed on Annex A of the Wildlife Trade Regulations since 2013. CMS does not list the species.

Threats

Wild populations are threatened by hybridisation with domestic horses and transmission of infectious diseases (King & Gurnell 2005, Robert *et al.* 2005). With the expansion of reintroduced populations, there is increased competition for resources with domestic horses and possibly other livestock, leading to overgrazing in some areas. Recently, illegal mining in protected areas has become an additional threat causing intrusion and disturbance (Boyd & King 2011).

As the population size is small, it is vulnerable to stochastic events such as severe weather, as was the case during the winter 2000/2001 and 2009/2010 when out of 137 in one population only 48 horses survived (Kaczensky *et al.* 2011a). Predation on foals from naïve captive bred horses by wolves may account for a significant number of mortalities (Kaczensky *et al.* 2004).

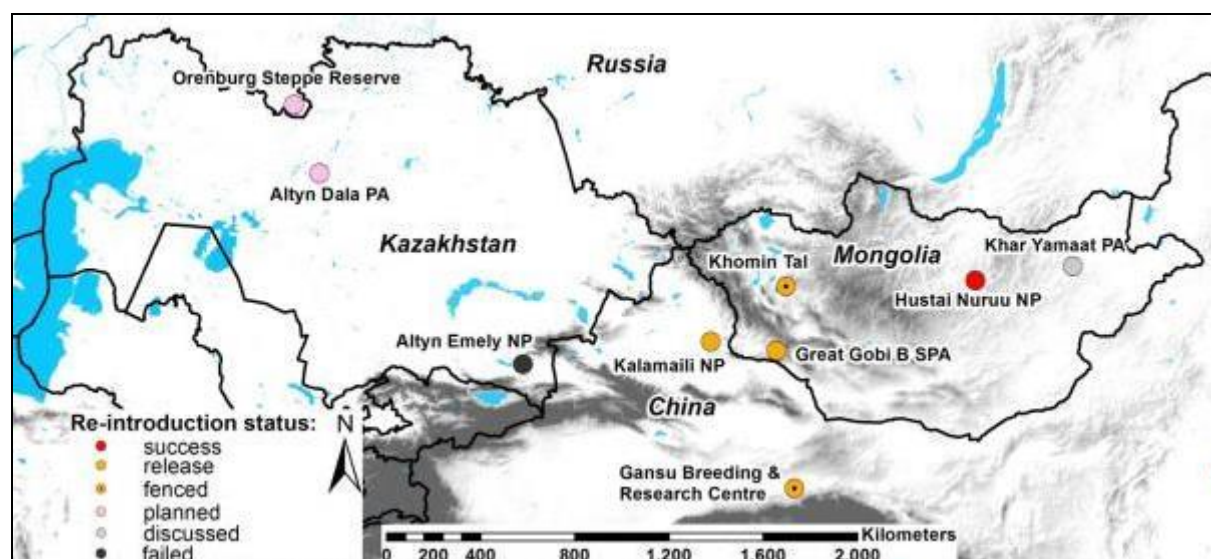
Distribution and movements

The reintroductions of Przewalski's horses began in Mongolia in the Takhin Tal Nature Reserve in the Dzungarian Gobi (in the northwest corner of Gobi B Strictly Protected Area) and Hustai National Park in 1994 (**Map 13**). A third reintroduction site, Khomiin Tal, in the Great Lakes Depression, was established in 2004, as a buffer zone to the Khar Us Nuur National Park. This site is presently still fenced (Boyd & King 2011, Kaczensky *et al.* 2011c). Fences along the Mongolian-Chinese border and the respective national security concerns/interests are currently the main impediment to potential transboundary migration in the Dzungarian Gobi.

In China captive breeding centres were established in Xinjiang and Gansu Provinces, which released the first group in 2007, roaming free on the Chinese side of the Dzungarian Gobi. Another herd is released during summer but returns to the acclimatisation pen during winter (Boyd & King 2011).

There is no knowledge about the ecology of takhi in the wild before they became extinct (King & Gurnell 2005); current knowledge on movement behaviour is limited to reintroduced populations. Studies have shown that seasonal preferences of habitat selection exist, leading to small range movements depending on plant productivity and access to water (King & Gurnell 2005, Kaczensky *et al.* 2008).

³¹ Listed as *Equus ferus przewalskii* by IUCN.



Map 13: Przewalski's horse *Equus caballus przewalskii* reintroduction sites. Source: Kaczensky *et al.* (in prep).

Tibetan gazelle *Procapra picticaudata*

Conservation status

The Tibetan gazelle *Procapra picticaudata* has experienced a population decline of around 20% since 1992 due to illegal hunting, competition with domestic livestock, and government policy of fencing rangelands (Mallon & Bhatnagar 2008). Latest global population estimates date back to 1998 and were at approx. 100,000; no current reliable estimates are available (Mallon & Bhatnagar 2008). However, the species remains the most widespread wild ungulate on the grasslands of the Qinghai-Tibet Plateau, persisting in areas where other species have been exterminated (Schaller & Gu 1994). IUCN lists the species as Near Threatened; it is not listed under CITES, the Wildlife Trade Regulations or CMS.

Threats

Main threats to the species are probably habitat loss caused by conversion of rangeland and increases in livestock numbers. Some gazelles are killed for their meat; heads/horns are occasionally seen for sale. Fencing of rangeland is an increasing threat as it restricts movements and access to forage and is systematically excluding gazelles from parts of their former range, especially in the east. Road building has opened previously remote areas to grazing and illegal hunting (Mallon & Bhatnagar 2008).

However, due to little diet overlap with livestock (Harris & Miller 2005), the habitat of the Tibetan gazelle seems to have been only moderately altered by a history of livestock grazing (at least in China), and the gazelle's presence is not seen as a threat by pastoralists (Harris 2007). Further, the species seems to be less susceptible to disturbance than argali or wild yak (Harris 2007).

The much smaller Indian population has been reduced more severely. Throughout the last century hunting was the primary cause of the gazelle's decline here. Although hunting has been brought under control in the last two decades, intensified livestock grazing appears to have prevented the gazelle's recovery and may be causing further declines (Bhatnagar *et al.* 2006).

Distribution and movements

Ninety-nine per cent of the Tibetan gazelle's range lies in China (Mallon & Bhatnagar 2008) where it occurs across virtually the whole Qinghai-Tibet Plateau (Schaller & Gu 1994, **Map 14**). Its range extends a small distance into two adjoining areas of India (Ladakh and Sikkim) where it is fragmented into several patches (Fox *et al.* 1991).

Tibetan gazelles are sedentary and found widespread on alpine steppe, plains and hills. They are usually alone or in small herds, seldom more than a dozen animals. Being highly dependent on rangeland with a variety of forbs they congregate in certain localities (Miller & Schaller 1996).



Map 14: Tibetan gazelle *Procapra picticaudata* distribution. Information taken from Mallon & Bhatnagar (2008).

State of species knowledge and commonalities of threats

The following section summarises the results of the stakeholder survey with respect to i) the current level of knowledge on the species considered by this report and ii) the severity of a variety of threats they face. A total of 77 responses was received for all species combined. The results are intended to highlight gaps in the current knowledge and understanding of population estimates, migration patterns/ routes, factors driving migration/ movements, species biology and habitat requirements, and identify commonalities of threats across the species that require urgent attention.

State of species knowledge

The knowledge available on the species assessed varies considerably (Error! Reference source not found.). Reliable knowledge throughout the species' range seems to be available only for the reintroduced and intensely studied Przewalski's horse. Fairly good knowledge on most or all populations was reported to exist for Bukhara/ Yarkand deer, saiga antelope, Mongolian gazelle, and to a lesser extent for kulan/ onager and argali, for which factors driving migration/ movements are less well understood. Knowledge on goitered gazelle, snow leopard and cheetah is patchy; particularly on migration patterns/ routes and factors driving migration/ movements it is only limited/ mixed throughout the species' range. Even bigger gaps in knowledge exist for wild camel, wild yak, chiru, kiang and Tibetan gazelle. Of all categories assessed, for most species factors driving movements seems to be least understood.

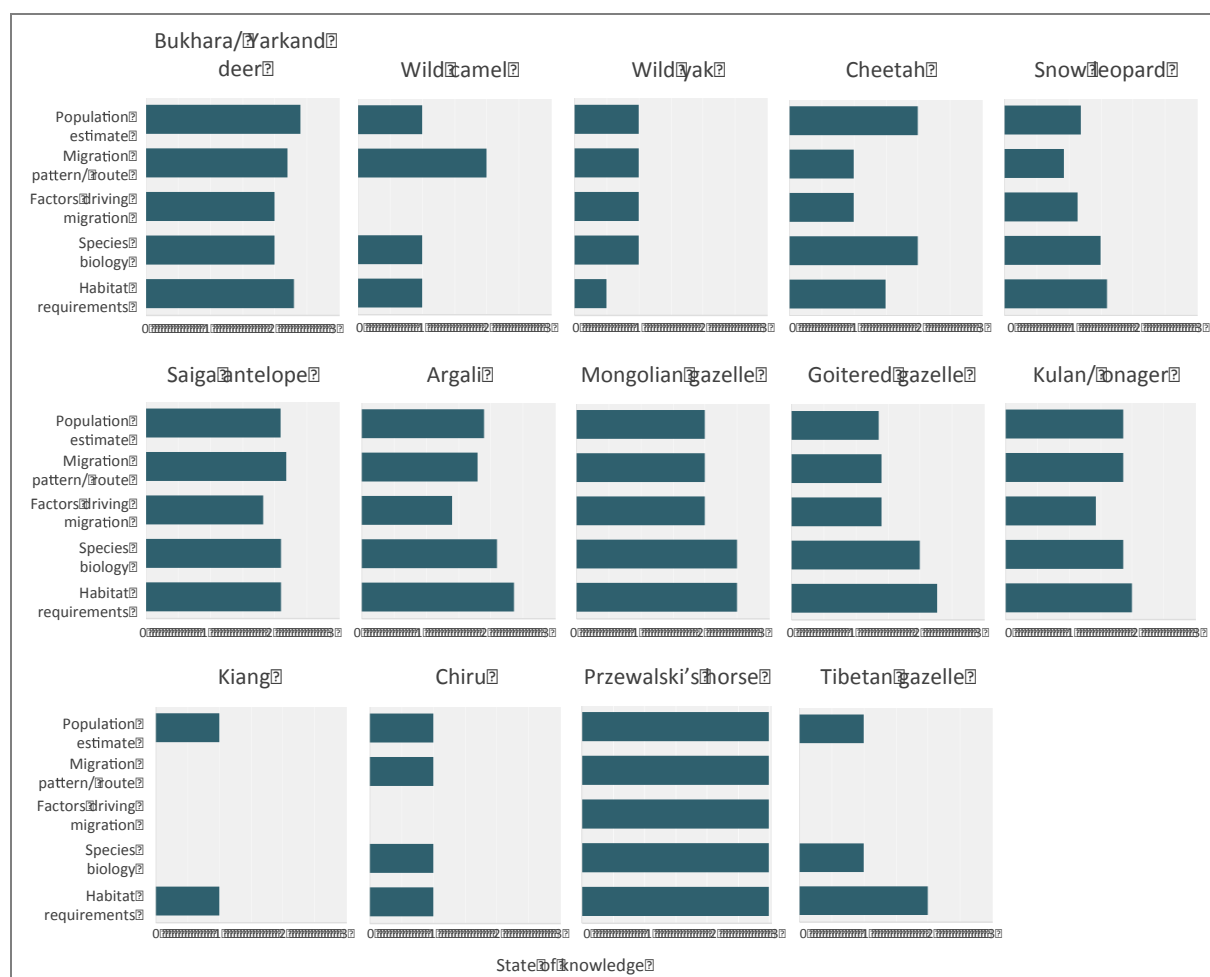


Figure 1: State of species knowledge as assessed by survey respondents. 0 = No knowledge, 1 = Limited/ mixed knowledge throughout the species' range, 2 = Fairly good knowledge for most or all populations, 3 = Reliable/ very good knowledge throughout the species' range.

Commonalities of threats

Combined for all species, threats assessed by respondents to be most severe (receiving the highest scores) were habitat degradation (total score of 33, see Error! Reference source not found.), fragmentation (33) and loss (28) caused by livestock grazing/ grazing competition (36), overgrazing (34) and barriers to migration (e.g. border and other fences, heavily used railroads and roads, 30). Other important factors causing habitat loss were human presence and disturbance (27) and industry and infrastructure development (e.g. mining, oil and gas extraction, 24). Particularly for highly mobile species such as Mongolian gazelle, saiga, kulan, wild camel and cheetah but also for others such as the Przewalski's horse, barriers to movements were assessed to represent high or critical threats. Habitat loss caused by industry and infrastructure development was assessed as critical for Mongolian gazelle and wild camel; loss of habitat caused by livestock grazing/ grazing competition was critical for the Przewalski's horse.

Illegal hunting ranked high for all species combined (32); although ranking lower overall, illegal international trade (20) was assessed as high threat for several species (cheetah, snow leopard, saiga, Mongolian gazelle). Also high ranking was drought (25), which was assessed as critical threat for Przewalski's horse alongside with severe cold/ snow and disease/ mass mortality. Other critical threats for single species included interbreeding between wild and domestic species (wild camel and wild yak), low offspring recruitment (wild camel), retribution killings (cheetah) and depletion of wild prey (cheetah and snow leopard).

Threats other than assessed by the questionnaire but mentioned by respondents for single species included the potentially high threat of deregulating protected areas allowing mining activities inside

reserves (mentioned for the Przewalski's horse) and a changing vegetation (kiang, medium threat), both causing habitat loss. Others referred to the construction of dams and artificial regulation of river flows and water reservoirs (Bukhara deer, high threat) and the collection of *teresken* (argali, high threat) causing habitat degradation. Agriculture, irrigation systems and bridges (e.g. between Tajikistan and Afghanistan) were mentioned to cause barriers to movements (Bukhara deer and goitered gazelle, medium-high threat).

One respondent argued that the absence of and/or an insufficiently developed legal hunting practice of Bukhara deer, saiga and prey species of cheetah stimulates illegal hunting and prevents incentive driven protection by local traditional hunters (high threat). Also mentioned in the category of hunting and trade was the high threat to snow leopards of being trapped in snares that originally target wolves.

In the category of climate related threats respondents mentioned that these are interconnected with barriers to movements as animals are hindered to escape unfavourable climate conditions (kulan). Others referred to changing dynamics of springs, rivulets and streams caused by reduced snow fall, faster snow melt and melting of glaciers (argali, medium threat). Also mentioned was a changed microclimate cause by the shrinkage of the Aral Sea having detrimental impacts on kulan.

Some referred to pasteurellosis as cause of saiga mass mortality events, while others mentioned that causes for mass die offs are debated and in combination with infectious diseases speculations include climate induced changes in vegetation favouring poisonous plants. One respondent stressed that although the direct threat of disease for snow leopard is low, this is an issue for two of its main prey species, ibex and marmot. Other threats included predation by and competition with wolves (Bukhara deer, argali; snow leopard), river floods (Bukhara deer), and chasing or harassment for fun (kulan).

The kind of threats and their severity vary between different countries and populations. One respondent remarked that for some species (e.g. wild camel) not only knowledge on population size and trends is limited but good data is also lacking on the threats they face.

Table 4: Averaged threats ranking results of the stakeholder survey for the assessed species. 0 = no threat; 1 = low threat; 2 = medium threat; 3 = high threat; 4 = critical threat; ? = no or 'no opinion' response received. Scores are rounded.

Threat	Bukhara/ Yarkand deer	Wild camel	Wild yak	Cheetah	Snow leopard	Saiga antelope	Argali	Mongolian gazelle	Goitered gazelle	Kulan	Kiang	Chiru	Przewalski's horse	Tibetan gazelle	Total score
Hunting and Trade															
Illegal hunting	2	3	1	3	3	3	3	3	3	2	1	1	1	1	32
Unsustainable legal hunting	1	0	0	0	0	0	2	3	0	0	?	0	0	0	7
Illegal international trade in animal products	1	1	0	3	3	3	2	3	1	1	?	2	0	0	20
Illegal national trade in animal products	1	3	0	2	2	2	2	2	1	1	?	0	0	0	14
Habitat															
Habitat loss	3	2	3	2	2	2	1	3	2	1	2	2	3	2	28
Habitat degradation	2	2	3	3	2	2	2	3	2	1	3	3	3	2	33
Habitat fragmentation	3	1	2	3	2	2	2	4	2	3	2	3	4	1	33
Cause of habitat loss															
Industry and infrastructure development	1	4	0	2	1	2	1	4	2	3	?	?	3	1	24
Livestock grazing/ grazing competition	2	3	3	3	2	1	2	3	2	1	3	3	4	3	36
Agricultural conversion	3	0	0	2	0	1	1	1	2	1	?	?	1	1	11
Deforestation	3	0	0	1	1	0	1	0	1	0	?	?	0	0	7
Human presence/ disturbance	2	3	3	3	2	2	2	2	2	2	?	2	2	1	27
Cause of habitat degradation															
Overgrazing by livestock	2	3	3	3	1	2	2	3	2	1	2	3	3	3	34
Deforestation	2	0	0	1	1	0	1	0	1	0	?	?	0	0	6
Fire	2	0	0	1	0	1	0	2	1	1	?	?	0	0	8
Cause of habitat fragmentation															
Formation of habitat islands (e.g. through deforestation, human encroachment, etc.)	3	2	2	3	2	1	2	2	2	2	?	?	0	0	19
Barriers to migration (e.g. fences, heavily used railroads and roads, etc.)	2	3	0	3	2	3	2	4	2	3	?	2	4	1	30

Threat	Bukhara/ Yarkand deer	Wild camel	Wild yak	Cheetah	Snow leopard	Saiga antelope	Argali	Mongolian gazelle	Goitered gazelle	Kulan	Kiang	Chiru	Przewalski's horse	Tibetan gazelle	Total score
Climate															
Drought	2	1	0	3	1	2	2	2	2	2	3	2	4	?	25
Severe cold/ snow	1	0	0	1	1	2	2	2	2	2	?	2	4	1	20
Climate change	1	1	2	3	2	1	1	2	2	2	?	3	2	?	21
Other threats															
Disease/ mass mortality	1	1	0	?	1	3	1	2	1	1	?	?	4	0	15
Inbreeding	1	3	3	3	0	0	1	0	1	1	?	?	2	0	15
Hybridisation/ interbreeding between wild and domestic species	0	4	4	0	0	0	0	0	0	0	?	0	2	0	10
Low offspring recruitment	1	4	?	3	1	1	1	1	1	1	0	0	2	0	15
Retribution killings	1	0	1	4	3	1	1	1	0	1	0	?	0	0	12
Depletion of wild prey	0	0	0	4	4	0	0	0	0	0	0	0	0	0	8
Predation by feral dogs	1	0	0	3	0	1	1	2	2	1	0	?	1	0	12
Cause of disease/ mass mortality															
Livestock-wildlife disease transmission	2	1	0	?	1	2	2	3	1	1	?	?	3	0	15

Habitat

Species specific habitat requirements

Typical inhabitants of the undulating deserts, semi-deserts, steppes and grasslands are the Mongolian gazelle, saiga and goitered gazelle. The dry steppes of eastern Mongolia form the optional habitat for **Mongolian gazelles** (Mallon 2008c). They inhabit plains, hilly steppes, intermontane basins and broad valleys but avoid rocky or broken terrain, narrow valleys, high-altitude steppes, forests, shrub thickets, and sand dunes, unless driven there by exceptional circumstances. The **saiga** generally inhabits the open dry steppe grasslands and semi-arid deserts of Central Asia. Bekenov *et al.* (1998) described the typical habitat as flat open areas covered with low-growing vegetation, allowing animals to run quickly; areas of broken terrain or dense cover are generally avoided (Mallon 2008d). The **goitered gazelle** typically inhabits a wide range of semi-desert and desert habitats. They can inhabit broken terrain but do not visit areas with drifted sands. They may ascend into foothills and penetrate mountain valleys to benefit from the cover provided on hillsides and along water courses (Bannikov 1954, Amgalan 2000, Mallon 2008a, Farhadinia *et al.* 2009).

Wild camel and kulan are typical animals of the deserts and semi-arid steppes. The habitat of the **wild camel** varies from rocky mountain massifs, to the flat pavement-like areas of extremely arid deserts, vast washed-out plains with sparse vegetation, stony desert plains, high sand dunes and poplar fringed oases (Hare 2008). Recent data confirmed previous observations that suggest that they favour areas between large depressions and high mountains in Mongolia (Zhirnov & Ilyinsky 1986, Kaczensky *et al.* 2014). In some areas, in the absence of fresh water, wild camel have adapted to drinking salt water slush which domestic camel will not touch (Hare 2008). **Kulan/ onager** is usually found in dry mountain steppe with hummocks and rocky outcrops and semi-desert and desert plains, dominated by semi-shrubs, shrubs, and scrub vegetation. When grass is plentiful, kulan are predominately grazers. During dry season and in drier habitats, they browse a large portion of their diet, also eating woody plants. Water sources are an important determinant of distribution; in summer months the species occurs in the vicinity of standing water, whereas its range increases in winter when it is not restricted by water availability, eating snow as a substitute. In Mongolia, kulan have been observed digging holes as deep as 60 cm in dry riverbeds to access water (Harris & Miller 1995, Feh *et al.* 2001, Feh *et al.* 2002, Moehlman *et al.* 2008). Because the historic range of the **Przewalski's horse** is not precisely known, there has been much debate about its typical/preferred habitat. It is assumed that they formerly inhabited steppe and semi-desert habitats. Lowland steppe vegetation was preferred by horses at Hustai Nuruu National Park, Mongolia (King & Gurnell 2005, Boyd & King 2011).

The **Bukhara/Yarkand deer** lives in lowland riparian corridors of mixed deciduous vegetation (called tugai) dominated by species of poplar *Populus* spp. and willow *Salix* spp., surrounded by deserts. They can inhabit all types of riparian forests, also homogenous stands of reeds on salinated lands. In winter and early spring, they may move into desert and semi-desert habitat to feed on shrubs (e.g. *Haloxylon* sp., UNEP/CMS 2005b).

The yak, chiru, Tibetan gazelle and kiang share to a large extent the same habitat on the Qinghai-Tibet Plateau, China. **Wild yak** live in the alpine tundra, grasslands, and cold desert regions of the northern part of the plateau. In summer they prefer mesic sedge meadows at the upper limit of vegetation close to 5,000 m, and descend to lower-elevation grasslands in autumn (Harris 2007). Much of the average annual precipitation on the plateau falls as hail and snow. Lakes are generally saline and surface water is scarce, as is vegetation which is dominated by grasses, sedges and forbs – the main food source of the yak (Harris & Leslie 2008) – and low or procumbent shrubs, much of which can be classed as alpine or high cold steppe (Schaller & Gu 1994). **Chiru** inhabit high altitude plains, undulating hills, plateaus and montane valleys at elevations of 3,700-5,500 m (Schaller 1998). They prefer forbs and sedges gathering in large herds numbering from as few as a dozen to as many as thousands; most herds travelling hundreds of kilometres between winter and calving areas (Harris

2007). The **kiang** is an animal of open terrain, mainly found in plains, alpine meadows, desert steppes, broad valleys, and hills, where grasses and sedges, are abundant (Harris & Miller 1995, Schaller 1998). They reach their highest densities on the vast alpine meadows and range from 2,700 m to as high as 5,400 m (Schaller 1998). However, they also occur in desert steppe and other arid habitats, such as in the Qaidam basin, China (Harris & Miller 1995, Shah *et al.* 2008). *Stipa* spp., a common grass on the Qinghai-Tibet Plateau, constitutes most of the diet of kiang, whereas sedges are eaten occasionally, forbs and shrubs are rarely eaten (Harris & Miller 1995; Schaller 1998). **Tibetan gazelle** occur in high-altitude plains, hills, and stony plateaus but also graze in wetland margins. They are highly dependent on rangeland with a variety of forbs and are absent from much of the northern Qiangtang with its arid uplands (Schaller & Gu 1994, Miller & Schaller 1996, Mallon & Bhatnagar 2008).

Snow leopards and one of their prey species, the argali, share much of their mountainous habitat for obvious reasons. **Snow leopards** are closely associated with alpine and sub-alpine zones, favouring steep terrain, well broken by cliffs, ridges, gullies, and rocky outcrops dominated by shrubs and grasses (McCarthy *et al.* 2003). In Mongolia and Tibet, China, they may occupy relatively flat or rolling terrain as long as there is sufficient hiding cover (Jackson *et al.* 2010). In the Sayan mountains of the Russian Federation and parts of the Tien Shan range of China, they are found in open coniferous forest, but usually avoid dense thickets. They generally occur at elevations of 3,000-4,500 m, except at their northern range limit, where they are found at lower elevations of 900-2,500 m (McCarthy *et al.* 2003). Low temperatures and high aridity makes its habitat among the least productive rangeland systems in terms of graminoid biomass, with prey populations consequently occurring at relatively low densities (Jackson *et al.* 2010). The snow leopard's principal natural prey species are blue sheep, ibex and argali, but they also prey on marmot *Marmota* spp., pika *Ochotona* spp., hares *Lepus* spp., small rodents, and birds (Jackson *et al.* 2010, Jumabay-Uulu *et al.* 2013). Most **argali** inhabit gentle slopes of mountains, steppe valleys and rocky outcrops between 3,000 and 5,000 m (Schaller 1998, Harris 2007). In some areas, they live in lower elevation, semi-arid areas of open desert habitats (Reading *et al.* 2005). They feed on grasses, sedges, and some herbs and lichens, and regularly drink from open springs and rivers (Harris and Reading, 2008).

The **Asiatic cheetah** habitat in the Islamic Republic of Iran consists of desert and semi-desert, much of it with precipitation of fewer than 100 mm per year. The terrain ranges from plains and salt pans to eroded foothills, and rugged desert ranges that rise to an elevation of up to 2,000-3,000 m. The vegetation, if any, consists of a sparse cover of shrubs, most less than one meter tall. Goitered and Indian gazelle *Gazella bennetti* are the preferred prey but have become scarce through over-hunting and replacement by livestock (Nowell & Jackson 1996). Opportunistic recovery of cheetah kills suggest that urial *Ovis orientalis*, Persian ibex *Capra aegagrus* and Cape hare *Lepus capensis* are the key prey species today though none are considered optimal for cheetahs (Hunter *et al.* 2007).

Ecosystem review

The following review of main ecosystems occupied by the species assessed is based on the ecoregion³² classification and status assessment used by WWF. Ecoregions are categorised in biogeographical realms³³ and in major habitat types or biomes that describe different areas of the world that share similar environmental conditions, habitat structure, and patterns of biological complexity, and that contain similar communities and species adaptations (<http://worldwildlife.org>). The most important habitat types for migratory mammals in Central Asia consist of deserts and xeric shrublands, temperate grasslands and shrublands, montane grasslands and shrublands and temperate coniferous forests.

³² WWF defines an ecoregion as a "large unit of land or water containing a geographically distinct assemblage of species, natural communities, and environmental conditions" (<http://wwf.panda.org>).

³³ Categorized as Afrotropical, Australasia, Indo-Malayan, Nearctic, Neotropical, Oceania and Palearctic.

Several ecoregions in the area covered by CAMI were identified as Global 200 sites³⁴, including the western Himalayan temperate forests (68³⁵, CE³⁶, in Afghanistan, India, Nepal, Pakistan), the Altai-Sayan montane forests (79, VU, China, Kazakhstan, Mongolia, Russian Federation), the Daurian steppe (96, China, Mongolia, Russian Federation), the Qinghai-Tibet Plateau steppe (110, Afghanistan, China, India, Pakistan, Tajikistan), the middle Asian montane steppe and woodlands (111, Afghanistan, China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan), the eastern Himalayan alpine meadows (112, Bhutan, China, India, Myanmar, Nepal), and the Central Asian deserts (134, Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan).

A list of priority sites for conservation (including protected areas) for the assessed species per country based on response received during the stakeholder survey and literature is provided in Annex 4.

Deserts and xeric shrublands

Deserts and xeric shrublands vary greatly in the amount of annual rainfall they receive; generally, however, evaporation exceeds rainfall. Similarly, temperature variability is diverse but extremes are characteristic of most deserts, with typical searing daytime heat that gives way to cold nights due to the absence of insulation provided by humidity and/or cloud cover. The diversity of climatic conditions supports a rich array of habitats, many of which are ephemeral in nature, growing seasonally only for brief periods of time, intermitted by more or less long dormancy phases. Woody-stemmed shrubs and plants characterise vegetation in these regions, which have evolved to minimize water loss.

The central Persian desert basins (PA1313³⁷, VU), the last stronghold of the Asiatic cheetah, covers the vast arid steppe and desert region of central Iran and a small part of northwest Afghanistan. Dominated by a salt desert in the north and smaller areas of very hot sand and gravel deserts in the east, the area's vegetation ranges from sagebrush to saltland and psammophytic plants, including chenopodiaceous communities in Afghanistan. Separated by the Kopet Dag mountains to the northeast, the Central Asian southern desert (PA1312, status not available) is among the richest desert complex in Eurasia. The hydrothermal characteristics of this area distinguish it from the deserts to the north. Precipitation is greatest during the winter and spring while the average temperature and degree of aridity are higher than in the northern deserts. Adjacent to the north is the Central Asian northern desert (PA1310, VU), a mosaic of clay, stone, salt and sandy deserts. The area is dominated by semi-shrub communities formed by the perennial saltworts *Chenopodiaceae* and sagebrushes *Artemisia* spp. Even further north lies the Kazakh semi-desert (PA1318, CE), a transition area between the desert and steppe, consisting of vast plains and eroded plateaus. Bunch-grass steppes with shrubs and dwarf semi-shrub deserts with grasses dominate. The flora is an association of species from the southern steppe areas of Kazakhstan, the Black Sea areas, and Turanian desert species. Typical animals of these deserts are saiga and goitered gazelle.

The Central Asian riparian woodlands (PA1311, CE) are the habitat of the Bukhara deer. These gallery forests are located along the floodplains of the major Central Asian rivers, mainly the Amudarya, Syrdarya and their tributaries. They are characterised by thickets of trees entwined with lianas, patches of grassy clearings, and at times interspersed with wetlands. Tugai represents a critical habitat for both resident and migratory wildlife. Main flyways for migrating birds pass through the water bodies in the riparian forests which serve as wintering sites, stopovers along migration routes, and sites for colonial nesting. These riparian forests are severely threatened by anthropogenic activity. Their conservation and restoration is of great importance to the biological diversity and ecosystem function in the region.

³⁴ Olson and Dinerstein (2002) identified a set of 238 ecoregions whose biodiversity features are distinct and irreplaceable or which were considered the best example of a biome within a realm – the Global 200.

³⁵ WWF Global 200 code.

³⁶ WWF status assessment; CE – Critical or Endangered; VU – Vulnerable; RS – Relatively Stable or Intact.

³⁷ WWF Ecoregion code; PA – Palearctic realm.

The Taklimakan desert (PA1330, CE), located between China's Kunlun and Tian Shan mountains, is the largest desert in China, consisting to a large extent of shifting sand dunes that support very little or no vegetation. The Tarim basin (Temperate Broadleaf and Mixed Forests biome, PA0442, CE), a deciduous forest and steppe region along the rivers of Tarim and Yarkand in the heart of the Taklimakan serves a similar function as the tugai forests and are the habitat of the Yarkand deer. Adjacent to the Taklimakan lies the Qaidam desert (PA1324, VU), a high basin surrounded by mountains where cold temperatures and lack of water limit vegetative growth. Because the basin has no outlet to the sea, water that flows into the basin from surrounding mountains evaporates, creating saline soil conditions. East to the Taklimakan follows the Alashan Plateau semi-desert (PA1302, VU), which extends from the Qinghai-Tibet Plateau, China, northward into Mongolia's Gobi desert. Its basin and range topography creates an arid climate. Yet increased rainfall in the mountain areas turns the desert green for a short time in summer, shrub vegetation is found in many areas. Further to the northeast, in the semi-arid steppe of the Gobi desert (PA1314, VU), only peripheral regions receive a flush of grass during summer. North of the Alashan Plateau, joins the Gobi Lakes valley (PA1315, VU), situated in south-western Mongolia between the Khangai range and the end of the Gobi-Altai and Mongol-Altai ranges. In the north-east of the Taklimakan, separated by the mountains of the Tien Shan, lies the Dzungarian basin (PA1317, CE) of north-western China and Mongolia, a vast expanse of semi-desert with thin steppe vegetation. Species living in these deserts include wild camel, saiga, argali, Mongolian gazelle, goitered gazelle, kulan/ onager, Przewalski's horse, kiang, Tibetan gazelle, and snow leopard.

Temperate grasslands and shrublands

Temperate grasslands are generally speaking devoid of trees, except for riparian or gallery forests associated with streams and rivers. However, some regions do support interspersed individuals or clusters of trees. Biodiversity in these habitats includes a number of large grazing mammals and associated predators in addition to burrowing mammals and numerous bird species. Large parts still sustain vast migrations of large vertebrates such as saiga and Mongolian gazelle. Other species occurring in these regions include argali, goitered gazelle and snow leopard.

The Kazakh steppe encompasses one of the world's largest dry steppe regions (PA0810, CE). Before the 1950's, when large areas were ploughed for crops, this steppe was a continuous grassland belt stretching across Central Asia from the Ural River in the west to the Altai foothills in the east. It is characterised by hot dry summers and cold winters, without significant snow. Lakes provide sanctuaries for diverse and rare species of waterfowl, great amount of migratory birds from different parts of the world are nesting and feeding in wetland areas, such as Kourgaldzhin and Tengiz lakes. Imbedded in the steppe is the Kazakh upland (PA0811, CE), which is considerably higher than the surrounding plains. It features elevated land, eroded plateaus, and low mountains. Habitat types characteristic to this area include steppes with shrubs and brushwoods, granite rock pinewoods in low mountains, and woods associated with lakes and wetlands. South-east of the Kazakh steppe lies the Altai steppe and semi-desert (PA0802, VU) and the Emin valley steppe (PA0806, VU). This grassland and steppe-dominated region includes cold temperate mountains and a system of shallow saline lakes that provide breeding habitat for many waterfowl.

The Alai-western Tian Shan steppe (PA0801, CE) and the adjacent Gissaro-Alai open woodland (PA0808, CE) are characterised by ephemeroïd herb vegetation and coniferous evergreen woodlands of juniper *Juniperus* spp., as well as unique relict fruit and nut forests. In the lower reaches of the Tian Shan to the north-west, steppes extend outward to the deserts and grasslands of Central Asia (PA0818, CE).

The extensive Mongolian-Manchurian grassland (PA0813, CE) spreads inland from north-eastern China's coastal hills toward the boreal forests of southern Siberia, characterised by warm and productive summers and cold and windy winters. Spreading to the southwest of the Da Hinggan mountains in north-eastern China, the Mongolian-Manchurian grassland extends one arm west toward the upper Selenga river basin that drains ultimately into Lake Baikal in the Russian Federation. Another arm extends southwest toward the deserts of north-central China. Much of the region consists of nearly flat or rolling grasslands.

Montane grasslands and shrublands

Montane grass- and shrublands are the high elevation (montane and alpine) equivalent to temperate grass- and shrubland, characterised by a colder climate and sub-alpine and alpine vegetation.

The alpine meadows and tundra of the Altai mountain range (PA1001, VU and PA1016, RS) have an arctic character distinct from the Tian Shan, Himalaya and Tibetan regions to the south. The Altai receives more precipitation than the other mountain ranges of Central Asia and because the climate is cold, rates of evaporation are also lower than in the desert ranges to the south. Thus, water is an important component of the landscape with many rivers, lakes, and marshy tundra regions. While summers are temperate, winters are very cold; the growing season is short. High plateaus extend for hundreds of square kilometres with lichens and mosses as the principal ground cover, as well as a small number of vascular plants and cushion plants in high elevation ice-free areas. Slightly lower elevations support alpine meadows. Thickets of rhododendron occur in some areas.

In the Tian Shan montane steppe and meadows (PA1019, VU), forest stands are intermixed with broad swaths of sedge-meadow. Elsewhere, meadow steppe is the dominant ground cover with the character of the vegetation determined primarily by elevation and secondarily by precipitation. The alpine zone here is dominated by low-growing herbaceous sedge meadows. These are very extensive, especially in the eastern part of the Tian Shan and support, besides the sedges *Kobresia* spp. and *Carex* spp., various alpine forbs. North-facing slopes are shrubbier at low elevations and give way to a parklike forest-meadow mosaic in which the meadows are dominated by the grasses *Festuca* spp., *Poa* spp. and *Helictotrichon schellianum*. Here, shrub taxa include some of the same genera found at lower elevations, together with higher-elevation taxa, most of which are thorny.

South-west of the Tian Shan adjoins the Pamir alpine desert and tundra (PA1014, VU), located at the crossroads of several of Asia's largest mountain ranges, including the Hindu Kush, Karakoram and Tian Shan. Affinities with all three mountain ranges result in a large variety of species. Furthermore, the Pamir's high vertical relief, compared to the larger Qinghai-Tibet Plateau that lies to the east, increases habitat diversity and biodiversity. The climate is cold, dry and windy with high diurnal temperature variations. South-west of the Pamir lie the Hindu Kush alpine meadows (PA1005, VU) and to the south the Karakoram-west Tibetan Plateau alpine steppes (PA1006, VU), which together with the north-western Himalayan alpine shrub and meadows (PA1012, RS) contain some of the highest densities of mountain ungulates in the region, including argali, which in turn provide a substantial prey base for the snow leopard for which the majority of this region is prime habitat.

The north Tibetan Plateau-Kunlun mountain alpine desert (PA1011, status not assessed) and the central Tibetan Plateau alpine steppe (PA1002, RS) support some of the most intact ecosystems in temperate Eurasia. Herds of wild ungulates, including argali, chiru, wild yak, Tibetan gazelle and kiang, and their predators, such as the snow leopard, roam across a landscape comprised of feather grasses, cushion plants and alpine forbs. This region includes the Qiangtang, consisting of a lofty basin of gently rolling plains and widely scattered, brackish lakes, most of which have been losing water to evaporation throughout the Holocene. The climate is cold, dry and windy, with widespread, continuous permafrost in the northern parts. The Qinghai-Tibet Plateau, supports a range of alpine vegetation types with a general trend from moist alpine scrub/ steppe vegetation to high, cold desert along a transect from southeast to northwest as the climate becomes colder and drier. The adjacent Qinghai-Tibet Plateau alpine shrublands and meadows (PA1020, VU) to the south-east form a transition zone between wet sedge meadows of eastern Tibet and the semi-arid steppes and cold deserts of the western part.

In the north-eastern corner of the Tibet-Qinghai Plateau lie the Qilian mountains subalpine meadows (PA1015, VU). At elevations above 3,000 m they support extensive meadow and scrub vegetation on a landscape of rolling hills against a backdrop of rocky scree slopes and glaciated peaks. The mountains give home to species such as argali, wild yak, kiang, Tibetan gazelle and snow leopard.

Temperate coniferous forest

Temperate evergreen forests are common for the montane areas in the Central Asian region for altitudes below the tree line. Species of trees inhabiting these forests include pine *Pinus* spp., cedar

Cedrus spp. and fir *Abies* spp. The understory contains a wide variety of herbaceous and shrub species. Pine forests support a herbaceous ground layer that may be dominated by grasses and forbs that lend themselves to ecologically important wildfires. Both, argali and snow leopard occur in these regions.

Important coniferous forests in the Central Asian region include the montane forest steppe of the Altai mountains (PA0502, VU), the highest mountain system in southern Siberia. It stretches from the Beluha massif on the Russian-Kazakh border southwest to central Mongolia and forms a divide between the closed, arid watersheds of inner Asia and the massive river drainages that flow northward through Siberia into the Arctic Ocean. This region has a high degree of biological diversity, providing habitat for argali and snow leopard and a myriad of other species from both the steppe and the taiga. Adjacent to the north, the forests transition to the mid-elevation coniferous forests of the Sayan mountains (PA0519, VU), lying between the Siberian taiga and the Mongolian steppe.

The Tian Shan mountain forests (PA0521, VU) are limited to places of sufficient moisture and warmth and generally restricted to north-facing slopes. The coniferous forests tend to be rather homogeneous, dominated by the spruce *Picea schrenkiana* that may form single-species stands or may grow up through a layer of broad-leaved deciduous trees. At the lower elevations, spruce associates with aspen *Populus tremula*, a pioneer of landslides and other disturbed sites. At higher elevations, the associated broad-leaved species include mountain ash *Sorbus tianschanica*, willow *Salix xerophila*, and several birch species *Betula* spp.

The Afghan montane coniferous forests (PA0506, VU] are found between 2,000 and 3,300 m in north-eastern Afghanistan and western Pakistan and support one of the largest remaining populations of markhor *Capra falconeri*. Several types of forests make up this region due to the influence of the monsoon. Areas between 2,100 and 2,500 m receive less monsoon rain and have dry coniferous species. At higher elevations (2,500-3,100 m), with continuous rain from the monsoon, temperate deciduous species mix with conifers (including *Cedrus deodara*, one of the most important timber species in Pakistan and Afghanistan) forming dense forest covers with trees of 15-30 m in height. At 3,100-3,300 m, precipitation decreases again and the cedar forest is replaced by juniper *Juniperus* spp.

Stakeholder review

Governmental stakeholders

A detailed list of governmental agencies of the assessed countries and their roles and responsibilities with respect to migratory mammal conservation according to response received from the stakeholder survey and literature is provided in Annex 5.

International donors

European Union

The European Union () has strengthened its relationship with the Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) since the adoption of “The EU and Central Asia: Strategy for a New Partnership” by the European Council in June 2007. As part of this Strategy, the EU-Central Asia Environmental Dialogue has been established to foster environmental protection and better manage water resources. The EU External Action Service is based in Brussels, Belgium. Delegations to third countries are located in all of the countries considered by this assessment except in the Islamic Republic of Iran and Turkmenistan (<http://eeas.europa.eu>).

The current Regional Environment Programme for Central Asia, EURECA 2009, focuses on regional cooperation and partnership development with Europe and aims at reaching its specific objectives through supporting the following four main components:

- Central Asia enhanced regional cooperation on Environment and Water
- Forest and biodiversity governance, including environmental monitoring (FLERMONECA)

- Partnership of water management and basin organisations in Central Asia
- Environmental awareness raising

FLERMONECA is the centerpiece of EURECA 2009 with the global objective to promote the stability and security of the countries of Central Asia, to assist them in their pursuit of sustainable economic development and poverty reduction and to facilitate closer regional cooperation both within Central Asia and between Central Asia and the EU. It consists of the following components: i) Forest law enforcement and governance, ii) Ecosystem Restoration in Central Asia (ERCA) and iii) Environmental Monitoring in Central Asia. Supporting the implementation of CMS is a core area of the ERCA component (<http://flermoneca.org>).

FLERMONECA is being implemented by the GIZ (see below), the German forestry agency Hessen-Forst, the Austrian Environment Agency and the Regional Environmental Centre for Central Asia (CAREC) in all five Central Asian countries (see above).

Global Environment Facility

The Global Environment Facility (GEF) is an independently operating financial organisation that unites 183 countries in partnership with international institutions, civil society organisations, and the private sector to address global environmental issues while supporting national sustainable development initiatives. GEF was established in 1991 as a \$1 billion pilot programme in the World Bank (WB) to provide additional grants and concessional funding to cover incremental or additional costs associated with transforming a project with national benefits into one with global environmental benefits. In 1994, at the Rio Earth Summit, GEF moved out of the WB system to become a permanent, separate institution. The GEF Secretariat is based in Washington, DC, USA (<http://www.thegef.org>).

GEF administers different trust funds, among others the GEF Trust Fund, which provide grants for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. Resources for the GEF Trust Fund are replenished every four years by donating countries. Negotiations for the replenishment period 2014-2018 are still ongoing.

The three initial partners implementing GEF projects included the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and WB. The GEF also serves as financial mechanism for the following conventions:

- Convention on Biological Diversity (CBD)
- United Nations Framework Convention on Climate Change (UNFCCC)
- Stockholm Convention on Persistent Organic Pollutants
- United Nations Convention to Combat Desertification (UNCCD)

The GEF Small Grants Programme provides financial and technical support to projects that conserve and restore the environment while enhancing people's well-being and livelihoods. Grant are up to US\$ 50,000 and go directly to local communities including indigenous people, community based organisations and other non-governmental groups for projects in biodiversity, climate change mitigation and adaptation, land degradation and sustainable forest management, international waters and chemicals.

United States Agency for International Development

The United States Agency for International Development (USAID) focuses on issues related to democracy, human rights and governance, global health, economic growth and trade, and agriculture and food security in the Central Asian region. The Office of the Administrator is located in Washington, DC, USA. USAID country missions are present in all countries considered by this assessment except in the Russian Federation and the Islamic Republic of Iran (<http://www.usaid.gov>).

In the framework of the USAID Sustainable Conservation Approaches for Priority Ecosystems (SCAPES) programme, the organisation's largest global conservation initiative managed centrally from Washington, DC, two five-year programmes have been recently supported in the Central Asian region with a key focus on migratory species:

- Ustyurt Landscape Conservation Initiative (focal species: saiga antelope, Kazakhstan, implemented by Pact, FFI, and ACBK)
- Governing 'Fugitive Resources' Across National Boundaries: Wildlife Migrations, Illegal Trade and Habitat Fragmentation in the Daurian Steppe (focal species: Mongolian gazelle, Mongolia, Russian Federation and China, implemented by WCS, <http://mongolia.wcs.org>).

In 2012 a four-year water security and sustainable development project was launched across Asia in which snow leopard conservation plays a key role. The Conservation and Adaptation in Asia's High Mountain Landscapes and Communities Project is being implemented in Bhutan, India, Kyrgyzstan, Mongolia, Nepal, and Pakistan aiming to stimulate greater understanding and action at local, national and regional levels across snow leopard range countries to help conserve the species. USAID have further supported the work of WCS in Afghanistan (see below) and are a partner organisation of the GSLEP Program (see below).

Other environment related work in several Central Asian countries include agricultural development and diversification, e.g. by offering technical assistance to improve the productivity of livestock breeds, by providing training to veterinary experts on how to improve animal health through modern feeding programmes and disease protection, and by applying improved techniques and better technology to disease-resistant plants.

In Kazakhstan, USAID works on matters of the environment and global climate change to strengthen the implementation of laws to curb the growth of greenhouse gases, including an emissions trading system. Further, USAID is working with the Government of Kazakhstan and the private sector to strengthen the climate resiliency of the wheat sector.

World Bank

The World Bank (WB) is an international financial institution that provides leveraged loans to developing countries with a stated goal of reducing poverty. In Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) it is partnering with governments and development partners to strengthen energy and water security and to support the regional transport network to foster international trade. The WB Headquarters is located in Washington, D.C., USA. The Central Asia Regional Office is based in Kazakhstan, with further country offices in each of the assessed countries except the Islamic Republic of Iran (<http://www.worldbank.org>).

As part of its regional approach, the Bank has initiated the Central Asia Energy-Water Development Program (CAEWDP), which aims to improve diagnostics and analytical tools to support the countries of the region to manage their water and energy resources, strengthen regional institutions, and stimulate investments. CAEWDP is actively engaged in technical assistance on energy and water issues with Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan and supports Turkmenistan and Afghanistan in regional engagements. The WB is discussing the CAEWDP with potential partners in an effort to establish a multi-donor trust fund to support core elements of the programme³⁸. The WB also supports power sector interregional cooperation initiatives between Central Asia and south Asia. The Central Asia Regional Trade activity, launched in 2013, is informing governments and stakeholders on a number of components of a successful trade-agenda for the region, including analysis of outcomes and policies and recommendations to make trade integration more effective. Further, the WB is a development partner of the Central Asia Regional Economic Cooperation (CAREC) Program (see below). As part of CAREC, with two projects of more than USD 3 billion in total, the WB is Kazakhstan's major development partner in this sector, in particular the Western Europe - Western China International Transit Corridor Project. Similar efforts are taking place in Uzbekistan and Turkmenistan, and to a lesser extent in Kyrgyzstan and Tajikistan.

³⁸ Several development organisations are currently involved in Central Asia, in both water and energy issues, including the Asian Development Bank (ADB), the Islamic Development Bank (IDB), the European Commission (EC), Eurasian Development Bank, UNDP, United Nations Economic Commission for Europe (UNECE), GIZ, the State Secretariat for Economic Affairs of Switzerland (SECO), the Department for International Development (DFID) of the United Kingdom, USAID, and the Aga Khan Foundation (<http://www.worldbank.org>).

In addition, the WB is partnering with a broad group of donors to support the work of the International Fund for Saving the Aral Sea (IFAS, see below), coordinating the multilateral development banks' climate adaptation programme for Tajikistan and a Regional Hydrometeorology Program across the region.

The Global Tiger Initiative's Secretariat at the World Bank has provided support and advice to guide the process of developing the GLSEP programme (Snow Leopard Working Secretariat 2013, see below).

United Nations organisations

Food and Agriculture Organization of the United Nations

In the year 2006, the Food and Agriculture Organization of the United Nations (FAO) opened a Sub-Regional Office for Central Asia (SEC) in Ankara, Turkey, for overseeing activities in the countries of Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan and Uzbekistan. The emphasis of SEC action is placed on analysis of and advice on policy reforms concerning agriculture, land tenure and natural resources as well as on providing technical assistance services in institution building, knowledge and competencies development, training and experience exchange among countries in overcoming the challenges of transition. Core areas of support are animal production and health, plant production and protection, fisheries, forestry, investments, and land and water. The Headquarters of the FAO is based in Rome, Italy, the Regional Office for Asia and the Pacific is located in Bangkok, Thailand, and the Regional Office for Europe and Central Asia is located in Budapest, Hungary (<http://www.fao.org>).

Through the SEC office, Central Asian countries are assisted, *inter alia*, in developing and implementing programmes to improve the income of small-scale producers and in developing appropriate preventive and response mechanisms (early warning, early detection and early response) to the threats posed by transboundary outbreaks of animal diseases and crop pests. Another main area of attention is to provide policy and technical advice, focusing on institutional adaptation and broader stakeholder participation in the framework of national forest programmes. Capacity building, networking and provision of services for forest resources assessments and wildlife and protected areas management are also important components of FAO support.

The core of FAO's land and water resources programme in Central Asia is to provide technical assistance and enhance institutional capacities on mainstreaming and scaling up of sustainable land management to combat land degradation, drought preparedness and management, modernisation of irrigation systems, improvement of water use efficiency and crop water productivity. It is also committed to strengthen the policy dialogue on transboundary water resources management (e.g. in the Aral Sea Basin region).

FAO and CMS are in ongoing discussion concerning the formalisation of a Memorandum of Cooperation (UNEP/CMS/Resolution 10.21, UNEP/CMS 2011p) to enhance synergies. In 2011 they jointly convened a Scientific Task Force on Wildlife and Ecosystem Health (UNEP/CMS 2011q) with the specific mandate to identify wildlife diseases of high priority with respect to human, environmental, livestock, and wildlife health in hopes of recognising diseases with devastating potential before they emerge.

United Nations Development Programme

The United Nations Development Programme (UNDP) is an important stakeholder in terms of implementing major biodiversity conservation programmes in Central Asia. Among its broad development assistance agenda promoting the realisation of the Millennium Development Goals (MDGs), its work has a particular focus on the environment and energy sector in the region. The UNDP Headquarters and the Regional Bureau for Europe and the Commonwealth of Independent States is located in New York, NY, USA, the UNDP Regional Centre for the latter is located in Bratislava, Slovakia. UNDP in Asia and the Pacific consists of the Regional Bureau based in the UNDP Headquarters in New York, a Regional Centre based in Bangkok, Thailand, and Suva, Fiji. Country offices exist in all 10 assessed countries (<http://www.undp.org>).

Together with the GEF (see above), UNDP is working for policy and institutional change that supports a green, low-carbon and climate resilient economy and society. The Programme promotes investment in energy efficiency and renewable energy to reduce greenhouse gases and the sustainable use of natural resources. It has helped to establish and strengthen protected areas and integrate biodiversity and land management activities into economic sectors such as mining, forestry, and agriculture (including calculating the economic value of ecosystems), restore degraded land and forest, protect water resources, and prepare communities to respond to climate related risks, such as floods and mudslides.

UNDP works with a wide variety of partners and local communities to mobilise funding and knowledge. Specific conservation interventions in the region include but are not limited to:

- Protecting poorly represented and threatened ecosystems (e.g. Kazakhstan, Uzbekistan).
- Working to include the principles of biodiversity into economic activities and ensuring that production processes support essential ecosystem functions (e.g. agriculture sector in Tajikistan, energy sector in Russia and Uzbekistan).

The Poverty-Environment Initiative (PEI) is a joint global UN-led programme of UNDP and the UN Environment Programme (UNEP, see below) that supports country-level efforts to mainstream poverty-environment linkages into national development plans and processes, from policymaking to budgeting, implementation and monitoring. With both financial and technical support, UNDP and UNEP assist decision-makers and a wide range of other stakeholders to manage the environment in a way that improves livelihoods and leads to sustainable growth. The Initiative works with government partners to raise awareness, influence policy making and strengthen the mainstreaming of poverty-environment into budget processes, sector programmes and sub-national planning. The overall aim is to bring about lasting institutional change and to catalyse key actors to increase investments in pro-poor environmental and natural resource management. A PEI country programme was launched in Tajikistan in May 2010, and a PEI national programme was officially signed in February 2011 in Kyrgyzstan.

United Nations Environment Programme

The Regional Office of the United Nations Environment Programme (UNEP) for Europe (responsible among others for Central Asia) is working in the region on seven priority areas: climate change, disasters and conflicts, ecosystems management, environmental governance, chemicals and waste, resource efficiency, and environment under review (<http://www.unep.org>). In Central Asia a series of initiatives have been implemented which although not directly linked to the conservation of migratory land mammals, they nevertheless address many of the indirect threats faced by the majority of them. The UNEP Headquarters is located in Nairobi, Kenya. The Regional Office for Europe is based in Geneva, Switzerland, and the Regional Office for Asia and the Pacific in Bangkok, Thailand (<http://www.unep.org>).

UNEP promotes the conservation and sustainable use of biological diversity in the Pan-European region by, *inter alia*, servicing the Pan-European Biological and Landscape Diversity Strategy (PEBLDS) and providing expert and technical assistance to countries of Eastern Europe, Caucasus and Central Asia. PEBLDS was developed by several national and international organisations in 1994 to monitor and reduce the degradation and loss of biodiversity resources in Europe. UNEP and the Council of Europe have shared the joint Secretariat of the PEBLDS since 1995. The principal aim of the Strategy is to ensure the sustainability of the European natural environment with special emphasis on concerted European action under all existing initiatives, particularly the Convention on Biological Diversity (CBD). Among others PEBLDS provides a framework to promote a consistent approach and common objectives for national and regional action to implement the CBD. As Coordinator of PEBLDS, UNEP is responsible for organising and facilitating meetings and preparing related documents.

The UNEP-led Green Economy Initiative, launched in late 2008 aims at providing analysis and policy support for investing in green sectors and in greening environmentally unfriendly sectors. Within

UNEP, the Green Economy Initiative includes the following three sets of activities (<http://www.unep.org/greeneconomy/>):

- Producing a Green Economy Report and related research materials, which analysed the macroeconomic, sustainability, and poverty reduction implications of green investment in a range of sectors from renewable energy to sustainable agriculture and providing guidance on policies that can catalyse increased investment in these sectors.
- Providing advisory services on ways to move towards a green economy in specific countries.
- Engaging a wide range of research, non-governmental organisations, business and UN partners in implementing the Green Economy Initiative.

The Partnership for Action on Green Economy (PAGE) supports countries interested in pursuing inclusive, resource-efficient, low-carbon economies. Until 2020, PAGE aims to catalyse the transformation process of 30 countries' economies (with Mongolia being the first to join) by shifting investment and policies towards the creation of a new generation of assets: clean technology, well-functioning ecosystems and a skilled labour force with green jobs driven by strong institutions and good governance. PAGE is a partnership between UNEP, the International Labour Organization, the United Nations Industrial Organization and the United Nations Institute for Training and Research.

International conventions

Convention on Biological Diversity

The Convention on Biological Diversity (CBD) is an international treaty, which entered into force in 1993 with three main objectives: i) conservation of biological diversity, ii) sustainable use of the components of biological diversity, and iii) fair and equitable sharing of the benefits arising out of the utilisation of genetic resource. The treaty covers all ecosystems, species, and genetic resources. It aims at linking traditional conservation efforts to the economic goal of using biological resources sustainably and sets principles for the fair and equitable sharing of the benefits arising from the use of genetic resources, notably those destined for commercial use. It further covers the field of biotechnology, addressing technology development and transfer, benefit-sharing and biosafety. The Convention is legally binding; countries that join it are obliged to implement its provisions (<https://www.cbd.int>).

The Secretariat of the Convention is based in Montreal, Canada; it is linked to UNEP (<http://www.cbd.int>). Its main functions are to organise meetings, draft documents, assist member governments in the implementation of programmes of work, coordinate with other international organisations, and collect and disseminate information.

The Convention's ultimate authority is the Conference of the Parties (COP), consisting of all governments (and regional economic integration organisations) that have ratified the treaty. This governing body reviews progress under the Convention, identifies new priorities, and sets work plans for members. The COP can also make amendments to the Convention, create expert advisory bodies, review progress reports by member nations, and collaborate with other international organisations and agreements. The COP has launched a number of thematic programmes of work including: biodiversity of inland waters, marine and coastal biodiversity, agricultural biodiversity, forest biodiversity, biodiversity of dry and sub-humid lands, mountain biodiversity and island biodiversity. In addition, the COP establishes ad hoc committees or mechanisms as it sees fit.

The principal instruments for implementing the Convention at the national level, are the National Biodiversity Strategies and Action Plans (NBSAPs), which the Convention requires member countries to prepare. Countries have to ensure that the national biodiversity strategies (or equivalent instruments) are mainstreamed into the planning and activities of all those sectors whose activities can have an impact (positive and negative) on biodiversity. Countries are asked to review, revise and update their NBSAPs in line with the new Strategic Plan for Biodiversity 2011-2020 (see below).

In 1996, the CBD and UNEP/CMS Secretariats concluded a Memorandum of Cooperation and developed Joint Work Plans (JWP). The current JWP 2012-2014 (UNEP/CMS 2011c) specifies collaboration on providing support and guidance to Parties on the integration of migratory species

considerations in their NBSAPs (guidelines were prepared in 2011, UNEP/CMS 2011h) and among others to develop a coherent approach to cross-cutting issues. Within the cooperation of CBD and CMS, CMS is recognised as the lead partner in conserving and sustainably using migratory species over their entire range.

Besides collaboration under the JWP, the Secretariats' cooperation continues under the auspices of the Biodiversity Liaison Group (UNEP/CMS 2011c). This group has been established between the heads of the secretariats of six biodiversity-related conventions in order to enhance coherence and cooperation in implementation. The group meets regularly to explore opportunities for synergistic activities and increased coordination, and to exchange information. Members other than CBD and CMS are CITES, the Ramsar Convention on Wetlands, the Convention Concerning the Protection of the World Cultural and Natural Heritage and the International Treaty on Plant Genetic Resources for Food and Agriculture.

In addition to the Biodiversity Liaison Group, in 2006 UNEP initiated a knowledge management programme for Multilateral Environment Agreements (MEAs) consisting mostly of projects focusing on sharing strategic information, harmonisation of national reporting, and developing issue-based modules for coherent implementation of MEAs. In 2009, its commitment was increased to knowledge and information management: the Multilateral Environment Agreement Information and Knowledge Management (MEA IKM) initiative. The initiative seeks to develop harmonised and interoperable information systems in support of knowledge management activities among MEAs for the benefit of Parties and the environment community at large.

Further formal cooperation exists among the three Rio Conventions (CBD, UNCCD, UNFCCC) through the Joint Liaison Group (see below).

Convention on the Conservation of Migratory Species of Wild Animals

The Convention on the Conservation of Migratory Species of Wild Animals (CMS), also known as Bonn Convention, came into force in 1983 and aims to conserve terrestrial, aquatic and avian migratory species throughout their range. CMS is an intergovernmental treaty, concluded under the aegis of UNEP. The UNEP/CMS Secretariat is located in Bonn, Germany (<http://www.cms.int>).

Migratory species threatened with extinction are listed on Appendix I of the Convention. CMS Parties strive towards strictly protecting these animals, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them. Any consumptive use is prohibited with a very restricted scope for exceptions. Migratory species with an unfavourable conservation status that need or would significantly benefit from international cooperation are listed in Appendix II of the Convention. For this reason, the CMS encourages Range States to conclude global or regional agreements. Species can be listed on either or both Appendices.

CMS acts as a framework convention; specific Agreements may range from legally binding treaties to less formal instruments, such as MOUs and Action Plans. Several Agreements have been concluded to date under the auspices of CMS, with the MOU Concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope and the MOU Concerning Conservation and Restoration of the Bukhara Deer being the most important for the Central Asian Mammals Initiative. A draft International Single Species Action Plan for the Conservation of the Argali has recently been prepared and an MOU concerning argali conservation has been proposed.

The decision-making organ of the Convention is the COP made up of representatives from all CMS Parties, which meets once every three years. The COP reviews implementation, adopts budget resolutions and amends the species listed under the Appendices among others. A Standing Committee formed by rotating regional representatives provides interim policy and administrative guidance between the regular meetings of the COP. The Scientific Council consists of experts appointed by CMS Parties and the COP and gives advice on technical and scientific matters. Both, the Standing Committee and the Scientific Council can form working groups to address certain issues. A Secretariat under the auspices of the UNEP provides administrative support to the Convention, develops and promotes Agreements, disseminates information and organises meetings.

The CMS Small Grants Programme has played an important role in strengthening the implementation of the Convention through supporting CMS-related conservation initiatives for a number of migratory taxa, with a strong focus on implementation in developing countries (<http://www.cms.int/en/activities/small-grants/about>).

Formal cooperation exists with several other MEAs, UN organisations and others, among which CBD, CITES, FAO and UNCCD. Further, the UNEP/CMS Secretariat signed a Memorandum of Cooperation with IUCN (in 2003) and Partnership Agreements with CIC (in 2005), the International Fund for Animal Welfare (IFAW, in 2005), WCS (in 2007), and FZS (in 2008).

United Nations Convention to Combat Desertification

Established in 1994, the United Nations Convention to Combat Desertification (UNCCD) is a legally binding international agreement linking environment and development to sustainable land management. The Convention addresses arid, semi-arid and dry sub-humid areas (also called drylands) where some of the most vulnerable ecosystems and peoples are found. In the 10-Year Strategy of the UNCCD (2008-2018) that was adopted in 2007, Parties to the Convention specified their goals: "to forge a global partnership to reverse and prevent desertification/ land degradation and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability". The UNCCD Secretariat is located in Bonn, Germany (<http://www.unccd.int>).

Key instruments to implement the Convention are National Action Programmes (NAPs), which are supported by action programmes at sub-regional (as in the case of Central Asia) and regional levels to promote collaboration and capacity building. The Asian regional priorities are captured in a Regional Action Programme, which was adopted at ministerial level in 1997. A Sub-Regional Action Programme (SRAP) for the Central Asian Countries on Combating Desertification within the UNCCD context was prepared in 2003 (UNCCD 2003, see below).

The UNCCD is one of the three Rio Conventions, in addition to the CBD and UNFCCC. The Conferences of the Parties to each Rio Convention have underlined the need for enhanced collaboration among the conventions, in order to enhance synergy and reduce duplication of activities. In 2001, the Conventions established a Joint Liaison Group as an informal forum for exchanging information, exploring opportunities for synergistic activities and increasing coordination. Options for collaboration have been explored in several meetings and documents, and a number of collaborative activities are underway.

A Memorandum of Cooperation between the Secretariats of UNCCD and CMS was signed in 2003 (UNEP/CMS 2011p). Potential for joint activities is provided by the dialogue on the establishment and maintenance of ecological networks which also looks at preserving arid land ecosystems. Specific collaboration is also sought in the framework of the Central Eurasian Aridland Concerted Action and Associated Cooperative Action (UNEP/CMS 2011p) and thus is recommended as well with respect to the CAMI.

Convention on International Trade in Endangered Species of Wild Fauna and Flora

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement between governments, which entered into force in 1975, aiming to ensure that international trade in specimens of wild animals and plants does not threaten their survival. States adhere to the Convention voluntarily, however, once joined, CITES is legally binding by providing a framework to be respected by each Party. Parties have to ensure CITES implementation at the national level by adopting their own domestic legislation. The CITES Secretariat is administered by UNEP and is located in Geneva, Switzerland (<http://www.cites.org>).

CITES works by subjecting international trade in specimens of selected species to certain controls. All import, export, re-export and introduction from the species covered by the Convention have to be authorized through a licensing system. Each Party to the Convention must designate one or more Management Authorities in charge of administering this licensing system and one or more Scientific Authorities to advise them on the effects of trade on the status of the species.

Species covered by CITES are listed in three Appendices, according to the degree of protection they need. Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilisation incompatible with their survival. Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade. The COP is the supreme decision-making body of the Convention and comprises all member states.

Due to the European Single Market and the absence of systematic border controls within the EU, the provisions of CITES have to be implemented uniformly in all EU Member States. As such, CITES is implemented in the EU through a set of regulations known as the EU Wildlife Trade Regulations (<http://ec.europa.eu>).

CITES has established a number of general cooperation agreements with other organisations. In 2002, a Memorandum of Cooperation was concluded between the CMS and CITES Secretariats (UNEP/CMS 2011d), under the framework of which JWPs were developed. The current JWP 2012-2014 takes account of the CMS Strategic Plan 2006-2014, the CITES Strategic Vision for 2008-2013 (which got extended to 2020) and is set within the over-arching framework of the CBD Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets (see below, UNEP/CMS 2011d). Joint activities relate among others to promoting actions for the conservation and sustainable use of shared species, i.e. for the Central Asian region these are saiga antelope and snow leopard (UNEP/CMS 2011e).

International organisations

Denver Zoological Foundation

The Department of Conservation Biology of the Denver Zoo, Denver, USA, has been working to preserve and conserve habitats and wildlife among others in Mongolia since 1996, with a particular focus on Ikh Nart Nature Reserve in north-western Dornogobi Province and wild Bactrian camel conservation in the Great Gobi Strictly Protected Area in south western Mongolia (<http://www.denverzoo.org>).

Denver Zoo's work in Ikh Nart aims at developing a comprehensive, interdisciplinary management programme for the reserve that will actively conserve the protected area and its natural resources in a sustainable manner. The programme incorporates wildlife research, conservation, and management; training for wildlife biologists, conservationist, archaeologists, wildlife veterinarians, rangers, and government officials; ecotourism development and local livelihood enhancement; improved pasture management; and environmental education and outreach. A major focus of scientific research in Ikh Nart centres around understanding the ecology of and threats to cinereous vultures *Aegypius monachus*, lesser kestrels *Falco naumanni*, argali and Siberian ibex *Capra sibirica*, as well as how to better conserve these species. Researchers have tracked vultures, argali, and ibex with radio collars to study habitat use, movement patterns, and resource partitioning and overlap with other wild and domestic species. Additional research has focused on behavioural studies, factors influencing reproductive success, genetic analyses, sources of mortality, and more, all aimed at informing conservation strategies.

In the Great Gobi, Denver Zoo has studied wild camels since 1996, including population surveys, diet studies, and satellite telemetry work to understand habitat use, movement patterns, and home range sizes. The challenges of working in the harsh Great Gobi have hampered research and associated conservation efforts, but continued progress is made.

Besides research, Denver Zoo has worked on several aspects of capacity building, with a special emphasis on supporting Mongolian conservationists to equip them with skills and knowledge to protect and manage wild natural resources. Further, science and conservation education focusing on regional biodiversity and conservation issues has been provided to communities in and around protected areas and local people have been assisted in developing sustainable livelihoods such as creating and collaborating with a women's cooperative group and developing ecotourism infrastructure.

Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (German Agency for International Cooperation), based in Eschborn and Bonn, Germany, assists the German Government in achieving its objectives in the field of international cooperation. GIZ operates in the fields of economic development and employment promotion; governance and democracy; security, reconstruction, peacebuilding and civil conflict transformation; food security, health and basic education; and environmental protection, resource conservation and climate change mitigation. In crises, they carry out refugee and emergency aid programmes. Country offices are in all countries considered by this assessment except the Islamic Republic of Iran (<http://www.giz.de>).

In the Central Asian region the GIZ has been active in several initiatives linking directly or indirectly to the conservation of migratory mammals. Since 2002 the Regional Programme on Sustainable Use of Natural Resources in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) has been developing approaches for the participatory and sustainable management of forests, pasture and wildlife (<http://www.naturalresources-centralasia.org>).

The forest programme (Tajikistan, Kyrgyzstan) takes a joint management approach, under which the national forest department leases long term usage rights of forest plots to private tenants. The tenants are trained to use the plots in a sustainable manner and protect them from illegal deforestation and overgrazing. Further work has been conducted in the field of energy efficiency.

The pasture management component (all five countries) is working together with the local population to develop solutions to the problems of pasture degradation in rural areas. Aiming at ensuring the sustainability of the measures, herders who use the pastures are involved in the decision-making processes, and in the financing of management mechanisms and the pastoral infrastructure. Central aspects of the approach are the sensitisation of pasture users and support provision for pasture committees.

The wildlife management programme is based on the principle of 'protection through use', which involves local people in the design of wildlife management regulations, while allowing them to gain economic benefits from their application. In Tajikistan and Kyrgyzstan, support has been provided in the field of sustainable management of mountain ungulates in order to provide benefits for local people and incentives for biodiversity conservation. Local people in model areas are supported to form groups to which user rights on hunting grounds are assigned. Management plans are developed together with the hunters which regulate protection, monitoring and hunting, aiming at preventing overuse of wild animal resources. Guidelines for monitoring of mountain ungulate populations have been developed and surveys are supported. At the national level the development of an enabling legal framework has been supported. The project cooperates with partners from other Central Asian countries, in particular Afghanistan, and has supported the listing of argali under Appendix II of CMS.

In Kazakhstan, support has been provided to improve the state census and monitoring system of the saiga antelope, to create instruments for a sustainable future use of saiga and to improve the anti-poaching system in cooperation with the implementing partner ACBK (see below).

Further, since 2008 GIZ is working to promote sustainable management of natural resources in the Hindu Kush Himalayas in cooperation with the implementing partner the International Centre for Integrated Mountain Development (ICIMOD). Emphasis has been given to develop and implement regionally agreed concepts and strategies to facilitate adaptation to climate change and sustainable resource management (e.g. the programme helps develop and improve concepts and data collection in areas such as the management of protected areas, forestry and/or adaptation to climate change in the regional context). Since 2012 GIZ is supporting ICIMOD as well as implementing partner organisations in China, India and Nepal with the planning and setting up of the Kailash Sacred Landscape, a transboundary sacred landscape, for the transboundary protection of biodiversity in the region.

For cooperation with the EU on FLERMONECA, see above.

Fauna & Flora International

Founded in 1903, Fauna & Flora International (FFI) works to conserve threatened species and ecosystems in over 40 countries, mostly in the developing world. In the Central Asian region FFI is addressing issues related to migratory mammal conservation in the countries of China, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan (<http://www.fauna-flora.org>). FFI's head office is based in Cambridge, United Kingdom (UK); country offices are in China, Kyrgyzstan and Tajikistan.

In China, FFI's work focuses among others on encouraging herder communities on the Qinghai-Tibet Plateau, China, to form collaborative management committees, which serve as a forum for discussions on issues such as predation of livestock by wildlife.

In the Ustyurt region, Kazakhstan and Uzbekistan, FFI is following an integrated and multi-faceted approach to landscape level conservation using the saiga antelope as a flagship species, consisting of research, education and institutional support for governments and the private sector. Further support is provided to the development of sustainable livelihoods and the promotion of transboundary cooperation. FFI is a Signatory to the CMS Saiga MOU.

In Tajikistan, FFI has established a national conservation training programme, working with a network of experts across the country to train national park staff and other practitioners, and promoting applied conservation research. Further capacity building work has been conducted for the Zorkul State Nature Reserve to develop motivation and basic skills for protected area management.

In Kyrgyzstan, the staff of the Sarychat-Ertash State Nature Reserve have been supported to counteract poaching, monitor snow leopards, and engage communities. FFI further has been working with the Naryn State Nature Reserve to strengthen its technical capacity aiming at enabling both reserves to deliver more effective management, as well as enhancing ecological connectivity between the reserves, and improving community outreach in support of snow leopard conservation.

Frankfurt Zoological Society

The Frankfurt Zoological Society (FZS), founded in 1858, is an internationally operating conservation organisation based in Frankfurt, Germany. In Central Asia, FZS has been working in Kazakhstan to provide support to the Altyn Dala Conservation Initiative, a programme aiming at conserving the Betpak Dala saiga population through creating large connecting reserves and providing support to anti-poaching units (<http://www.zgf.de>).

The initiative is creating an integrated network of protected grassland reserves extending through central Kazakhstan. Over 5.2 million hectares have already been legally protected; plans exist to increase these by another five million hectares. Further components include exploring opportunities to restore the original wild ungulate community, including kulan and Przewalski's horse, and community education and public outreach.

The Altyn Dala Conservation Initiative is an international partnership between the FZS, ACBK and the Royal Society for the Protection of Birds (RSPB, see below). The FZS signed a Partnership Agreement with CMS in 2008 (UNEP/CMS 2011p) and is a Signatory to the CMS Saiga MOU.

International Council for Game and Wildlife Conservation

The International Council for Game and Wildlife Conservation (CIC) is a politically independent advisory body based in Budakeszi, Hungary, founded in 1930. CIC aims to preserve wild game and hunting by promoting the principle of sustainable use in international policy development. The Council believes that regulated hunting, including subsistence and local recreational hunting as well as hunting tourism and trophy hunting can contribute positively towards conservation and empowerment, thereby following the sustainability principles as defined in the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity adopted at the Seventh Meeting of the COP to the CBD in 2004 (<http://www.cic-wildlife.org>).

The CIC's Division on Applied Science cooperates with governmental departments and agencies as well as non-governmental organisations to develop, maintain or improve the management of game species in their natural habitat, with a special focus on migratory species. One of their principal objectives is to promote concepts, which ensure the use of wildlife as a renewable resource and

provide sustainable revenue streams for local communities as well as funding for wildlife conservation.

With regard to migratory mammals one of their current focus is on *Caprini* and *Antilopinae* in Central and western Asia. CIC is an institutional member of the Saiga Conservation Alliance (see below); they have signed the CMS Saiga MOU and the CMS Bukhara deer MOU as cooperating organisation. The CIC and the UNEP/CMS Secretariat signed a Partnership agreement in 2005 (UNEP/CMS 2011p).

Initiated in 2006, in cooperation with the FAO, the Ministry of Agriculture of the Czech Republic and the Czech Forestry and Game Management Research Institute, CIC has established a strategic partnership to assist countries from the southern Caucasus and Central Asia in conserving their biodiversity and creating an enabling environment for the sustainable use of wildlife resources for the benefit of the local and national economies, known as the Wildlife Initiative for Central Asia and the Caucasus (WICAC).

International Fund for Animal Welfare

Founded in 1969, the International Fund for Animal Welfare (IFAW) saves individual animals, animal populations and habitats worldwide. With projects in more than 40 countries, IFAW provides assistance to animals in need, including pets, wildlife and livestock, or rescuing animals in the case of disasters. IFAW advocates preventing animal cruelty and protecting wildlife and habitats and promotes addressing animal welfare concerns in policy, legislation and society. The organisation objects commercial exploitation. The international Headquarters is in Yarmouth Port, MA, USA, regional offices are among others in China and the Russian Federation (<http://www.ifaw.org>).

IFAW works to connect animal welfare and conservation through, among others, campaigning for the protection of individual animals, wild populations and their habitats through international agreements such as CMS and CITES and addressing issues of illegal wildlife trafficking. IFAW has conducted law enforcement training targeting customs, police, transport, veterinarians, forestry, marine and zoological personnel in the Central Asian countries in cooperation with INTERPOL. Further, the organisation is engaged in investigating illicit internet trade in wildlife products and in raising the awareness of and working with online market providers to monitor and institute bans on the sale of wildlife products derived from endangered species.

Since 2002, IFAW has funded anti-poaching units to protect saiga antelopes at the Stepnoij Nature Reserve located in the Astrakhan region, Russian Federation. They also support the Ermeli Saiga Breeding Center in Kalmykia, which borders the Astrakhan region. In addition to saiga breeding, the Centre releases satellite collared animals to the wild, conducts hormone and DNA analyses, and studies saiga habitat. In China, IFAW has been involved in a global campaign to reduce the use of endangered species in Asian traditional medicine.

A partnerships agreement between IFAW and the UNEP/CMS Secretariat was signed in 2005 (UNEP/CMS 2011p).

International Takhi Group

The International Takhi Group (ITG), based in Sihlwald, Switzerland, is committed to the reintroduction and conservation of the Przewalski's horse or takhi in Central Asia as well as the protection of the Great Gobi Strictly Protected Area, Mongolia, as a cultural landscape and its development into a biosphere reserve. Their goal is to establish and maintain a viable population of wild horses in the long term, stabilise the intensity of habitat use by herders and help the local population to support park management, and conserve habitat for a viable population of wild horses (<http://www.takhi.org>).

The ITG works in collaboration with the Research Institute of Wildlife Ecology of the University of Veterinary Medicine in Vienna (see below) and the National University of Mongolia. A key component of the conducted research is monitoring of takhi and kulan, thereby transferring knowledge and technology to Mongolian scientists aiming at enabling them to manage the project on their own responsibility in the long term.

Further work is being conducted to strengthen local organisations and cooperatives to support the development of sustainable livelihoods and the improvement of traditional livestock farming. Plans

exist for the establishment of a transboundary protected area with China to connect to another reintroduction site for Przewalski's horses there.

International Union for Conservation of Nature

Founded in 1948, the International Union for Conservation of Nature (IUCN) is a leading authority on the environment and sustainable development, representing the largest professional global conservation network, which has Official Observer Status at the United Nations General Assembly. The IUCN Headquarters is based in Gland, Switzerland. The Asia Regional Office is located in Bangkok, Thailand, and the Regional Office for West Asia in Amman, Jordan. A country programme office is in China (<http://iucn.org>).

IUCN's Global Programme is coordinated by the IUCN Secretariat and delivered in conjunction with IUCN member organisations, commissions and IUCN's theme-based programmes on business, economics, ecosystem management, environmental law, forest conservation, gender, global policy, marine and polar, protected areas, science and knowledge, social policy, species, water, and world heritage.

The IUCN Global Species Programme, in conjunction with the IUCN Species Survival Commission (SSC) and partners, produces, maintains and manages the IUCN Red List of Threatened Species™, the world's most comprehensive information source on the global conservation status of animal, fungi and plant species and their links to livelihoods. It implements global species conservation initiatives, including Red List Biodiversity Assessment projects to assess the status of species for the IUCN Red List.

IUCN SSC is a science-based worldwide network of volunteer experts providing information to IUCN on biodiversity conservation, the inherent value of species, their role in ecosystem health and functioning, the provision of ecosystem services, and their support to human livelihoods in a range of different fields. Most members are deployed in Specialist Groups, Red List Authorities and Task Forces and provide scientific advice to conservation organisations, government agencies and other IUCN members, and support the implementation of MEAs. The Policies, Guidelines & Standards produced by the SSC provide guidance to specialised conservation projects and initiatives, such as re-introducing animals into their former ranges, handling confiscated specimens, and halting the spread of invasive species. SSC Specialist Groups concerned with the species considered by this assessment include the Antelope Specialist Group, Caprinae Specialist Group, Deer Specialist Group, Equid Specialist Group and Cat Specialist Group.

A Memorandum of Cooperation was signed between IUCN and CMS in 2003 (UNEP/CMS 2011p); IUCN SSC is a Signatory to the CMS Saiga MOU.

Large Herbivore Network

The Large Herbivore Network (LHNet) is a knowledge network under the umbrella of the European Centre for Nature Conservation (ECNC) aiming at preserving and restoring large Eurasian herbivores in the wild. LHNet brings together experts and interested parties, as well as non-governmental and governmental organisations of many nationalities from a diverse range of disciplines in order to facilitate opportunities in support of large herbivore conservation and ecological restoration. LHNet works closely together with IUCN (Species Specialist Groups, Red List of Threatened Species, <http://www.lhnet.org>).

Past project activities have focused on saiga, Bukhara deer, goitered and Mongolian gazelle by applying a seed-money strategy i.e. using small funds to facilitate cooperation and the initiation of projects. Issues addressed included anti-poaching, research, and increasing public awareness. LHNet is involved in international conventions such as CMS, CITES and the Convention on the Conservation of European Wildlife and Natural Habitats.

ECNC is an independent European expertise centre for biodiversity and sustainable development, promoting an integrated approach for both land and sea and actively stimulating the interaction between science, society and policy. ECNC is based in Tilburg, Netherlands.

Michael Succow Foundation for the Protection of Nature

The Michael Succow Foundation for the Protection of Nature (Michael Succow Foundation), established in 1999, is a nature conservation organisation charity based in Greifswald, Germany, aiming at developing and facilitating natural sites listed under the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Convention, national parks and biosphere reserves. It engages in protection and rewetting of peatlands and strengthens nature conservation through scientific research, capacity building, ecological education and public relations. Their main focus of work is on regions of north-eastern Germany and the transformational countries of the former Eastern bloc countries (<http://www.succow-stiftung.de/home.html>).

In Central Asia the Michael Succow Foundation aims at strengthening nature conservation networks on the governmental, scientific and civil society level through building capacity by promoting ecologic research and education. In recent years the following projects have been implemented: research of carbon sequestration of steppe soils (Kazakhstan) and saxaul vegetation (Kazakhstan, Uzbekistan, Turkmenistan), capacity building in the field of international climate finance instruments under UNFCCC for accessing climate funds in the land use-, land use change, and forestry sector (Kyrgyzstan, Uzbekistan) and the establishment of pistachio growing centres for the rehabilitation of ecosystem function of natural pistachio communities (Uzbekistan). In the long term, the Foundation promotes and consults on establishing and maintaining large-scale protected areas, predominantly biosphere reserves but also national parks (Kazakhstan, Uzbekistan, Turkmenistan), and on biodiversity monitoring in southern Ustyurt (Uzbekistan, Turkmenistan). The work of the Michael Succow Foundation is supported by university partnerships among Greifswald University and universities and scientific institutions in Kazakhstan, Uzbekistan and Turkmenistan in the field of nature conservation and ecology, which encourages excursions, scientific exchange, study visits and conferences among partner institutions.

Naturschutzbund Deutschland e.V.

Founded in 1899, the Naturschutzbund Deutschland (NABU) e.V. (Nature and Biodiversity Union) is an environment associations with its Headquarters based in Berlin, Germany. NABU's main objectives are the preservation of habitats and biodiversity, the promotion of sustainability in agriculture, forest management and water supply and distribution, as well as the enhancement of the significance of nature conservation in the public space (<http://www.nabu.de>).

In Central Asia, NABU is involved in conserving snow leopards in Kyrgyzstan where the organisation has established an anti-poaching unit, has carried out environmental education programmes and deployed camera traps. NABU has initiated the Global Snow Leopard Conservation Forum, held in Bishkek in 2013 leading to the endorsement of the GSELP programme (see below).

Further, NABU supports cross-border nature conservation in the northern Tian Shan in cooperation with Kyrgyz and Kazakh project partners. In the Pamir-Alai region, the border area between Tajikistan and Kyrgyzstan, NABU is working in cooperation with partner organisations to establish a cross-border protected area.

In Kazakhstan and Uzbekistan, children education material was developed in order to raise awareness on the plight of the saiga and equipment for rangers was provided.

Organization for Security and Co-operation in Europe

The Organization for Security and Co-operation in Europe (OSCE) assists participating states with the sustainable use and sound management of natural resources, recognising the close connection between environmental issues and security. It primarily supports projects to improve water management, deals with soil degradation and safe disposal of toxic and radioactive waste. However, it works as well to raise environmental awareness and to promote public participation in environmental decision-making. The OSCE Secretariat is based in Vienna, Austria. There are OSCE Centres in Kazakhstan and Kyrgyzstan, an office in Tajikistan and a Project Coordinator in Uzbekistan (<http://www.osce.org>).

Since 2002, the OSCE has been supporting the establishment of Aarhus Centres and Public Environmental Information Centres in several countries (including Kazakhstan, Kyrgyzstan and

Tajikistan) in an effort to support the implementation of the Aarhus Convention and provide members of the public with practical resources to exercise their environmental rights under the Convention.

These Centres play an important role in promoting all three pillars of the Aarhus Convention, namely i) access to information, ii) public participation in decision-making, and iii) access to justice in environmental matters. They raise awareness among the public and governmental authorities by disseminating environmental information and carrying out educational and training projects relevant to the implementation of the Convention. By providing a venue where members of the public can meet to discuss environmental concerns, the Aarhus Centres strengthen environmental governance. The Secretariat of the Aarhus Convention provides guidance for the initiative and contributes capacity-building and training to Aarhus Centre staff.

Panthera

Based in New York, NY, USA, Panthera was founded in 2006 with the aim of conserving the world's largest and most endangered cats and their habitats. In the Central Asian region Panthera is active in several countries focusing on snow leopard (China, India, Mongolia, Pakistan, and Tajikistan; plans exist to expand work into Kyrgyzstan) and cheetah (Islamic Republic of Iran, <http://www.panthera.org>).

Panthera's Snow Leopard Program partners among others with the Snow Leopard Trust (see below) and WCS and employs a multi-pronged approach to snow leopard conservation. Their work includes scientific research, monitoring of snow leopard, prey populations and habitat, supporting the creation of regional and country-specific action plans, providing training, assessing livestock and human land use patterns, establishing community based conservation initiatives to reduce conflicts with the snow leopard (e.g. developing a model for community managed hunting concessions to ensure the sustainable use of wild prey species and economic and social benefits for involved communities) and addressing issues of habitat connectivity and fragmentation.

In the Islamic Republic of Iran, Panthera in collaboration among others with the Iranian Government, WCS and UNDP has created a conservation programme to protect the Asiatic cheetah, its prey base and natural habitats. The focus of their work lies on gathering ecological data on the existing cheetah population, other carnivore (such as Persian leopard *Panthera pardus saxicolor*) and prey populations, studying competition for land between livestock and the cheetah's wild ungulate prey, empowering law enforcement officials to protect cheetahs and their prey and environmental education targeting local communities to improve attitudes towards the species.

Regional Environmental Center for Central Asia

The Regional Environmental Centre for Central Asia (CAREC) was founded in 2001 by Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, as well as UNDP and the European Commission with the mission to promote multi-sector cooperation in addressing environmental problems in Central Asia at local, national and regional levels. Its Headquarters is based in Kazakhstan with regional offices in all member countries (<http://www.carecnet.org>).

Its objectives are to:

- Establish an inter-sectoral dialogue in Central Asia involving the donor community
- Create opportunities to attract to Central Asia advanced knowledge, best international practices and technologies in the field of environmental management and sustainable development
- Enhance the role of civil society in the field of environmental protection and sustainable development in Central Asia

Projects are implemented within several programmes, including the Environmental Management Programme, Climate Change and Sustainable Energy, Education for Sustainable Development (targeting among others the business sector), Water Initiatives Support, and Interprogram Activities. Although not directly working on migratory species, particularly CAREC's experience in capacity building for sustainable development and its engagement with the private sector (including Chevron, AGIP, BG Group) provide scope for synergies in the framework of the CAMI.

Royal Society for the Protection of Birds

The Royal Society for the Protection of Birds (RSPB), founded in 1889, works for the conservation of wild birds, other wildlife and their habitat in the UK and worldwide. As the UK partner of BirdLife International (a global partnership of national conservation organisations) RSPB cooperates and supports BirdLife Partners throughout the world (<http://www.rspb.org.uk>).

Developing from an initiative originally focusing on conserving the sociable lapwing *Vanellus gregarius* on their breeding grounds in Kazakhstan, support to ACBK has expanded to support ecosystem-scale conservation in Kazakhstan in the framework of the Altyn Dala Conservation Initiative (ADCI, see below). ADCI is a large-scale programme to conserve the northern steppe, semi desert and desert ecosystems and its biodiversity in central Kazakhstan, the range of the largest remaining saiga population, the Betpak Dala saiga (<http://www.acbk.kz>). The project aims to provide the technical input required to achieve a landscape-scale network of protected areas.

Activities have included mapping vegetation communities, assessing bird and mammal densities in pristine and modified steppe and semi-desert habitats and factors influencing them, assessing socio-economic factors and their impacts on land use, identifying saiga migration routes, developing predictive models of steppe land use and the response of steppe wildlife, and defining conservation needs and priority areas for protection.

Saiga Conservation Alliance

The Saiga Conservation Alliance (SCA), founded in 2006, is a network of researchers and conservationists who work collaboratively to conserve saiga antelopes and the steppe ecosystem in all saiga range countries (with the exception of Turkmenistan). The SCA and collaborating organisations support a range of activities, including captive breeding (at the Centre for Wild Animals in Kalmykia, Russian Federation), educational programmes for children, awareness raising and outreach, anti-poaching work, conducting social surveys, training of students and young scientists, producing local handicrafts and offering eco-tours. Further, the SCA publishes a bi-annual news bulletin, Saiga News, in the six languages of the saiga range countries, providing information about recent developments in saiga conservation and ecology. The SCA is based in Oxfordshire, UK (<http://www.saiga-conservation.com>).

The SCA is a Signatory to the CMS Saiga MOU and in cooperation with ACBK they act as technical coordinator for the Memorandum (UNEP/CMS 2011i). Main coordination objectives include: i) provision of technical and logistic assistance to the UNEP/CMS Secretariat in preparing MOU-related meetings; ii) creation of a mechanism for communication and exchange of information between all stakeholders on MOU implementation; iii) creation of an atmosphere of cooperation and results-based monitoring; iv) active engagement in the promotion of saiga conservation internationally, and v) provision of technical advice. Under this mandate, the Saiga Resource Centre was created, an online database, which collects and stores saiga-related information for use by the saiga conservation community (www.saigaresourcecentre.com).

Snow Leopard Conservancy

The Snow Leopard Conservancy (SLC) was established in 2000 with the mission to advance community based stewardship of the snow leopard through education, research and grassroots conservation action. The goal of SLC is to transform snow leopards from being perceived as pests by herders into assets valued more alive than dead. As such, the SLC works with local partners to provide technical assistance, grants and incentives for community based activities, linked to specific stewardship and biodiversity conservation commitments. As part of the overall community based conservation planning process, SLC supports snow leopard and prey species status surveys and conducts baseline inventories and assessments by involving local people through a participatory engagement process. The SLC Headquarters is based in Sonoma, CA, USA (<http://snowleopardconservancy.org>).

The Conservancy currently works in seven of the twelve range countries: Bhutan, India, Kazakhstan, Mongolia, Nepal, Pakistan, and Russia. Activities have included establishing predator-proof corrals, educating herders on improving animal husbandry and guarding practices, developing livestock

insurance systems, improving household incomes in environmentally friendly, socially responsible and economically viable ways (including ecotourism development), increasing environmental awareness and understanding of mountain ecosystems among communities, conducting non-invasive baseline research on snow leopards, their prey and habitat, and protecting the natural prey base by among others patrolling and creating special wildlife areas (e.g. livestock-free blue sheep wintering areas).

Snow Leopard Network

The Snow Leopard Network (SLN), founded in 2002, is a worldwide organisation dedicated to facilitating the exchange of information between individuals, organisations and governments for the purpose of snow leopard preservation. Currently over 500 members are registered at the Network, including snow leopard experts in the public, private, and non-profit sectors. SLN is based in Seattle, WA, USA (<http://www.snowleopardnetwork.org>).

SLN was created to promote sound scientifically-based conservation of snow leopards through networking and collaboration between individuals, organisations, and governments. The Network strives to establish and strengthen professional linkages for addressing crucial issues affecting the survival of the species and its prey, and livelihood opportunities of local people. The primary document used to further this goal is the Snow Leopard Survival Strategy, which was co-authored by several members of SLN.

Specific objectives of the Network are to i) establish the SLN as lead coordinator for promoting snow leopard research and conservation, ii) facilitate the implementation of the Snow Leopard Survival Strategy, and relevant aspects of CMS, CITES, CBD etc., iii) promote the development and implementation of country action plans for snow leopards, iv) promote scientific management and conservation of snow leopard, natural prey and their mountain ecosystem, v) build and strengthen capacity in range countries for snow leopard conservation, and vi) formulate position statements on snow leopard related issues drawing on the combined knowledge and expertise of the SLN members.

Snow Leopard Trust

Founded in 1981, the Snow Leopard Trust (SLT) works with local communities in snow leopard regions to develop conservation programmes aiming at protecting the species and its habitat while improving the lives of local people (<http://www.snowleopard.org>). SLT conducts scientific research on snow leopards, among others by using camera traps and the Global Positioning System (GPS) collars, ecological surveys of snow leopard habitat, and community knowledge and attitude surveys to determine threats to snow leopards and the causes of the human-wildlife conflicts. Further, SLT supports education programmes consisting of camps and nature clubs for children, a herder education programme combining support for livestock vaccinations, the development of livestock insurance systems and the creation of sustainable economic opportunities.

Technical support is bound to annually renewed conservation agreements which vary from protecting snow leopards and their wild prey from poaching, limiting the number of livestock, and setting aside graze-free areas. SLT collaborates with a range of local and international partners and works in China, India, Kyrgyzstan, Mongolia and Pakistan. The Trust is based in Seattle, WA, USA.

The Nature Conservancy

The Nature Conservancy (TNC), founded in 1951, works in the USA and globally to protect ecologically important lands and waters for nature and people. In the Central Asian region the TNC works in China and Mongolia. The Worldwide Office of the TNC is located in Arlington, VA, USA; country offices are in Mongolia and China (<http://www.nature.org/>).

In Mongolia, the TNC works in the eastern steppes and the Gobi, where they support the Mongolian Government, the industry sector and local communities to reduce conflicts between development and conservation goals (particularly with respect to avoiding, mitigating and offsetting impacts from development) and support sustainable development. Further efforts include developing sustainable livelihoods seeking to implement market based solutions to incentivise responsible grazing practices in order to restore grassland ecosystems, connect cashmere goat herders with western retailers,

ultimately improve herder livelihoods (<http://noyafibers.wordpress.com>) and supporting ranger patrols to enforce environmental regulations.

In China, the TNC among others supports the Chinese Government to develop new protected areas (with a focus on Yunnan Province) and to modernise China's protected areas system through initiatives aimed at enhancing the reserves' capacity to protect land. Further work has focused on developing ecosystem-based climate change adaptation strategies and piloting a carbon-accounting project to help China participate in international commitments to address climate change. Other efforts concern investing in alternative energy (e.g. biogas, fuel-efficient stoves), creating livelihood benefits from ecotourism in and around national parks, conservation education for children, fresh water conservation, and reforestation.

TRAFFIC

TRAFFIC is a wildlife trade monitoring network, established in 1976, aiming to ensure that trade in wild plants and animals is not a threat to the conservation of nature. As a joint programme of WWF and IUCN it is the focal programme within both organisations on issues related to trade in wild animals and plants. The organisation is governed by the TRAFFIC Committee, a steering group composed of members of WWF and IUCN. TRAFFIC also works in close co-operation with the Secretariats of the CBD and CITES. Its Headquarters, TRAFFIC International, is located in Cambridge, UK; country offices are located in China and the Russian Federation (<http://www.traffic.org>).

TRAFFIC's core competencies include research (e.g. market surveys; assessment of trade mechanisms, routes, economics and motivations; analysis of official trade statistics; collation of observations and findings of other researchers; and specific investigations of illegal trade activities), analysis of conservation problems and solutions, and provision of recommendations resulting from this work. The organisation also advises the development of policies, practices and actions to address identified conservation challenges, explores the application of strategies, and analyses the effectiveness of previous approaches thereby seeking to strike a balance between regulatory supply control approaches and incentive and consumer-based demand driven approaches.

Raising public awareness of wildlife trade issues is a secondary, though important, goal of TRAFFIC communications work (such as a recent advertisement campaign in mainland China aimed at changing consumer attitudes towards unsustainable wildlife trade). Findings and recommendations are communicated to audiences and individuals at national and regional governmental levels, international treaty meetings, and the private sector. Several reports on the international trade on saiga, snow leopard and chiru have been published in recent years. Further, TRAFFIC organises and assists training and other capacity-building initiatives for officials involved in regulation of wildlife trade and provides technical advice and mediates or facilitates multi-sector and inter-governmental considerations of solutions to wildlife trade-related conservation challenges.

TRAFFIC has provided expert advice, information and assistance in support of the further development and implementation of the CBD, typically focusing on specific programmes of work of the Convention. Representatives normally attend official CBD meetings, including COPs, Meetings of the Subsidiary Body on Scientific, Technical and Technological Advice, as well as specific Working Groups and Liaison Groups of the Convention.

Further, TRAFFIC provides information and assistance to help the decision-making processes at CITES. In 1999, the two organisations signed a MOU, with the purpose of undertaking joint activities for capacity building. Together with IUCN, TRAFFIC publishes in-depth analyses of all formal proposals put forward by CITES Parties to be discussed at COPs and publishes its recommendations on each decision to be taken, based on the results of their analyses.

Wild Camel Protection Foundation

The Wild Camel Protection Foundation (WCPF) is aiming to protect the wild camel and its habitat in the Gobi desert in north-west China and south-west Mongolia. The core focus of WCPF has been the establishment of a captive breeding programme for wild camels in Mongolia. As part of their work, WCPF has developed an environmental education programme, involving the preparation of environmental booklets for school children in China and Mongolia, and public awareness campaigns.

The booklets are part of a series of multi-language environmental education books targeting school children and adults alike, which have been distributed in China and Mongolia. WCFP further acts as advisor to the Lop Nur Wild Camel National Nature Reserve. Established in 1997, the organisation is based in Benenden, UK (<http://www.wildcamels.com>).

Wildlife Conservation Society

The Wildlife Conservation Society (WCS), founded in 1895, has the mission to save wildlife and wild places across the globe. It manages about 500 conservation projects in more than 60 countries, addressing issues such as climate change, natural resource exploitation, the connection between wildlife health and human health, and the sustainable development of human livelihoods. The WCS Headquarters is located in New York, NY, USA; it has country offices in Afghanistan, China and Mongolia, and runs further projects in the Islamic Republic of Iran and Tajikistan (<http://programs.wcs.org>).

In Afghanistan, WCS is conducting work in Badakhshan Province, the Hazarajat Plateau, and Kabul. Efforts have concentrated on implementing biodiversity and rangeland assessments, the creation of community governance institutions, facilitation of sustainable community livelihood development, building of capacity to manage the health interface between livestock, wildlife and humans, strengthening of environmental laws, policies and institutions, and development of technical capacity for natural resource management at all levels. WCS has been working toward the creation of a four-country Transboundary Protected Area in the Pamirs between Afghanistan, Pakistan, Tajikistan, and China in order to protect argali, snow leopard, and other species that range across these national borders.

In China, WCS has been working on large mammal conservation in Tibet since the 1980s, contributing to the creation of the Qiangtang National Nature Reserve. WCS has since worked on gathering data on the biodiversity and human distribution, trained nomadic herders, government staff at different levels, and local research institutes to empower their participation in the development and implementation of a coordinated 'Qiangtang Region Landscape Conservation Management Plan.' Special attention is given on reducing human-wildlife conflict and increasing the resilience of both communities and habitats through supporting the development of community based models for sustainable livelihoods that incorporate wildlife needs and grassland recovery into traditional pasture management practices. The work has focused among others on conserving argali, snow leopard, chiru, and kiang. WCS is currently working on an initiative aimed at identifying and implementing conservation actions that can mitigate threats to wild yak.

In Mongolia, WCS has conducted research on snow leopard, Mongolian gazelle, saiga, kulan, and goitered gazelle, worked on public education concerning wildlife conservation, helped to strengthen the country's laws on hunting and wildlife trade, and trained Mongolian authorities in enforcement techniques to address the unsustainable and illegal wildlife trade. WCS has fostered community based natural resource management by helping livestock herders organise and manage their herds and land sustainably, teaching them about pasture rotation and sound stocking rates of livestock, and training local rangers to monitor and protect wildlife and enforce local hunting regulations. Further efforts have focused on preventing the fragmentation of critical Mongolian gazelle habitat in the eastern steppes and preserving the intactness of the grasslands from development. WCS has worked closely with and advised mining operations in the south Gobi on mitigating negative impact and developing offset schemes.

WCS has been working actively with the Government of the Islamic Republic of Iran and international partners on implementing activities needed to save the Asiatic cheetah from extinction since 2000. As such, Iran's Department of the Environment launched an initiative in conjunction with the UNDP/GEF and the help of WCS to save the cheetah, its habitat, and prey, particularly the goitered gazelle. WCS is instituting training and capacity building to assist the Islamic Republic of Iran in developing the ability to ensure the survival of cheetah and other components of their wildlife resources through education, workshops, and field-based training.

In the Tajik Pamirs, WCS has been active since the early 2000s, addressing threats at a landscape scale; they support the concept that the Pamirs would be best managed and efficiently protected as a unit, implying the need for transboundary collaboration between range countries. As such, WCS has partnered with the Governments of Tajikistan, Afghanistan, and Pakistan, regional experts and local communities to implement a series of initiatives aimed at developing strategies for transboundary conservation in the region. WCS performed repeated surveys of argali and snow leopard, held an international workshop on transboundary cooperation in the Pamirs in 2006 in Urumqi, China, led a transboundary management project in Tajikistan in 2011 discussing threats and opportunities for conservation within Tajikistan and in a transboundary manner across the Pamirs' landscape on various levels. They brought ecosystem health experts together from Tajikistan, Afghanistan, and Pakistan to build capacity for an integrated and transboundary approach to the study and management of diseases, and to foster the creation of a health information network aiming at mitigating disease transmission and improving health of wildlife such as argali. Further work in the transboundary Pamirs region has been done with respect to minimising impacts of climate change on wildlife such as argali and snow leopard.

A Partnership Agreement was signed between WCS and the UNEP/CMS Secretariat in 2007 (UNEP/CMS 2011p); WCS is a Signatory to the CMS Saiga MOU.

World Trade Organization

The World Trade Organization (WTO) was founded in 1995, replacing the former General Agreement on Tariffs and Trade, which was signed in 1947. The WTO is an international organisation dealing with rules of trade between nations. It provides a forum for negotiating agreements aimed at reducing obstacles to international trade and a legal and institutional framework for the implementation and monitoring of these agreements, as well as for settling disputes arising from their interpretation and application. Members of the countries considered by this assessment include China, Kyrgyzstan, Mongolia, the Russian Federation and Tajikistan. Afghanistan, the Islamic Republic of Iran, Kazakhstan and Uzbekistan have acquired observer status; Turkmenistan has established a Governmental Commission to review issues related to the country's accession to the WTO (<http://www.wto.org>).

The highest institutional body of the WTO is the Ministerial Conference, which meets roughly every two years. A General Council conducts the organisation's business in the intervals between Ministerial Conferences. Specialised subsidiary bodies (Councils, Committees, Sub-committees) administer and monitor the implementation of the various WTO agreements. WTO activities are supported by a Secretariat with offices in Geneva, Switzerland.

In the preamble to the Marrakech Agreement that established the WTO, sustainable development, and the protection and preservation of the environment are recognised as fundamental goals of the organisation. Formal cooperation exists with the FAO and UNEP. Since 1995, UNEP has been an observer of the WTO Committee on Trade and Environment and the two organisations have worked closely in the context of capacity building activities to raise awareness on the linkages between trade, environment and sustainable development and to promote greater dialogue between trade and environment policy makers. The WTO has also participated at sessions of the UNEP Governing Council.

The anticipated accession of Afghanistan, the Islamic Republic of Iran, Kazakhstan, Uzbekistan and Turkmenistan drives the need for improved transport infrastructure (see below). Sandwiched between two trading giants – the Russian Federation and China – the Central Asian countries form a collective trading bridge across the region. As transit countries, WTO accession has the potential to increase trade volumes across the region fuelled by lower tariffs on trade to the benefit of national economies but to the potential detriment of migratory mammals if not managed carefully.

World Wide Fund For Nature

The World Wide Fund For Nature (WWF) was established in 1961, with the aim of conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable and promoting the reduction of pollution and wasteful consumption. WWF is active in over 100 countries

worldwide in more than 1300 conservation projects. The organisation carries out conservation work such as practical field projects, scientific research, advising local and national governments on environmental policy, promoting environmental education, and raising awareness of environmental issues. The Secretariat of WWF International is based in Gland, Switzerland. Country offices and associates are in the Russian Federation (responsible for the Central Asia Programme in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan), Mongolia, and China (<http://wwf.panda.org>, <http://www.wwf.ru>). WWF International is a Signatory to the CMS Saiga MOU and the CMS Bukhara deer MOU.

Priority species of WWF's Global Programme include saiga as a "footprint-impacted species"³⁹ (past and current conservation focus has been on Kazakhstan, Mongolia and the Russian Federation; e.g. promoting the work of TRAFFIC, raising public awareness, conducting socio-economic surveys, supporting anti-poaching activities), Tibetan antelope (China; promoting the work of TRAFFIC, raising awareness, supporting anti-poaching efforts and the management of the Qiangtang National Nature Reserve), argali (among others Kazakhstan, Mongolia, Kyrgyzstan, Tajikistan; sustainable livelihood development, protection of grazing grounds, regulation and monitoring of hunting, supporting population surveys), and snow leopard (Kazakhstan, Kyrgyzstan, Mongolia, Uzbekistan; supporting rural sustainable development, controlling illegal trade and mining, awareness raising, mobile anti-poaching units, supporting snow leopard surveys).

Further initiatives focused in the past among others on Bukhara deer (Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan; supporting protected areas inhabited by deer, raising public awareness, supporting anti-poaching activities, reintroduction in natural habitats, supporting the restoration of tugai forests and developing sustainable water management and land use practices), kulan (Turkmenistan; restoring artificial water places, supporting law enforcement, anti-poaching activities, awareness raising), goitered gazelle (Turkmenistan, Tajikistan; supporting reintroduction) and Mongolian gazelle (Mongolia; supporting population surveys). WWF has led discussions on reintroducing the Caspian tiger *Panthera tigris virgata* and cheetah in parts of Central Asia.

Priority sites of WWF's Global Programme include the Altai-Sayan ecoregion, where WWF works on establishing a network of protected areas in Mongolia focusing on forest and fresh water conservation, conserving transboundary populations of argali and snow leopard, and sustainable socio-economic development. A further priority site is the Amur-Heilong River Basin, straddling the border between north-eastern China and the Russian Far East, aiming at conserving and promoting the sustainable management of headwaters of the Amur-Heilong River. The WWF Central Asia Programme has been involved in promoting the establishment of a transboundary network of protected areas across the region, the so-called ECONET, consisting of strictly protected zones, ecological corridors and buffer zones.

Zoological Society for the Conservation of Species and Populations

The Zoological Society for the Conservation of Species and Populations (ZGAP), founded in 1982, is a German based non-profit organisation with the mission to support the conservation of endangered wildlife little known to the general public. ZGAP's work is based on the principle of involving local institutions and experts in their work and enabling them to take on responsibilities and leadership in the long term to achieve a sustainable outcome (<http://www.zgap.de>).

Since 2008, the ZGAP is active in Central Asia, where it has supported the implementation of the Tajikistan Mountain Ungulates Programme, in cooperation with the Academy of Sciences of Tajikistan and until 2012 the Nature Protection Team (see below) as well as GIZ and Panthera. Their work focuses on the conservation of mountain ungulates through the establishment of community based organisations that protect wild ungulates and their habitats and generate income from sustainable use through tourism and hunting. Further efforts include monitoring of wild ungulate populations to inform management and setting of sustainable hunting quotas. With the support of the programme, by early 2014 more than 250,000 hectares of ungulate habitat have been put under

³⁹ "Footprint-impacted species" are defined by WWF as species under threat primarily due to unsustainable hunting, logging, fishing and/or other human activities.

the management of local partner organisations, and populations of ibex and markhor have shown significant increases; since 2013 the Marco Polo argali *O.a. polii* shows signs of recovery in some sites. The development of similar community based management regimes are planned for the distribution ranges of urial and Severtzov's argali *O.a. severtzovi*.

Zoological Society of London

Founded in 1826, the Zoological Society of London (ZSL) is an international scientific, conservation and educational charity with the mission to promote and achieve worldwide conservation of animals and their habitats. The ZSL runs conservation programmes in Britain and over 50 countries worldwide. The ZSL Conservation Department is based in London, UK; country offices are in Mongolia and China (<http://www.zsl.org>).

Work conducted by ZSL in Mongolia comprises ZSL's Steppe Forward Programme, which aims to build capacity at different levels of society, including herders, students and environmental professionals, in collecting and analysing ecological data to monitor the impact of threats on species and populations. Further, the project aims to raise awareness in local communities of the problems faced by Mongolian biodiversity. Several field guides, including mammals and birds of Mongolia, have been published in English and Mongolian. ZSL's Wildlife Picture Index, implemented in cooperation with WCS, uses a systematic camera-trapping approach to give an indication of biodiversity and population numbers in and close to protected areas aiming at measuring success of protected areas management in Mongolia. ZSL further maintains an environmental newsletter focusing on Mongolia, the MongolBioweb, and in cooperation with WCS, organises monthly informal gatherings open to anyone interested to present and discuss topics relevant for Mongolian conservation.

In addition, the saiga and the wild camel are categorised by ZSL as Evolutionarily Distinct and Globally Endangered (EDGE) species in their EDGE of Existence programme, which focuses on threatened species that represent a significant amount of unique evolutionary history. EDGE species are identified by using a scientific framework developed by ZSL and each year a number of EDGE species are selected for conservation attention. Part of the EDGE of Existence programme is the provision of two-year fellowships awarded to conservationists of EDGE species range countries to work on the species. Previously, ZSL has supported research on wild camels through EDGE Fellowships in China and Mongolia focusing on collecting information on the impacts of habitat loss, hunting, hybridisation with domestic camels, poisoning and drought in Lop Nur Wild Camel National Nature Reserve, China, and Great Gobi Special Protected Area A in Mongolia.

Others

The list above is far from complete. There is a multitude of additional UN bodies (e.g. UNESCO/World Heritage Convention, UNFCCC), international donors (such as the Asian Development Bank ADB, European Bank for Reconstruction and Development EBRD, Eurasian Development Bank EDB, Islamic Development Bank IDB, Kreditanstalt für Wiederaufbau KfW, International Monetary Fund IMF), foreign aid agencies (e.g. Department for International Development DFID, Swiss Agency for Development and Cooperation SDC, Japan International Cooperation Agency JICA), and non-governmental development and research organisations, networks and alliances (e.g. Aga Khan Development Network AKDN/ Mountain Societies Development Support Programme MSDSP, International Center for Agricultural Research in the Dry Areas ICARDA, Agency for Technical Cooperation and Development ACTED, Central Asian Mountain Partnership CAMP Alatau and CAMP Kuhiston/ Alliance of Central Asian Mountain Communities AGOCA, ICIMOD, Mountain Partnership, Regional Mountain Centre of Central Asia, the Eurasia Foundation of Central Asia), which provide support to industry and infrastructure development, sustainable natural resource management, sustainable livelihoods and civil society development, water and energy efficiency and alternative energy, climate change adaptation and other environmental issues that all have important links to conserving migratory mammal in the Central Asian region.

National organisations

Association for the Conservation of Biodiversity in Kazakhstan

The Association for the Conservation of Biodiversity in Kazakhstan (ACBK) is a non-profit organisation aimed at the study and conservation of endangered species of flora and fauna, of both global and ecological significance, as well as maintaining the integrity of the natural world. In cooperation with national and international partners, ACBK is implementing a range of different programmes in Kazakhstan focussing among others on the conservation of migratory mammals. In 2010, ACBK was appointed BirdLife International's Affiliate for Kazakhstan. Their head office is based in Astana, Kazakhstan (<http://www.acbk.kz/en/>).

The Altyn Dala Conservation Initiative (ADCI) focuses on conserving the northern steppe, semi desert and desert ecosystems of central Kazakhstan by establishing a network of protected areas and corridors, conducting research, developing a participatory wildlife monitoring system, conserving saiga and other key species on the landscape level and conducting environmental education and awareness raising. Further efforts have dealt with supporting the reintroduction of regionally extinct species (such as Przewalski's horse and kulan) and the development of ecotourism. A second landscape scale initiative has focused on conserving the saiga antelope on the Ustyurt Plateau, including the development of a public awareness campaign, supporting law enforcement, conducting ecological and socio-economic research, and establishing eco-youth clubs.

ACBK is a Signatory to the CMS Saiga MOU and in cooperation with the SCA (see above) they act as technical coordinator for the MOU (UNEP/CMS 2011i). As such, ACBK is responsible for collecting information from national governments, non-governmental organisations (NGOs) and other stakeholders and provides expertise and assistance aiming at ensuring a high quality of data. Further tasks include the maintenance of databases on projects and experts and logistical support for technical and other meetings.

Iranian Cheetah Society

The Iranian Cheetah Society (ICS) is a non-profit organisation established in 2001, which works to save the Asiatic cheetah in the Islamic Republic of Iran. Its main goals are to increase public awareness on the cheetah and its habitat through education, reduce human-cheetah conflict, conduct research, and to conserve the cheetah in its natural habitat with public participation. ICS' main activities have focused on education targeting mainly the youth at the local level and in cities and on conducting research on cheetah, its wild prey and potentially competing carnivore species. The ICS is based in Tehran, Islamic Republic of Iran (<http://www.wildlifeextra.com/go/good/Iranian-Cheetah-Society.html#cr>).

Nature Protection Team, Tajikistan

The Nature Protection Team (NPT) is a Tajik environmental NGO based in Dushanbe, Tajikistan, focusing on monitoring and protecting endangered species and their habitat, conducting ecological education, round tables and conferences, awareness raising, and providing advice on environmental legislation (<http://anped.org>).

In cooperation with others, from 2008 till 2012 NPT has supported the development of community based conservation and management of mountain ungulates in Tajikistan, since 2009 in the framework of GIZ's Regional Programme on Sustainable Use of Natural Resources in Central Asia (see above). Focusing on ibex, markhor, urial and argali the project's activities included assessing and monitoring of mountain ungulates populations and their habitats, facilitation of protection and management through involvement of local users and improving management in private game reserves, as well as fostering the political dialogue and improvement of the legal framework. A key activity of the project was the provision of support to the assignment of long term user rights and responsibilities for wildlife in specific areas to representatives from local communities. The development of sustainable management systems by local private organisations and local community based NGOs aims to generate income from wildlife through ecotourism and sustainable hunting in order to generate sufficient incentives for their protection and rehabilitation and the conservation of their habitats.

Based on the progress made by NPT towards sustainable wildlife management in Tajikistan, several organisations have since been engaged in conservation and sustainable use of wildlife and have provided continuing support to community based game management, including GIZ, ZGAP and the Denver Zoological Foundation.

International scientific institutions

Besides national scientific institutions several international institutions conduct research on and related to migratory mammals in the Central Asian region, and provide advice and contribute to the development of conservation strategies, including but not limited to the following:

The **Arid Land Research Center, Tottori University, Japan**, has focused on studying long-distance migration, including barrier effects from linear infrastructure, and habitat use of Mongolia gazelle in Mongolia and grazing impact on plant and animal communities in drylands (<http://www.alrc.tottori-u.ac.jp>). Further research included tracking movements of saiga on the Ustyurt Plateau, Kazakhstan.

The **Imperial College London, Conservation Science Department, UK**, has a twenty-year research programme on the saiga antelope focusing among others on life history strategies, population dynamics and behaviour, effectiveness of monitoring and conservation interventions, participatory monitoring, socio-economic research, biodiversity offsets and factors driving the spatial distribution of saiga antelopes and domestic livestock (<http://www.iccs.org.uk>).

The **Royal Veterinary College, London, UK**, has been involved in supporting investigations into the causes of saiga mass mortality events of recent years and in developing collaboratively (under an MOU with the Biosafety Institute Gvardeskeiy, Kazakhstan, and with the FAO Emergency Prevention System, the Kazakhstan Veterinary Reference Laboratory and conservation NGOs), efficient and cost effective epidemiological investigation protocols for infectious disease surveillance and outbreak investigation in saiga (<http://www.rvc.ac.uk>).

Researchers at the **Smithsonian Conservation Biology Institute, Front Royal, VA, the University of Maryland, Department of Biology, MD, and the University of Massachusetts, Department of Environmental Conservation, MA, USA**, have tracked movements of Mongolian gazelles in the eastern steppes of Mongolia with GPS collars. They analysed the tracking data in combination with satellite imagery of vegetation productivity to better understand spatiotemporal changes in the gazelles' habitat and the underlying behavioural mechanisms that drive their nomadic long-distance movements (<http://nationalzoo.si.edu/scbi/>, <http://biology.umd.edu>, <http://eco.umass.edu>). The University of Massachusetts is further involved in conducting research on distribution, diet and population dynamics of saiga in Mongolia.

The **University of Montana, College of Forestry and Conservation, MT, USA**, has conducted research into the causes and consequences of grassland degradation in Qinghai Province, China by linking ecological measurements directly to actions by pastoralists, taking cultural norms, economic incentives, and policies of central and provincial governments into account. In addition to biophysical attributes, livestock density and pasture usage patterns have been quantified. Previous work has included research on argali in China, Afghanistan, Mongolia, and Tajikistan (<http://www.cfc.umt.edu>). The **Division of Biological Sciences, Department of Forestry and Conservation** focuses on human-wildlife interactions, particularly the impact of warming temperatures on the biology and conservation of wild yak on the Qinghai-Tibet Plateau, China, and on understanding factors assuring long-distance migrations beyond the boundaries of protected areas concentrating on saiga in Mongolia (<http://bergerlab.dbs.umt.edu>).

The **University of Veterinary Medicine Vienna, Research Institute of Wildlife Ecology, Austria**, in collaboration with the ITG and other NGOs has provided scientific advice to the reintroduction of the Przewalski's horse to the Dzungarian Gobi desert, Mongolia. Research has been conducted among others on understanding interaction between wild and domestic horses, kulan and wolves by studying their behaviour, habitat use, feeding ecology and water use, movement patterns and competition with livestock. Further research has focused on wild camels in Mongolia (habitat use, diseases transfer between wild and domestic camels), and cheetah and onager in the Islamic Republic of Iran (range and habitat use, human-onager conflict, <http://vmutpp.vu-wien.ac.at>).

The **Wildlife Conservation Research Unit, University of Oxford, Department of Zoology, UK**, has carried out preliminary surveys and interviews with local communities to establish evidence on snow leopard presence in China and strengthen the capacity of Tashikuergan Nature Reserve by providing both equipment and training for staff in GPS use, data recording, transect based methods, distance sampling, sign surveys, and camera trapping in collaboration with the Xinjiang Forestry Authority and the State Forestry Authority. Other wildlife surveys have been carried out, including on Marco Polo argali (<http://www.wildcru.org>).

International programmes/ initiatives

Central Asian Countries Initiative for Land Management

The Central Asian Countries Initiative for Land Management (CACILM) is a multi-country partnership programme between Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan and international donors including GEF, ADB, UNDP, and GIZ to work towards sustainable land management, reverse land degradation, and adaptation to climate change, water management and conservation of biological diversity (<http://www.adb.org>, Fabian *et al.* 2010), planned as 10-year programme (2007-2016).

CACILM's goal is the restoration, maintenance, and enhancement of the productive functions of the land in Central Asia, leading to improved economic and social well being. Within the CACILM framework, each of the countries has developed a National Programming Framework for Sustainable Land Management, which defines and describes the problems of land degradation, analyses the natural and human-made causes of land degradation in the unique historical and cultural contexts, and presents a prioritised programme of projects and technical assistance, and related concept papers.

Environment and Security Initiative

The Environment and Security Initiative (ENVSEC) was established in 2003 by OSCE, UNDP, and UNEP to assess and address environmental problems, which threaten or are perceived to threaten security, societal stability and peace, human health and/or sustainable livelihoods, within and across national borders in conflict prone regions of south eastern Europe, the southern Caucasus and Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan). The Initiative collaborates closely with governments, particularly foreign, defence and environment ministries, national experts and NGOs. ENVSEC seeks to identify environment and conflict hotspots by carrying out desk and field assessments, preparing reports and maintains a web site to draw attention of politicians and people to situations and sites where risks are high, by raising awareness, building capacities and strengthening institutions, and support actions for addressing security-relevant environmental problems (<http://www.envsec.org>, <http://envsec.grid.unep.ch>).

In 2004, the North Atlantic Treaty Organization (NATO) became an associated member of the Initiative, and since then coordinates with ENVSEC its environmental activities aiming at enhancing security in vulnerable regions. In 2007, the United Nations Economic Commission for Europe (UNECE) and the Regional Environmental Center for Central and Eastern Europe (REC, UNEP 2011) joined the Initiative. The key decision-making body of the Initiative is the ENVSEC Management Board, which is composed of representatives from each of the partner organisations, who chair it in turn annually.

In Central Asia, ENVSEC has based initial work on regional consultations to define priorities. After the Ferghana Valley and the Eastern Caspian, a third assessment focuses on the Amudarya river basin (UNEP 2011). The ENVSEC contact for Central Asia is based at the UNDP Regional Centre in Bratislava, Slovakia.

Green Bridge Partnership Program

The Green Bridge Partnership Program (GBPP) is an initiative intended to foster green economic growth in Central Asia and the wider region supported by international institutions and the private sector, and the facilitation of technology transfer, knowledge exchange, and financial support for the implementation of investment. The Program is constituted as an independently governed

international organisation based on voluntary participation and contribution. Membership is accessed through partnership arrangements (<http://gbpp.org>).

The GBPP is developed and promoted by the Government of Kazakhstan and an outcome of two major regional ministerial consultative processes. In 2010, the Sixth Ministerial Conference on Environment and Development in Asia and the Pacific held in Astana, Kazakhstan, endorsed the Astana Green Bridge Initiative, proposed by the Government of Kazakhstan to link the European and Asia-Pacific regions towards achieving sustainable development, by leveraging green economic growth. Subsequently, the Government of Kazakhstan developed and launched the GBPP at the Seventh Ministerial Conference “Environment for Europe”, held in Astana in 2011.

The GBPP’s main objective is to facilitate green growth activities across the region. The Program intends to act as a knowledge hub (to facilitate education, disseminate information and communicate learning), and a regional facilitator and international contributor to the development and adoption of clean technologies. The development of innovative investment solutions for tangible and bankable projects in key sectors is seen as critical to the sustainable growth of green economy. Five sectors have been identified for priority action by the GBPP, including water resource management, sustainable energy access, food security and agriculture, sustainable urban systems, and climate risk resilience.

The key programme areas identified in the GBPP are: national and international governance strengthening; information infrastructure for partnership, awareness raising and education; promotion of green business and green technologies; financial and economic mechanisms; improving standards for a green economy; and intervention in specific sectors (water; mountain and other ecosystems; eco-efficient use of natural resources; sustainable energy; food security and sustainable agriculture; sustainable urban infrastructure and transport and green construction; adaptation to climate change and preparedness for natural disasters, <http://www.unescap.org>).

International Consortium on Combating Wildlife Crime

The International Consortium on Combating Wildlife Crime (ICCWC) is a collaborative effort created in 2010 by the CITES Secretariat, INTERPOL, the United Nations Office on Drugs and Crime (UNODC), WB and the World Customs Organization (WCO), working to bring coordinated support to the national wildlife law enforcement agencies and to the sub-regional and regional networks that act in defence of natural resources. ICCWC mainly works for, and with, the wildlife law enforcement community, seeking to support development of law enforcement that builds on socially and environmentally sustainable natural resource policies, while taking into consideration the need to provide livelihood support to poor and marginalised rural communities. The CITES Secretariat in Geneva, Switzerland, chairs the alliance (<http://www.cites.org>).

ICCWC aims to provide support on a world-wide basis and is not restricted to a particular species or groupings of species. A first product of the consortium is the development of a Wildlife and Forest Crime Analytic Toolkit, published in 2012 (UNODC 2012), intended to serve as an initial entry point for national governments, international actors, practitioners and scholars to better understand the complexity of wildlife and forest crime, and to serve as a framework around which a prevention and response strategy can be developed.

International Fund for Saving the Aral Sea

The International Fund for Saving the Aral Sea (IFAS) was established in early 1990s by Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, aiming at implementing practical measures and programmes to overcome the impacts of the Aral Sea crisis and to improve environmental and socio-economic conditions in the Aral Sea Basin (<http://www.unece.org>). One of IFAS’ main activities is the Aral Sea Basin Programme (ASBP, see below) the implementation of which is funded by the governments of the member states and outside funding which has come from several international donors, including WB, ADB, EU, USAID, GIZ, and SDC, as well as the Governments of Switzerland, Japan, Finland, Norway and others (EC IFAS 2010). The chairmanship of the Executive Committee of IFAS (EC IFAS) is rotating, since 2009 it has been in Almaty, Kazakhstan (EC IFAS 2010).

In 1993, the Interstate Commission for Sustainable Development (ICSD) with Headquarters in Ashgabat, Turkmenistan, was established under IFAS with the mandate to develop and coordinate the implementation of a regional sustainable development strategy and to coordinate the implementation of environmental conventions with a transboundary dimension in Central Asia (<http://www.unece.org>). The Commission consists of representatives from environmental ministries and agencies, and from ministries of economy and science. The Commission allows participation of civil society organisations as observers and cooperates with youth environmental networks of Central Asia (Zoï Environment Network 2012). Over the last decade, the Commission produced themed reports on emerging environmental and development issues such as renewable energy, sound chemicals management, atmospheric brown cloud and stability of mountain lakes, and provided inputs to the Global Environment Outlooks 4 and 5⁴⁰ (2007 and 2012). The executive body of the ICSD is the Secretariat and the Scientific Information Center (SIC) with its branches in each of the Central Asian member states (SIC/UNEP 2007).

In 2001, ICSD with support from UNEP, ADB and UNDP coordinated the development of a Regional Environment Action Plan (REAP, UNEP 2001, see below) and was entrusted with the task of its implementation. The REAP focuses on regional problems in the fields of air and water pollution, land degradation, waste management, and mountain ecosystem degradation and covers high priority transboundary environmental issues in the region.

In 2006, initiated by and under the leadership of the ICSD, the Framework Convention on Environmental Protection for Sustainable Development in Central Asia was adopted to address the need for strengthened regional environmental cooperation in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan). The Convention includes articles on environmental protection and sustainable development, monitoring and assessment, protection of atmospheric air, protection of waters and sustainable use of water resources, conservation and rational use of land resources, waste management, conservation of mountain ecosystems, conservation of biological diversity, cooperation in emergency situations, scientific and technical cooperation, exchange of and access to information, and public participation. Turkmenistan was chosen as Depositary for the Convention, and tasked to work on registering it at the UN Secretariat. Currently, the countries of Kyrgyzstan, Tajikistan and Turkmenistan are Signatories. The Convention will take effect after the accession of Kazakhstan and Uzbekistan. UNEP acts as an Interim Secretariat (<http://www.rrcap.ait.asia>).

In 2007–2008, the Commission formulated a Sub-Regional Strategy on Sustainable Development of Central Asia, which is pending approval. The Strategy supported the initiative of Kyrgyzstan and Tajikistan to establish the Regional Mountain Centre of Central Asia in Bishkek in 2007, which promotes cooperation for mountain ecosystem conservation, sustainable use and improved socio-economic conditions of the mountain people (Zoï Environment Network 2012).

In 2009, the ICSD produced a draft regional strategy on adaptation to climate change. Further, the Commission facilitated and supported the Green Bridge Initiative, which aims to promote partnership among Europe, Asia and the Pacific to create an environment for introducing green economy principles.

Private sector

The Central Asian region holds abundant mineral deposits (e.g. oil & gas, gold, copper, coal, uranium, iron, lead), the exploration, extraction and transport of which potentially cause a heavy burden for migratory and non-migratory wildlife in the region if negative impacts are not managed adequately. Associated with an influx of work force in often previously pristine landscapes, industries cause large-scale disturbance, habitat degradation and loss; associated infrastructure puts free movements of wildlife at risk.

A vast number of national and international corporations work in the extractive industry and associated infrastructure sector, which are major stakeholders in forming the future of migratory mammals in the region. International corporations include but are not limited to Rio Tinto, Gazprom,

⁴⁰ Global Environment Outlooks are global state of the environment reports periodically issued by UNEP.

China National Petroleum Corporation, Korean Gas Corporation, Korean National Oil Company, PetroVietnam, Petronas, Tethys Petroleum, and many others. Besides large industrial mining the impact of small scale artisanal mining, e.g. for gold, should not be overlooked (Schaller *et al.* 2005).

While industry developments are an emerging threat to wildlife they can also become part of the solution. In Oyu Tolgoi, Mongolia, the world's foreseen largest copper mine, national and international support has resulted in an unprecedented aerial point sampling survey of the South Gobi desert in an attempt to develop a baseline for a biodiversity offset strategy.

Another important stakeholder of the private sector is the tourism industry, including national and international trophy hunting companies. Community based ecotourism can generate sustainable income from consumptive (i.e. sustainable hunting) and/or non-consumptive use (e.g. photo-tourism) of wildlife or pristine landscapes and provide an incentive for their conservation. However, the profit margin for ecotourism in Central Asia is likely not comparably with what has been experienced in African countries.

Regional transport infrastructure development initiatives

Several multilateral and multi-donor initiatives are underway in Central Asia aimed at modernising and expanding the transport network of the region with potential negative impacts for migratory mammals. Heavy used roads and railroads (particularly when fenced) threaten the connectivity of critical habitat and cause barriers to movements. New roads and railroads make previously remote and often inaccessible land reachable, encourage the establishment of new settlements and facilitate illegal hunting and trade of endangered wildlife.

Central Asia's geo-economic location on the crossroads between the major and growing world markets of Europe and South-East Asia and its wealth in mineral resources carries high potential for economic growth. However, besides liberalisation of trade policy (aimed for by among others the accession to the WTO, see above), the movement of transport equipment and goods through connecting countries needs to be cost effective (ADB 2006). Main transport routes and corridors are identified in regional agreements by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the United Nations Economic Commission for Europe (UNECE) in the Intergovernmental Agreement on the Asian Highway Network (entry into force 2005), European Agreement on Main International Traffic Arteries (1975) as well as under the framework of the Commonwealth of Independent States, the Transport Corridor Europe-Caucasus-Asia (TRACECA, 1993), the Economic Cooperation Organization (ECO) and the Central Asia Regional Economic Cooperation (CAREC) programme. International rail networks are determined by the European Agreement on Main International Railway Lines (1985), the Intergovernmental Agreement on the Trans-Asian Railway Network (entry into force 2009), and under the framework of the Organization for Cooperation of Railways, TRACECA and ECO (Kulipanova 2012).

Asian Highway Network and Trans-Asian Railway

The Asian Highway, formalised through the Intergovernmental Agreement on Asian Highway Network, which entered into force in 2005, is a 141,000 km network of roads running across 32 countries, including all 10 countries considered by this report (ESCAP 2003). The Network is part of the Asian Land Transport Infrastructure Development (ALTID) project, endorsed by ESCAP in 1992 aimed at promoting the development of international road transport in the region by developing highway routes of international importance and bringing the network in conformity with the Asian Highway classification and design standards.

A second pillar of the ALTID project is the Trans-Asian Railway, a network comprising 117,500 km of railway lines serving 28 member countries being built with the intention to provide international connections between the countries of the region, the Middle East and Europe. Member states negotiated the Intergovernmental Agreement on the Trans-Asian Railway Network, which entered into force in 2009 (<http://www.unescap.org>).

Central Asia Regional Economic Cooperation Program

The Central Asia Regional Economic Cooperation (CAREC) Program was initiated in 1997. It is a partnership of 10 countries (Afghanistan, Azerbaijan, China, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan) and 6 multilateral institutions (ADB, EBRD, IMF, IDB, UNDP, and WB) working to promote development through cooperation, aiming at accelerated economic growth and poverty reduction. The four core areas of cooperation are transport, trade facilitation, trade policy, and energy. Since 2001, the Program has mobilised over \$21 billion in transport, trade, and energy infrastructure investments (<http://carecprogram.org>). ADB serves as the Secretariat.

To guide the CAREC Program until the year 2020, the CAREC 2020: A Strategic Framework for the Central Asia Regional Economic Cooperation Program 2011-2020 (CAREC 2020) was endorsed in 2011. The Strategic Framework focuses on two objectives: expanding trade and improving competitiveness. Increasing transport connectivity through significant improvements and expansion of the region's infrastructure such as roads and rail systems are at the heart of the programme. In 2012, the Wuhan Action Plan was endorsed to promote effective and timely achievement of the strategic objectives laid out in CAREC 2020.

Euro-Asian Transport Links Project

The Euro-Asian Transport Links (EATL) Project started in 2002 as a joint undertaking between UNECE and ESCAP. In cooperation with designated national focal points in the Euro-Asian region, the EATL Project has identified main Euro-Asian road and rail routes for priority development and cooperation (<http://www.unece.org>). The Project aims to assist member states in strengthening their national capacities for developing interregional land and land-cum-sea transport linkages, assessing their expected impact on regional and economic development and identifying major impediments to the smooth movement of goods internationally. It focuses at both coordination and facilitation of financing of infrastructural projects, as well as facilitating and removing physical and administrative bottlenecks when crossing borders in overland transport between Europe and Asia. Thirty-nine countries participate in the Project, including all of the 10 countries considered under this report. The current Phase III of the EATL Project (2013-15) aims at making the Project overland links operational.

EATL complements other initiatives, particularly focused on the Central Asian sub-region, such as the United Nations Special Programme for the Economies of Central Asia (SPECA). This Programme has been initiated jointly by the UNECE and ESCAP in 1998, after consultations with Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan; Afghanistan and Azerbaijan joined later. It concentrates on economic issues of concern to the Central Asian republics, assisting participating countries to strengthen cooperation for their economic development through more efficient use of resources and facilitating their integration into Europe and Asia respectively. Currently SPECA is dealing with transport and border crossings, electrical energy production and distribution, water management, sub-regional cooperation on diversification of gas and oil pipeline routes, attraction of foreign direct investment into the countries of the sub-region, protection of the environment and development of small and medium enterprises (ECE ESCAP 2008).

Transport Corridor Europe-Caucasus-Asia

The Transport Corridor Europe-Caucasus-Asia (TRACECA) programme is a technical assistance programme funded by the EU that aims to develop a west-east transport corridor from Europe, across the Black Sea, through the Caucasus and the Caspian Sea to Central Asia, launched in 1993. TRACECA aims at supporting political and economic independence of the countries where it operates by enhancing their capacity to access European and world markets through alternative transport routes, encouraging further regional cooperation among partner countries and increasingly being a catalyst to attract the support of international finance institutions and private investors. In addition to an effective implementation of international agreements in the transport sector, regional projects and programmes include the improvement of rail and road safety as well as of air communications, aviation safety and air traffic management, maritime and aviation security to international standards and the improvement of inland waterway transport (<http://ec.europa.eu/>).

Today the TRACECA route comprises the transport system of the 13 member states of the Basic Multilateral Agreement on International Transport for Development of the Europe-the Caucasus-Asia Corridor: Armenia, Azerbaijan, Georgia, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Moldova, Romania, Tajikistan, Turkey, Ukraine and Uzbekistan. At present the TRACECA countries are implementing the Intergovernmental Commission Strategy for developing the Europe-Caucasus-Asia transport corridor for the period up to 2015 with the objective of delivering a sustainable, efficient and integrated multimodal transport system (<http://www.traceca-org.org>).

Review of current management/ conservation instruments

CMS instruments

CMS instruments facilitate international collaboration between Parties, international organisations and other stakeholders with regard to conservation of migratory species by negotiating formal commitments of Range States. Major contributions of existing instruments have included raising international awareness, harmonisation of research and monitoring, exchange of information and ideas and the production of publications and best-practice guidelines (UNEP-WCMC 2011).

In succession of the current Strategic Plan 2006-2014, a new Strategic Plan for Migratory Species 2015-2023 (SPMS, UNEP/CMS 2014) has been drafted for consideration by the COP at its 11th Meeting in 2014. When developing the SPMS the CBD Strategic Plan for Biodiversity and its Aichi Biodiversity Targets (see below) were used as a framework to link migratory species priorities to the relevant Aichi Targets and provide a logical and effective way for migratory species targets to be integrated into NBSAPs. Five Goals express the strategic outcomes of this plan:

1. Address the underlying causes of decline of migratory species by mainstreaming relevant conservation and sustainable use priorities across government and society
2. Reduce the direct pressures on migratory species and their habitats
3. Improve the conservation status of migratory species and the ecological connectivity and resilience of their habitats
4. Enhance the benefits to all from the favourable conservation status of migratory species
5. Enhance implementation through participatory planning, knowledge management and capacity building

Under each goal, a total of 16 performance targets specify the scale and nature of the main tangible shifts required in each case.

Besides the Strategic Plan, several different instruments exist under CMS which support the conservation of migratory species, including single or multi-species Concerted and Cooperative Actions (see above), Action Plans (sometimes accompanied by Medium Term International Work Programmes, MTIWP), and legally binding (AGREEMENTS⁴¹) or non-binding agreements (MOUs, Devillers 2008, UNEP/CMS 2011f). Both, Parties to the Convention and non-Parties can become Signatories to CMS Agreements.

Besides the CAMI, three instruments exist under CMS addressing Central Asian mammals listed on CMS Appendices and are discussed in the following, namely the Bukhara deer and Saiga MOUs and the Argali Action Plan.

CMS Bukhara deer MOU

The CMS MOU Concerning Conservation and Restoration of the Bukhara Deer (Bukhara deer MOU) came into effect in 2002 and remains open for signature indefinitely. Signatory Range States include

⁴¹ The typographical presentation of the word “agreement” in CMS texts has tended to follow a convention whereby a distinction is drawn between “AGREEMENTS” (upper case lettering, indicating instruments under Article IV.3 of the Convention), “agreements” (lower case lettering, indicating instruments under Article IV.4 of the Convention) and “Agreements” (upper case initial letter only, for use in a generic sense to apply to any or all CMS instruments established under Article IV, UNEP/CMS 2011f).

Kazakhstan, Uzbekistan, Tajikistan and the non-CMS Signatory country of Turkmenistan. The accession of Afghanistan has been proposed. Cooperating organisations, which have signed the MOU, include WWF, CIC and the UNEP/CMS Secretariat. Signatories of the MOU agree to work together to “provide strict protection for the Bukhara deer and identify, conserve and, where feasible and appropriate, restore those habitats of the species that are of importance in removing the subspecies from danger of extinction” (UNEP/CMS 2002a). The Bukhara deer became listed on Appendix I and II of CMS for populations in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Afghanistan in 2006 (UNEP/CMS 2005b).

The MOU is accompanied by an Action Plan with the objectives to i) restore range and numbers, ii) reduce mortality, and iii) enhance transboundary cooperation. Specific programmes of work detail activities, responsible agents and collaborators. During the First Meeting of the Signatories in 2011 it was decided to develop a five-year MTIWP (UNEP/CMS 2011m) following the model of the CMS Saiga MOU (see below). A reporting cycle of two years has been decided.

The MOU entrusts the UNEP/CMS Secretariat with convening regular meetings attended by representatives of the governments concerned and relevant stakeholders in order to assess the implementation of the Memorandum, including the Action Plan (UNEP/CMS 2002a). Despite the First Meeting of the Signatories held almost 10 years after signing the MOU (UNEP/CMS 2011n), the Memorandum proved to be an important tool for facilitating a coordinated approach to Bukhara deer conservation. Without much need for involvement of the UNEP/CMS Secretariat, activities have included captive breeding and reintroduction projects in Uzbekistan and Kazakhstan, and the restoration of riparian forest habitat in Tajikistan and Turkmenistan, mainly carried out through WWF (UNEP/CMS 2011m) resulting in increasing Bukhara deer numbers.

Scope for synergies and sharing of experience with CAMI and other instruments and initiatives that focus on migratory mammal conservation in Central Asia include anti-poaching measures, sustainable local development, transboundary population censuses and transboundary cooperation on species management in general.

CMS Saiga MOU

The CMS MOU Concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope (Saiga MOU) came into force in 2006 during the First Meeting of the Signatories. Originally developed only to include *Saiga tatarica*, since the Second Meeting of the Signatories in 2010, the MOU encompasses as well *S. borealis mongolica* (UNEP/CMS 2010b). MOU Signatories are the countries of Kazakhstan, Mongolia, and Uzbekistan (CMS Parties), and the Russian Federation and Turkmenistan (non-CMS Parties); the Memorandum remains open for signature indefinitely. Although not a Party to CMS nor a Signatory to the MOU, China has attended both Meetings of the Signatories and an initial dialogue with the Asian traditional medicine industry has been established. Cooperating organisation that have signed the MOU include FFI, FZS, CIC, IUCN SSC, WCS, WWF, ACBK and SCA. The MOU includes an Action Plan; MTIWPs for periods of 5 years have been adopted at the Meetings of the Signatories to support the implementation of the Action Plan and focus the work of the Range States and the saiga research and conservation community on areas of highest conservation concern. National reports have to be prepared in advance of the Meetings of the Signatories. In 2002 *S. tatarica* was listed on Appendix II of CMS, listing of *S. borealis mongolica* followed in 2008 (UNEP/CMS 2002f, UNEP/CMS 2008d).

CMS Saiga MOU Signatories agree to “provide effective protection for the saiga antelope and, where feasible and appropriate, conserve, restore and sustainably use those habitats and ecosystems that are important for its long term survival” (UNEP/CMS 2010b). The objectives of the Action Plan are to i) restore numbers of the saiga antelope to ecologically and biologically appropriate levels, ii) restore range and habitats of saiga antelope to ecologically and biologically appropriate levels, and iii) enhance transboundary and international cooperation through, *inter alia*, a regional conservation and management strategy. The implementation of the MOU and associated Action Plan/ MTIWP is assessed at regular meetings convened by or in consultation with the UNEP/CMS Secretariat.

The implementation of the first five-year MTIWP for the period of 2007-2011 was reviewed during the Second Meeting of the Signatories and an updated revised version of the programme covering

the period of 2011-2015 was endorsed (UNEP/CMS 2010a). The current MTIWP has the defined long term vision to “restore saiga populations to the point that sustainable use can again be envisioned” and the overall goal “that saiga populations show an increasing trend or their decline is halted over the next five years” (UNEP/CMS 2010a). The MTWP specifies range-wide and population-specific measures which have been prioritised by urgency (urgent, important and useful) and timescale (immediate and medium-term). The programme was also envisioned to form the basis for targeted fundraising nationally and internationally and should provide a guiding context for donor decisions (UNEP/CMS 2006a). A Third Meeting of the Signatories is planned to take place in 2015 to discuss the next five-year period.

The UNEP/CMS Secretariat, while keeping official responsibility for administering the MOU, is supported in this role by two NGOs, namely ACBK and SCA, which provide support to the technical coordination of the MOU and the associated MTIWP. Main coordination objectives include: i) provision of technical and logistic assistance to the UNEP/CMS Secretariat in preparing MOU-related meetings, ii) creation of a mechanism for communication and exchange of information between all stakeholders on MOU implementation, iii) creation of an atmosphere of cooperation and results-based monitoring, iv) active engagement in the promotion of saiga conservation internationally, and v) provision of technical advice. Details of the coordination process were among others discussed during a Workshop on the Implementation and Coordination of the Saiga Antelope (*Saiga spp.*) Memorandum of Understanding (MOU) and other CMS Instruments for Migratory Ungulates in Kazakhstan, in Astana, Kazakhstan in 2011 (UNEP/CMS 2011i). Under this mandate, the Saiga Resource Centre was created, an online database, which collects and stores saiga-related information for use by the saiga conservation community (www.saigaresourcecentre.com). Information exchange and monitoring of MOU implementation is among others facilitated by the Saiga News, a bi-annual news bulletin, published in the six languages of the saiga range countries by the SCA.

Further, several technical meetings have been convened to support the implementation of the CMS Saiga MOU. As such, the CITES Management Authority of China and the Secretariats of CITES and CMS held a Workshop on the Conservation and Sustainable use of Saiga Antelope in Urumqi, China, in 2010 with the objective to strengthen international cooperation among consumer and Range States and to provide a platform for discussion between those managing *in situ* or *ex situ* conservation activities and the Asian traditional medicine industry. The meeting resulted in a series of recommendations, which were taken on further during a side event on saiga conservation at the CITES COP 16 in Bangkok, in 2013, organised jointly by the CMS and CITES Secretariats. During the event, the Chinese Traditional Medicine Association (CTMA) stressed their interest to engage in and contribute more strongly in the conservation efforts under the CMS Saiga MOU, to enforce existing legislation and increase cooperation between in CTMA and Range States of saiga antelopes.

In 2013, the UNEP/CMS Secretariat in cooperation with FZS and FFI commissioned a study on Saiga Crossing Options - Guidelines and Recommendations to Mitigate Barrier Effects of Border Fencing and Railroad Corridors on Saiga Antelope in Kazakhstan (Olson 2013). Recommendations provided in the report are also applicable to other countries and species where similar developments take place.

Particular opportunities for synergies and sharing lessons with the CAMI encompass efforts undertaken to address poaching, illegal international trade (relevant e.g. for chiru), population monitoring, the setting of quotas for and management of sustainable hunting (relevant e.g. for argali), linear barriers to migration and mitigating negative impacts from industry development (relevant e.g. for kulan and Mongolian gazelle), and developing protocols for monitoring and control of disease outbreaks. Further, the CMS Saiga MOU generally serves as good example for a well coordinated multilateral conservation instrument.

CMS Argali Action Plan

Following the listing of the argali on CMS Appendix II in 2011, several Range States have expressed their interest in developing an instrument for transboundary conservation of argali under CMS. The Convention and GIZ commissioned a study on Gaps and Options for Enhancing Argali Conservation in Central Asia (Rosen 2012) which concluded that the combination of a MOU and Action Plan, similarly

to the CMS Saiga MOU, appears to be the most suited and promising option for pursuing the conservation of the argali across its range. During a Workshop towards Trans-boundary Cooperation for the Conservation of Argali in 2012 (UNEP/CMS 2012) Range States discussed a draft International Single Species Action Plan for the Conservation of the Argali for a period of ten years (Mallon *et al.* 2014) and formed an Argali Working Group to participate and actively contribute to the further development of the plan and its implementation.

The goal of the Action Plan is to maintain and restore argali populations to favourable conservation status throughout their range. It follows the objectives of i) stabilising argali numbers and range and reverse negative trends, ii) maintaining and restoring intact argali habitat and migration routes, iii) filling knowledge and information gaps, and iv) ensuring effective implementation of the action plan. The plan prioritises actions under each of the objectives (essential, high, medium, low), defines a time scale (immediate, short, medium, long, ongoing, completed) and responsible organisations.

A website was established to provide an information and communication platform for stakeholders to enhance cooperation and to systematically collect and share data relevant for argali conservation, the Argali Conservation Network (<http://argalinetwork.wordpress.com>). The site is maintained in close cooperation with the GIZ Regional Programme on Sustainable Use of Natural Resources in Central Asia.

Thematic overlap and scope for synergies include anti-poaching efforts, community based sustainable hunting and pasture use, equitable sharing of revenues from sustainable hunting, strengthening implementation of CITES, mitigating negative impacts from industry development and barriers to migration, disease transfer between livestock and wildlife and population monitoring.

Instruments under other MEAs

CBD

In 2010, the Tenth Meeting of the Conference of the Parties adopted a revised and updated Strategic Plan for Biodiversity for the period of 2011-2020. This Strategic Plan is the overarching framework on biodiversity, not only for biodiversity-related conventions but for the entire United Nations system. The vision for the Strategic Plan is: "Living in Harmony with Nature" where "By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people" (<https://www.cbd.int>).

Key elements of the Strategic Plan are the 20 Aichi Biodiversity Targets organised around five Strategic Goals:

- A. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
- B. Reduce the direct pressures on biodiversity and promote sustainable use
- C. To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
- D. Enhance the benefits to all from biodiversity and ecosystem services
- E. Enhance implementation through participatory planning, knowledge management and capacity building

Aichi Biodiversity Target 17 states that by 2015, each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated NBSAP, the principal instrument for implementing the CBD at the national level.

In 2010, the Secretariats of the five biodiversity-related conventions of CBD, CMS, CITES, Ramsar and the World Heritage Convention supported the adoption of an inclusive strategic plan for biodiversity and agreed that NBSAPs, when revised and updated, should cover the full range of activities needed to implement all biodiversity-related conventions, including CMS (UNEP/CMS 2011j). In addition to NBSAPs the COP urges regional organisations to consider the development or updating of Regional (supranational) Biodiversity Strategies and Action Plans (RBSAPs), as appropriate, including agreeing on regional targets, as a means of complementing and supporting national actions and of contributing to the implementation of the Strategic Plan for Biodiversity 2011-2020.

In 2011, CMS has prepared guidelines to integrate migratory species considerations in NBSAPs (UNEP/CMS 2011h). Further, the CMS MTIWP for the saiga antelope (2011-2015) and the CMS Argali Action Plan calls for developing national species specific action plans which are integrated into the NBSAPs (UNEP/CMS 2010a, Mallon *et al.* 2014).

Specific thematic programmes of work launched under the CBD which are of particular relevance for migratory species in Central Asia include the programme of work on dry and sub-humid lands (endorsed in 2000), on mountain biodiversity and on protected areas (PoWPA).

PoWPA is intended to assist Parties in establishing national programmes of work on protected areas with targeted goals, actions, specific actors, time frame, inputs and expected measurable outputs. Parties may select from, adapt, and/or add to activities suggested in the current programme of work according to particular national and local conditions and their level of development. The Islamic Republic of Iran and Kyrgyzstan have submitted PoWPA Action Plans.

CITES

At its 16th Meeting in 2013, the CITES COP, extended the validity of the CITES Strategic Vision and Action Plan 2008-2010 to 2020, including amendments to contribute to the achievement of the CBD Strategic Plan for Biodiversity 2011-2020 and relevant Aichi Biodiversity Targets and to the relevant outcomes of the United Nations Conference on Sustainable Development in 2012 (<http://www.cites.org>). The Strategic Vision and Action Plan has the twofold purpose of i) improving the working of the Convention, so that international trade in wild fauna and flora is conducted at sustainable levels, and ii) of ensuring that CITES policy developments are mutually supportive of international environmental priorities and take into account new international initiatives, consistent with the terms of the Convention. In order to achieve this purpose, three broad Goals, of equal priority, have been identified as the key components of the Strategic Vision:

1. Ensure compliance with and implementation and enforcement of the Convention.
2. Secure the necessary financial resources and means for the operation and implementation of the Convention.
3. Contribute to significantly reducing the rate of biodiversity loss and to achieving relevant globally-agreed goals and targets by ensuring that CITES and other multilateral instruments and processes are coherent and mutually supportive.

Within the framework provided by each of these goals, this Strategic Vision identifies a number of objectives to be achieved. Corresponding indicators of progress are developed by the Standing Committee and reviewed by the COP.

Several Species Trade and Conservation Decisions adopted at various COPs exist among others for Asian big cats (relevant for snow leopard and cheetah), cheetahs⁴², and Tibetan and saiga antelopes, which provide scope for synergy with the CAMI.

The Decision on saiga makes reference of the CMS Saiga MOU, Action Plan and MTIWP. As such, all Range States of the saiga (Kazakhstan, Mongolia, the Russian Federation, Turkmenistan and Uzbekistan) should fully implement the measures directed to them that are contained in the CMS MTIWP for the Saiga Antelope (2011-2015). Important consumer and trading countries of saiga parts and derivatives are encouraged to i) collaborate in managing and controlling trade in saiga antelope and to implement the actions regarding Sustainable Use and Trade contained in the MTIWP, ii) to contribute financially towards the in situ conservation of saiga antelopes in current Range States, and to iii) reduce consumption in saiga products and derivatives, for example through the use of alternative products with similar medicinal properties, and to implement in this respect the recommendations of the Workshop on the Conservation and Sustainable use of Saiga Antelope, Urumqi, China, 2010 (see above). Both, Range States and important consumer and trading countries

⁴² The CITES Secretariat has recently contracted a consultant to undertake a study of the illegal and legal trade in cheetah, and an assessment of the impact of this trade on the species in the wild. The resulting study is expected to be submitted by the Secretariat to the Animals Committee at its 27th meeting (28 April – 3 May 2014, Veracruz, Mexico) for its review and the formulation of recommendations.

should provide information on the measures and activities they undertook to implement the MTIWP via the online Saiga Resource Centre and its associated project database, managed under the auspices of CMS.

UNCCD

The Ten-Year Strategic Plan and Framework to Enhance the Implementation of UNCCD (2008–2018) aims to “forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability” (UNCCD 2007). The plan has four strategic objectives, namely to i) improve the living conditions of affected populations, ii) improve the condition of affected ecosystems, iii) generate global benefits through effective implementation of the UNCCD, and iv) mobilise resources to support implementation of the Convention through building effective partnerships between national and international actors.

The Convention’s Regional Implementation Annex for Asia calls for activities at the national, sub-regional, and regional level in the form of coordinated and integrated action programmes, which are integrated in other environmental and sustainable development strategies to maximize outputs and benefits for affected Parties. National Action Programmes (NAPs) have been prepared in several Asian countries, including China (prepared in 1996), the Islamic Republic of Iran (2004), Kazakhstan (2001, 2005-2015), Kyrgyzstan (2000), Mongolia (1997), Tajikistan (2000), Turkmenistan (1997) and Uzbekistan (1999). Currently, many NAPs are in the process of being aligned to the 10-year Strategy of the UNCCD. The implementation of the NAPs is supported by regional cooperation, including promotion of collaboration and capacity-building at national and sub-regional levels. Asian regional priorities are captured in a Regional Action Programme (RAP), which was adopted at ministerial level in 1997. The regional priorities are formulated to six Thematic Programme Networks (TPNs) that seek to link institutions and agencies together via an institutional focal point in order to promote cooperation and information sharing. The TPNs focus on the following themes:

- Desertification monitoring and assessment
- Agroforestry and soil conservation
- Rangeland management and fixation of shifting sand dunes
- Water resources management for arid-land agriculture
- Strengthening capacities for drought impact mitigation and combating desertification
- Assistance for the implementation of integrated local area development programmes

Further, the Central Asian countries Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan have prepared a Sub-Regional Action Programme (SRAP) in 2003 to harmonise, complement and increase the efficiency of national programmes (UNCCD 2003). Priority areas of sub-regional cooperation are:

- Monitoring and evaluation of desertification processes; establishment of an early warning system for drought and drought mitigation
- Improvement of water use in agriculture; combating erosion, salinization and swamp formation
- Agroforestry and management of forest resources and watersheds
- Pasture management
- Conservation of biodiversity and nature protection; development of eco- and ethnotourism
- Economic capacity building of local communities

Considerable scope for synergies in the framework of the CAMI exists in the areas of pasture/rangeland management, strengthening the economic capacity of local communities, biodiversity conservation and nature protection.

Others

Other MEAs, which partly overlap in scope with the CAMI, include but are not limited to UNFCCC (for matters related to mitigating and adapting to climate change), United Nations Educational, Scientific and Cultural Organization (UNESCO)/ World Heritage Convention (several natural sites in the Central Asian region are listed under the UNESCO, e.g. the Xinjiang Tianshan in China, Saryarka Steppe and

Lakes of Northern Kazakhstan, Uvs Nuur Basin in Mongolia and the Russian Federation, Golden Mountains of Altai in the Russian Federation, Tajik National Park/ Mountains of the Pamirs in Tajikistan), and the Framework Convention on Environmental Protection for Sustainable Development in Central Asia (once it has entered into force, see above).

Further, the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), established in 2012, aims to develop into a leading intergovernmental body for assessing the state of global biodiversity, its ecosystems and the essential services they provide to society and for strengthening capacity for the effective use of science in decision-making at all levels (<http://www.ipbes.net>). The platform intends to address the needs of MEAs that are related to biodiversity and ecosystem services by providing a mechanism recognised by both the international scientific and policy communities to synthesize, review, assess and critically evaluate relevant information and knowledge generated worldwide by governments, academia, scientific organisations, non-governmental organisations and indigenous communities. An IPBES work programme for the period of 2014-2018 has recently been prepared and the establishment of several expert groups to scope a set of regional and sub-regional assessments is currently under development, including an expert group on Europe and Central Asia. Further expert groups are planned to be formalised in future to scope thematic assessments of land degradation and restoration, invasive alien species, and sustainable use and conservation of biodiversity. IPBES is an independent intergovernmental body open to all member countries of the United Nations; from the 10 countries considered under this assessment, current members include China, Kyrgyzstan, the Islamic Republic of Iran, the Russian Federation and Tajikistan. UN partners are UNEP, UNDP, UNESCO and FAO. The IPBES Secretariat is located in Bonn, Germany.

Other national or multilateral instruments

There are various national species specific conservation strategies, bi- and multilateral agreements on the transboundary management of certain species, and national captive breeding programmes and protected areas which are of relevance to the conservation of migratory mammals in Central Asia. A list of key protected areas and transboundary conservation programmes based on the results obtained from the stakeholder surveys is provided in Annex 4 and 6. Three multilateral initiatives covering several of the assessed countries are discussed in more detail below.

Regional Environmental Action Plan for Central Asia

In 2001, the Interstate Commission on Sustainable Development (ICSD) developed with support from UNEP, ADB and UNDP the Regional Environmental Action Plan for Central Asia (REAP) for the countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan (UNEP 2001). The plan focuses on regional problems in the fields of air and water pollution, land degradation, waste management, and mountain ecosystem degradation and covers high priority transboundary environmental issues in the region. Actions are proposed for a timeframe until 2012, however, a recent study prepared under the leadership of the Scientific Information Center (SIC) on strengthening the institutional and legal basis of regional cooperation on the environment in Central Asia recommends updating the REAP in the light of the outcomes of Rio+20 and improving its implementation (<http://www.unece.org>). Scope for synergies are in the thematic overlap of addressing land and mountain ecosystem degradation (referring to the structure of the REAP from 2001).

Aral Sea Basin Programme

One of IFAS' main activities is the Aral Sea Basin Programme (ASBP) initiated in 1993, with the goal of stabilising the environment in the Aral Sea Basin, restoring the disaster zone around the lake, improving management of transboundary waters in the basin, and developing the capacity of regional organisations to plan and implement the programme. The objective of the current 3rd round of ASBP, covering the period of 2011-2015, is to improve the living conditions of the people in the region, particularly to "improve the socio-economic and environmental situation by applying the principles of integrated water resources management to develop a mutually acceptable mechanism for a multipurpose use of water resources and to protect the environment in Central Asia taking into

account the interests of all the states in the region” (EC IFAS 2010). The programme specifically works in the four directions of i) integrated use of water resources, ii) environmental protection, iii) socio-economic development, and iv) improving institutional and legal instruments.

Proposed projects under each direction with potential scope for synergies with the CAMI include: reforestation in the Aral Sea Basin (Reference number 2.1.1), regional programme for the protection of natural resources in mountain areas of Central Asia (2.1.3), establishment of a regional biodiversity monitoring system (2.2.1), conservation of endangered species of fauna and publication of a Red Book of Wild Fauna of the Aral Sea Basin (2.2.3), and improvement of grazing lands in the Aral Sea Basin (3.1.2).

Global Snow Leopard and Ecosystem Protection Program

The Global Snow Leopard and Ecosystem Protection Program (GSLEP) seeks to address high-mountain development issues using the conservation of the snow leopard as a flagship aiming to unite range country governments, non-governmental and inter-governmental organisations, local communities, and the private sector around a shared vision to conserve snow leopards and high-mountain ecosystems (Snow Leopard Working Secretariat 2013). The Program was endorsed by representatives of all 12 snow leopard range countries in 2013 at the Global Snow Leopard Conservation Forum in Bishkek, Kyrgyzstan. Partner organisations are CITES, CMS, FFI, GEF, GTI, INTERPOL, NABU, SLC, SLN, SLT, TRAFFIC, UNDP, USAID, Wildlife Conservation Research Unit (WildCRU), WCS, WB, and WWF.

The goal of the Program is to secure at least 20 snow leopard landscapes⁴³ across the species’ range by 2020. The foundation of the GSLEP Program are country specific National Snow Leopard and Ecosystems Priorities (NSLEPs) developed for each of the range countries in the course of several meetings and five Global Support Components (GSCs) prepared by international organisations to address issues that transcend national boundaries and go beyond the capacity of any one country. Priority activities are grouped in eight themes as follows:

1. Engaging local communities in conservation, including promoting sustainable livelihoods, and addressing human-wildlife conflict
2. Managing habitat and prey based upon monitoring and evaluation of populations and range areas
3. Combatting poaching and illegal trade
4. Transboundary management and enforcement
5. Engaging industry
6. Building capacity and enhancing conservation policies and institutions
7. Research and monitoring
8. Building awareness

The GSCs aim to support and assist the range countries, as needed, in the areas of wildlife law enforcement (theme 3), transboundary cooperation (4), engaging with industry (5), knowledge sharing (6), and research and monitoring (7).

A preliminary Working Secretariat has been established in Bishkek, Kyrgyzstan, (<http://www.snowleopardnetwork.org>) to coordinate activities of the range countries and the international community. Once the final Secretariat has been set up, it is anticipated to support monitoring and reporting on Program implementation including progress in allocation and utilisation of funding. Further, range countries have agreed to form a Steering Committee to guide Program implementation, regularly review its progress, and maintain political commitment to its objectives.

⁴³ Secure snow leopard landscapes are defined to:

- i) contain at least 100 breeding age snow leopards conserved with the involvement of local communities,
- ii) support adequate and secure prey populations,
- iii) have functional connectivity to other snow leopard landscapes, some of which cross international boundaries.

The mechanisms for monitoring and reporting, including indicators for Program implementation, are under development.

Opportunities for synergies with the CAMI exist in any of the themes listed above and their successful implementation would benefit a range of other species considered under this assessment. Given CMS' mandate for fostering transboundary cooperation, CMS is a lead partner in the respective GSCs. Proposed sub-components are:

1. Strengthening existing agreements and partnerships, including enhanced collaboration through international institutions
2. Supporting designation and management of landscape level transboundary conservation areas and projects
3. Supporting study exchanges between PAs of both adjacent and regionally linked range states, their managers, and communities
4. Supporting coordinated habitat management (planning), joint research and monitoring as well as facilitation of exchange of knowledge and data.

Close cooperation is recommended for any of the other GSCs and particularly theme 2) on managing habitat and prey, which considerably overlaps with the CMS Argali Action Plan. As one of the snow leopard's prey species argali share much of the same habitat.

International financial institution and private sector performance standards and principles

Equator Principles

The Equator Principles (EP) are a risk management framework, adopted by certain Financial Institutions, for determining, assessing and managing environmental and social risk in projects and is intended to provide a minimum standard for due diligence to support responsible risk decision-making. The EPs apply to all new project finance transactions globally with total project capital costs that exceed US\$ 10 million, and across all industry sectors. Jointly developed by international banks, the Principles are based on the International Finance Corporation's Performance Standards on Social and Environmental Sustainability (IFC's PS, see below) and on the World Bank Group Environmental, Health, and Safety Guidelines⁴⁴. They were launched in 2003 (EP I) and were updated in 2006 (EP II) and 2013 (EP III, <http://www.equator-principles.com>).

The Principles recognise the importance of climate change, biodiversity, and human rights, and negative impacts on project-affected ecosystems, communities, and the climate should be avoided where possible. If these impacts are unavoidable they should be minimised, mitigated and/or offset.

Financial Institutions, which have adopted the EP (EPFI), commit to implementing the Principles in their internal environmental and social policies, procedures and standards for financing projects and will not provide project finance or project-related corporate loans to projects where the client will not, or is unable to, comply with the Principles. The EP are applied to the expansion or upgrade of an existing project where changes in scale or scope may create significant environmental and social risks and impacts, or significantly change the nature or degree of an existing impact; they are not intended to be applied retroactively. Currently 79 financial institutions in 35 countries have officially adopted the EP, covering over 70% of international project finance debt in emerging markets.

When a project is proposed for financing, the EPFI, as part of its internal environmental and social review and due diligence, categorises it based on the magnitude of its potential environmental and social risks and impacts. Such screening is based on the environmental and social categorisation process of IFC. For all Category A and B projects⁴⁵, the EPFI requires the client to conduct an

⁴⁴ The EP are managed and governed by the adopting institutions and are not part of an IFC or WB initiative or programme. However a close relationship with the IFC is maintained.

⁴⁵ Category A – Projects with potential significant adverse environmental and social risks and/or impacts that are diverse, irreversible or unprecedented;

assessment process to address the relevant environmental and social risks and impacts of the proposed project and propose measures to minimise, mitigate, and offset adverse impacts. For Category A, and as appropriate, Category B projects, the assessment includes an Environmental and Social Impact Assessment (ESIA). Further, the EPFI requires that the assessment process evaluates compliance with the applicable IFC's PS and the World Bank Group Environmental, Health, and Safety Guidelines for projects located in countries deemed not to have robust environmental and social governance, legislation systems and institutional capacity designed to protect their people and the natural environment (Non-Designated Countries). For projects located in Designated Countries, the assessment process evaluates compliance with relevant host country laws, regulations and permits that pertain to environmental and social issues.

The EP have promoted convergence around common environmental and social standards. Multilateral development banks, including EBRD (see below), and export credit agencies through the Organisation for Economic Co-operation and Development (OECD) Common Approaches are drawing on the same standards as the EP. The Principles have also helped spur the development of other responsible environmental and social management practices in the financial sector and banking industry and have provided a platform for engagement with a broad range of interested stakeholders, including non-governmental organisations, clients and industry bodies.

Regional Working Groups develop and implement strategies to communicate, support and train, in cooperation with multilateral institutions and development agencies/ banks, other financial institutions worldwide, which undertake project finance and could benefit from adopting the EP. The Biodiversity for Banks (B4B) programme, co-launched by the EP Association, WWF and the Business and Biodiversity Offsets Program (BBOP, see below), is designed to help financial institutions overcome the challenges of incorporating risks associated with biodiversity and ecosystem services into their lending decisions.

International Finance Corporation Performance Standard 6

The International Finance Corporation (IFC) is an international financial institution offering investment, advisory, and asset management services to encourage private sector development in developing countries. The IFC was established in 1956 as the private sector arm of the World Bank Group to advance economic development by investing in strictly for-profit and commercial projects, which reduce poverty and promote development. It coordinates its activities with the other institutions of the World Bank Group but is legally and financially independent (<http://www.ifc.org>).

The Sustainability Framework of IFC articulates the institution's strategic commitment to sustainable development and is part of their approach to risk management. The Framework promotes sound environmental and social practices and encourages transparency and accountability. Part of the Sustainability Framework, are IFC's Performance Standards (PS), which have become globally recognised as a benchmark for environmental and social risk management in the private sector.

Originally adopted in 2006, the Sustainability Framework has been recently updated and since 2012 IFC's PS 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources defines the client's responsibilities for demonstrating no net loss and a net gain of biodiversity for impacts on natural and critical habitat, respectively. PS 6 recognises that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. The objectives of PS 6 are i) protection and conservation of biodiversity, ii) maintenance of benefits from ecosystem services, iii) promotion of sustainable management of living natural resources, and iv) integration of conservation needs and development priorities. The requirements set out in this PS were guided by CBD (IFC 2012).

Category B – Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures; and
 Category C – Projects with minimal or no adverse environmental and social risks and/or impacts.

As a matter of priority, the client should seek to avoid impacts on biodiversity and ecosystem services. When avoidance of impacts is not possible, measures to minimise impacts and restore biodiversity and ecosystem services should be implemented (mitigation hierarchy). For the protection and conservation of biodiversity, the mitigation hierarchy includes biodiversity offsets⁴⁶, which may be considered only after appropriate avoidance, minimisation, and restoration measures have been applied. A biodiversity offset should be designed and implemented to achieve measurable conservation outcomes that can reasonably be expected to result in no net loss and preferably a net gain of biodiversity; a net gain is required in critical habitats.

Critical habitats are areas with high biodiversity value, including i) habitat of significant importance to Critically Endangered and/or Endangered species (as listed under IUCN), ii) habitat of significant importance to endemic and/or restricted-range species, iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species, iv) highly threatened and/or unique ecosystems, and/or v) areas associated with key evolutionary processes.

In areas of critical habitat, the client can only implement project activities if he can demonstrate that i) no other viable alternatives within the region exist for development of the project on modified or natural habitats that are not critical, ii) the project does not lead to measurable adverse impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values, iii) the project does not lead to a net reduction in the global and/or national/regional population of any Critically Endangered or Endangered species over a reasonable period of time, and iv) a robust, appropriately designed, and long term biodiversity monitoring and evaluation programme is integrated into the client's management programme.

In such cases where a client is able to meet these requirements, the project's mitigation strategy will be described in a Biodiversity Action Plan, which has to be designed to achieve net gains of those biodiversity values for which the critical habitat was designated.

In 2013, the Cross Sector Biodiversity Initiative (CSBI) was launched to develop and share good practices and practical tools to apply the new IFC's PS 6. CSBI is a partnership between the International Petroleum Industry Environmental Conservation Association (IPIECA), the International Council on Mining and Metals (ICMM), and the Equator Principles Association aiming to share experiences and to create a culture of learning and continuous improvement. Although the CSBI is an industry forum, the group seeks to engage with non-industry groups who have interest and experience in offsets and the biodiversity mitigation hierarchy included in IFC's PS 6.

European Bank for Reconstruction and Development Performance Requirement 6

EBRD is an international financial institution that supports projects from central Europe to Central Asia and southern and eastern Mediterranean. Investing primarily in private sector clients whose needs cannot be fully met by the market, the bank fosters transition towards open and democratic market economies. EBRD provides project financing for banks, industries and businesses, both new ventures and investments in existing companies (<http://www.ebrd.com>).

EBRD seeks to ensure that the projects they finance are socially and environmentally sustainable, respect the rights of affected workers and communities and are designed and operated in compliance with applicable regulatory requirements and good international practices. To help clients and their projects achieve this, in 2008 the Bank has defined its own Performance Requirements (PR) based on IFC's PS as part of their Environmental and Social Policy (currently under review) covering key areas of environmental and social issues and impacts.

EBRD PR 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources stresses that EBRD recognises the need for the protection and conservation of biodiversity in the context of projects in which it invests. The Bank supports a precautionary approach to the conservation and sustainable use of biodiversity and the management of impacts upon it in line with

⁴⁶ The IFC defines biodiversity offsets as measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate avoidance, minimisation and restoration measures have been taken.

the Rio Declaration and CBD. In pursuing these aims, the Bank is guided by and supports the implementation of applicable international law and conventions and relevant EU Directives. The objectives of PR 6 are (EBRD 2008) to:

- Protect and conserve biodiversity
- Avoid, minimise and mitigate impacts on biodiversity and offset significant residual impacts, where appropriate, with the aim of achieving no net loss or a net gain of biodiversity
- Promote the sustainable management and use of natural resources
- Ensure that indigenous peoples and local communities participate appropriately in decision-making
- Provide for fair and equitable sharing of the benefits from project development and arising out of the utilisation of genetic resources
- Strengthen companies' license to operate, reputation and competitive advantage through best practice management of biodiversity as a business risk and opportunity
- Foster the development of pro-biodiversity business that offers alternative livelihoods in place of unsustainable exploitation of the natural environment.

PR 6 applies to projects in all types of habitats, irrespective of whether they have been disturbed or degraded previously, or whether or not they are protected or subject to management plans. Critical habitat must not be converted or degraded. Consequently, in areas of critical habitat, the client will not implement any project activities unless a range of specific conditions are met. Habitats may be considered as critical due to i) their high biodiversity value, ii) their importance to the survival of Endangered or Critically Endangered species, iii) their importance to endemic or geographically restricted species and subspecies, and iv) their importance to migratory or congregatory species.

New facilities or business activities financed by EBRD must be designed to meet the performance requirements from the outset. If a proposed business activity relates to existing facilities that do not meet the requirements at the time of approval, the client is required to adopt and implement a satisfactory Environmental and Social Action Plan (ESAP). If the bank provides general corporate finance, working capital or equity financing for a multi-site company, the client is required to develop and implement an ESAP at the corporate level (as opposed to the site-specific level). This must be both technically and financially feasible, and deliverable within an acceptable time frame.

Business and Biodiversity Offsets Programme

The Business and Biodiversity Offsets Programme (BBOP) is an international collaboration between companies, financial institutions, government agencies and civil society organisations. The members are developing best practice in following the mitigation hierarchy (avoid, minimise, restore, offset) to achieve no net loss or a net gain of biodiversity (<http://bbop.forest-trends.org>).

BBOP has developed a Standard on Biodiversity Offsets, agreed by an international, multi-stakeholder group, which was published in 2012 (BBOP 2012). The Standard supports transparent assessment and reporting of progress in the application of the mitigation hierarchy, including design and implementation of biodiversity offsets consistent with the BBOP Principles. Accompanying Guidance Notes offer additional detail such as an interpretation of the Standard's indicators, key questions for assessment, and factors to consider in assessing conformance.

Further BBOP published a series of handbooks (e.g. offset design, cost benefit, offset implementation), other resource papers (e.g. no net loss & loss-gain calculations, non-offsetable impacts, biodiversity offsets and impact assessment, biodiversity offsets and stakeholder participation) as well as several case studies of pilot projects. The Standard will be updated based on field trials and a consultation process and is anticipated to be re-released by 2016.

The CBD is set to continue its discussion of biodiversity offsets under 'biodiversity safeguarding' at the Working Group on Review of Implementation of the Convention in June 2014 and at CBD COP12 in October 2014 (<http://bbop.forest-trends.org>). IUCN is developing a policy on biodiversity offsets by November 2014 (<http://bbop.forest-trends.org>) and the EU is developing a No Net Loss Initiative for 2015 (<http://ec.europa.eu>).

Commonalities of conservation efforts

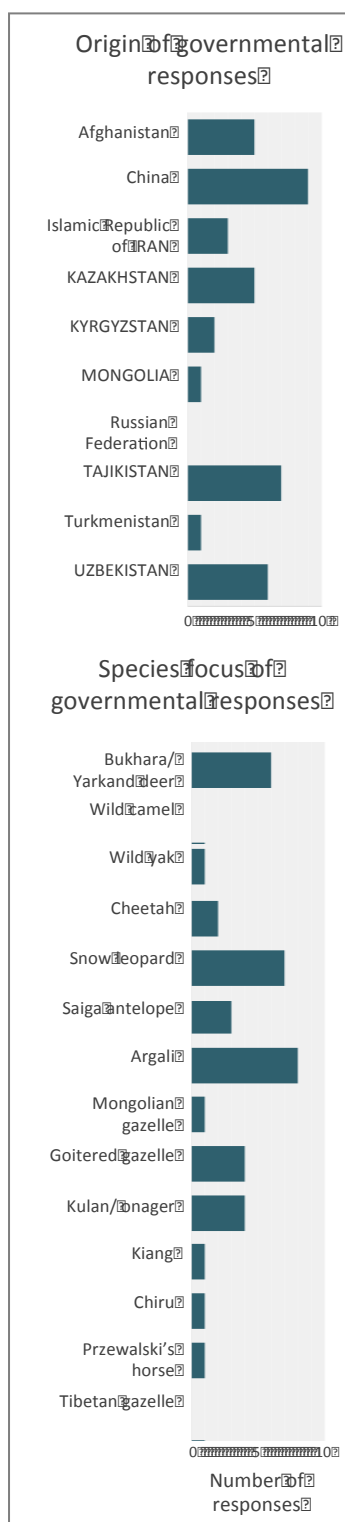


Figure 2: Origin and species focus of responses received from governmental stakeholders.

In order to assess the scope of conservation measures taken to conserve migratory mammals in Central Asia, the questionnaires asked governmental and non-governmental stakeholders to provide information i) on the species their work focuses on, ii) the kind of measurements taken and iii) financial means available for the year 2013. We received a total of 39 responses from governmental representatives of all countries except the Russian Federation. The majority of responses were received from China (9), followed by Tajikistan (7), Uzbekistan (6), Afghanistan and Kazakhstan (both 5). Multiple responses per representative were allowed concerning different species, as were responses from different representatives per country (**Figure 2**). In the analysis below multiple responses per species and country were combined.

We received a total of 56 responses from 39 non-governmental stakeholders. Multiple responses per organisation were allowed concerning different countries but were combined in the analysis.

Species and country focus of stakeholders

To put the results summarised below in perspective **Figure 2** details for which species responses from governmental representatives were received. Most responses dealt with only three species, namely argali, snow leopard and Bukhara deer/ Yarkand deer. No response was received for wild camel and Tibetan gazelle (detailed information is provided in Annex 7).

Saiga, snow leopard and argali seem to have gotten the greatest attention from non-governmental stakeholders within the past 3 years. The largest number of responses per species and country was received for saiga populations in Kazakhstan (14 responses, **Figure 3**). Except for Turkmenistan, where the species' occurrence has not been confirmed in recent years, across its range a large amount of organisations responded to focus their work on the antelope. Saiga conservation in Kazakhstan was followed by snow leopard conservation in Kyrgyzstan (11), in terms of the number of stakeholders responding to work on a species in a particular country. Also, much attention seems to be given to snow leopards in Mongolia (9) and Kazakhstan (8), followed by Tajikistan (7) and Pakistan (6). Similarly high was the number of stakeholders working on argali in Tajikistan (9), Mongolia and Kyrgyzstan (both 8), China (6) and Pakistan (5). On Mongolian gazelle a considerable number of stakeholders reported to conduct work only in Mongolia (8), similarly as for goitered gazelle (7). Other species seem to receive less attention. On kulan/ onager five stakeholders reported to work in both Kazakhstan and Mongolia, on Bukhara/ Yarkand deer the maximum number was four (Kazakhstan, Tajikistan, Turkmenistan and Uzbekistan). Despite taking into account the fewer range countries, comparably few organisations/ stakeholders seem to focus their work on cheetah (Islamic Republic of Iran: 5), wild camel (Mongolia: 5, China: 1), chiru (China: 5, India: 3), Przewalski's horse (Mongolia: 4, China: 1), Tibetan gazelle (China: 3, India: 1), wild yak (China: 2) and kiang (China: 2). Detailed information is provided in Annex 8. These results do not reflect the true numbers of organisations/ institutions working on these mammals in the countries assessed, however, possibly approximate the relationship of attention given to certain countries with

respect to certain conservation (with the exception of countries not included in this assessment: Bhutan, India, Nepal and Pakistan).

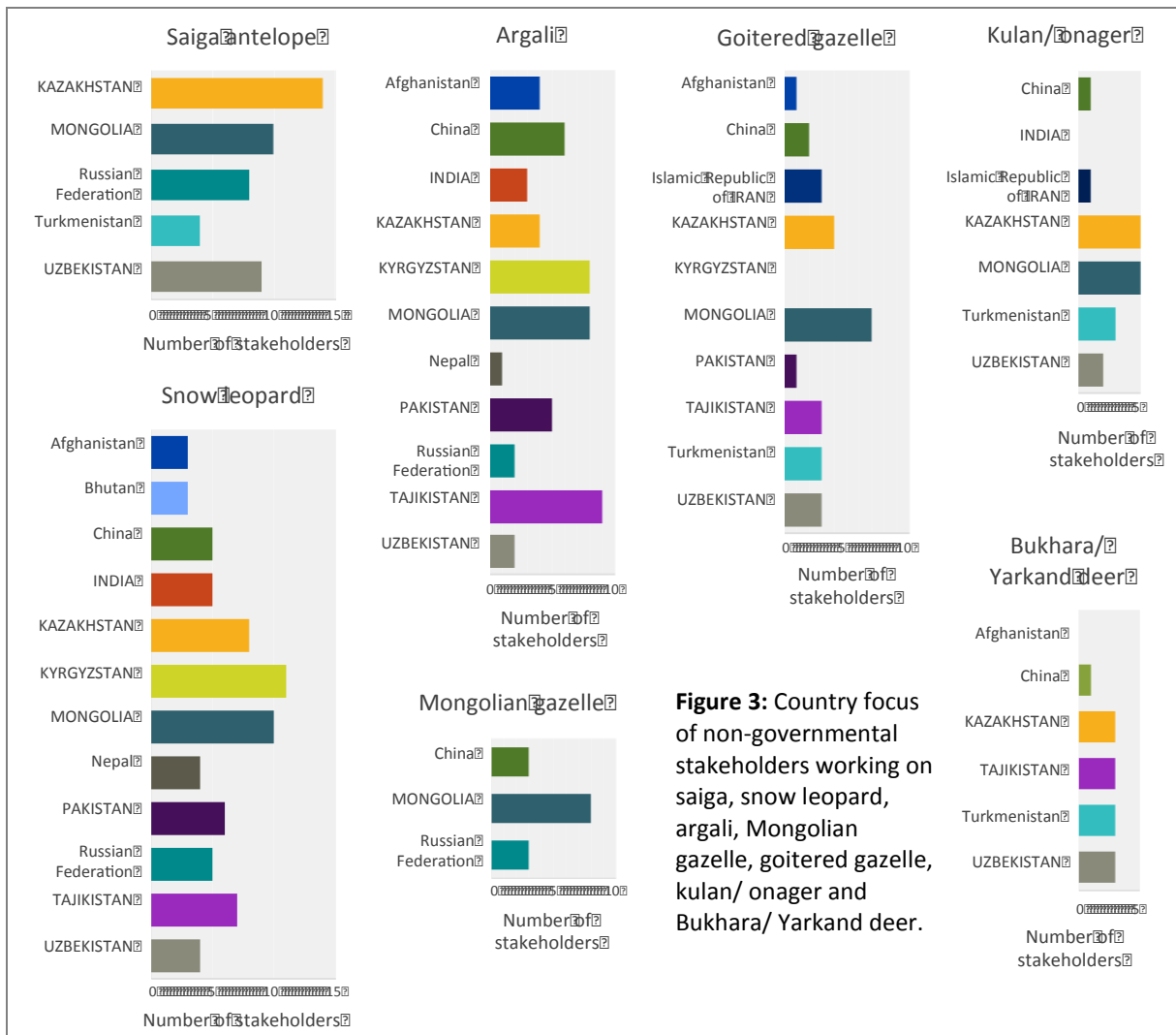


Figure 3: Country focus of non-governmental stakeholders working on saiga, snow leopard, argali, Mongolian gazelle, goitered gazelle, kulan/ onager and Bukhara/ Yarkand deer.

Conservation measurements

The survey asked stakeholders to provide information on their work in the categories of i) research, ii) awareness raising and education, iii) law enforcement, iv) capacity development, v) community support and vi) others (**Figure 4**). There are obviously differences in the response obtained by and for different countries and for different species. Here, only the combined results for each category are summarised for both, governmental and non-governmental stakeholders (detailed information is provided in Annexes 7 and 9).

The majority of both, governmental (31 responses) and non-governmental stakeholders (38), reported conducting research on species population monitoring. Second ranking was research on species biology for governmental representatives (27) and on the socio-economic background for non-governmental respondents (34), the latter representing a sharp difference between the two groups. Also high ranking among non-governmental respondents was research on migration patterns/ routes and habitat requirements (29 both). Less attention by both groups was paid to research on climate change impacts on species (10 governmental/ 12 non-governmental responses) and on local people (6/7). Other research areas than asked in the survey included national and international illegal trade, human/ sustainable use of wildlife and habitats, impact of habitat fragmentation on wildlife, human wildlife conflicts, socio-cultural and political background and resource partitioning among species.

A large number of stakeholders reported conducting awareness raising and education targeting the general public (28/35); only targeting governmental authorities ranked higher in the group of non-governmental respondents (39). Targeting adults in local communities (24/ 32) ranked higher than targeting children (19/27) in both groups and it seems that governments pay greater attention to the private sector (19) compared with non-governmental stakeholders (17). Other groups targeted included the scientific and wider conservation community (students in particular), NGOs and international military forces (Afghanistan).

In the group of governmental respondents, measurements taken to support law enforcement focused rather evenly on rangers (30), police (28), border security (23), customs (21) and local communities (25), while in the responses received from non-governmental stakeholders, there were distinct differences. The majority reported supporting and collaborating with rangers (37) and local communities (34) versus the remaining groups (13-18). Besides these target groups, respondents mentioned to provide support to CITES authorities and judiciary, national governments and local governmental authorities, reserves, the private sector (e.g. hunting concessions), NGOs and community based wildlife management organisations.

Both governments and non-governmental respondents seem to focus much of their capacity development efforts on science (25/41), legislation (24/27) and protected areas (25/32), whereas science was clearly favoured by non-governmental stakeholders. Great attention was further given in both groups to supporting sustainable livestock grazing (18/21) and mitigation of human-wildlife conflicts (18/23). Also rather high ranking among non-governmental respondents was capacity support for sustainable hunting and for mitigating impacts from industry and infrastructure development (both 20). Similar to the results obtained for research, comparably little emphasis seems to be placed on supporting climate change adaptation for species (12/7) and local communities (7/10). Other areas of capacity development mentioned by respondents were tranquilization and wildlife health monitoring.

While the majority of non-governmental stakeholders reported supporting sustainable livelihoods for communities (36), this was the area receiving least attention from governmental respondents in the category of community support (14). This is somewhat in line with the results obtained for socio-economic research above. Compared with other categories, fewer governmental respondents reported to support community involvement overall.

Comparably few stakeholders reported to take other conservation measures, such as captive breeding (12/11), and translocation and reintroduction (13/11). A range of other measures was mentioned, including reducing infectious and other disease risks and impacts, assisting in sustainable utilisation and promoting sustainable, legal and traceable trade in wildlife, provision of forage for wildlife when required and maintaining a rehabilitation centre for diseased animals.

A total of 30 non-governmental stakeholders reported to be involved in the implementation of transboundary initiatives, with a majority focusing on snow leopard (16), saiga (13) and argali (11, **Figure 5**). No transboundary initiatives were reported to focus on wild yak, kiang and Tibetan gazelle. Most frequently involved in transboundary initiatives were the countries of Kazakhstan (17), Kyrgyzstan (15), Mongolia (15), Uzbekistan (15), China (14), the Russian Federation and Tajikistan (13 both) according to the survey. Other countries mentioned included Bhutan, India, Nepal and Pakistan. Annex 10 provides a list of transboundary programmes referred to by non-governmental stakeholders. While this is encouraging, several respondents commented on the importance of strengthening transboundary cooperation. Afghanistan, as a possible range state for the Asiatic cheetah, requested to be considered in any global conservation action targeting the subspecies.

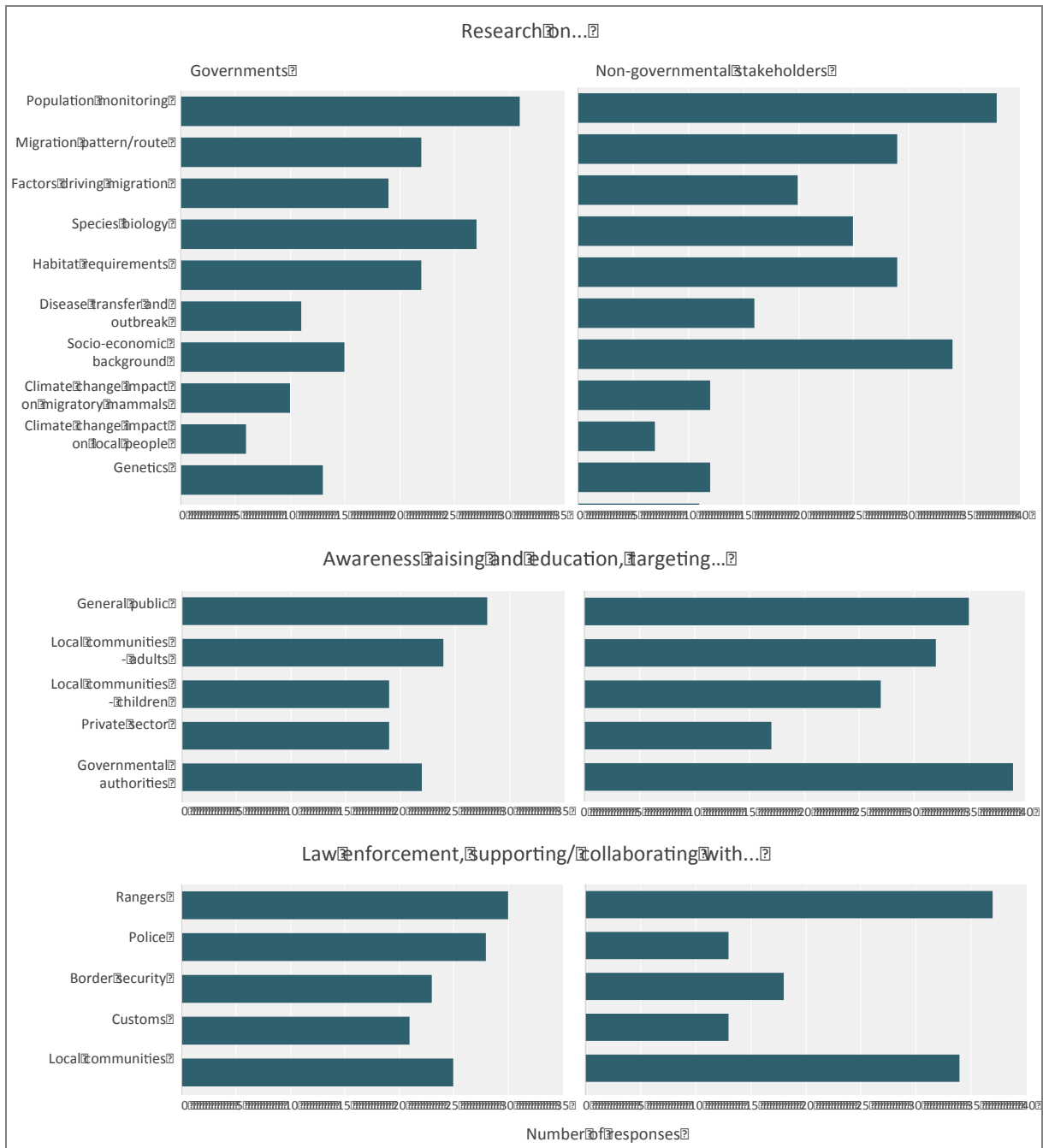


Figure 4a: Conservation measures taken by stakeholders.

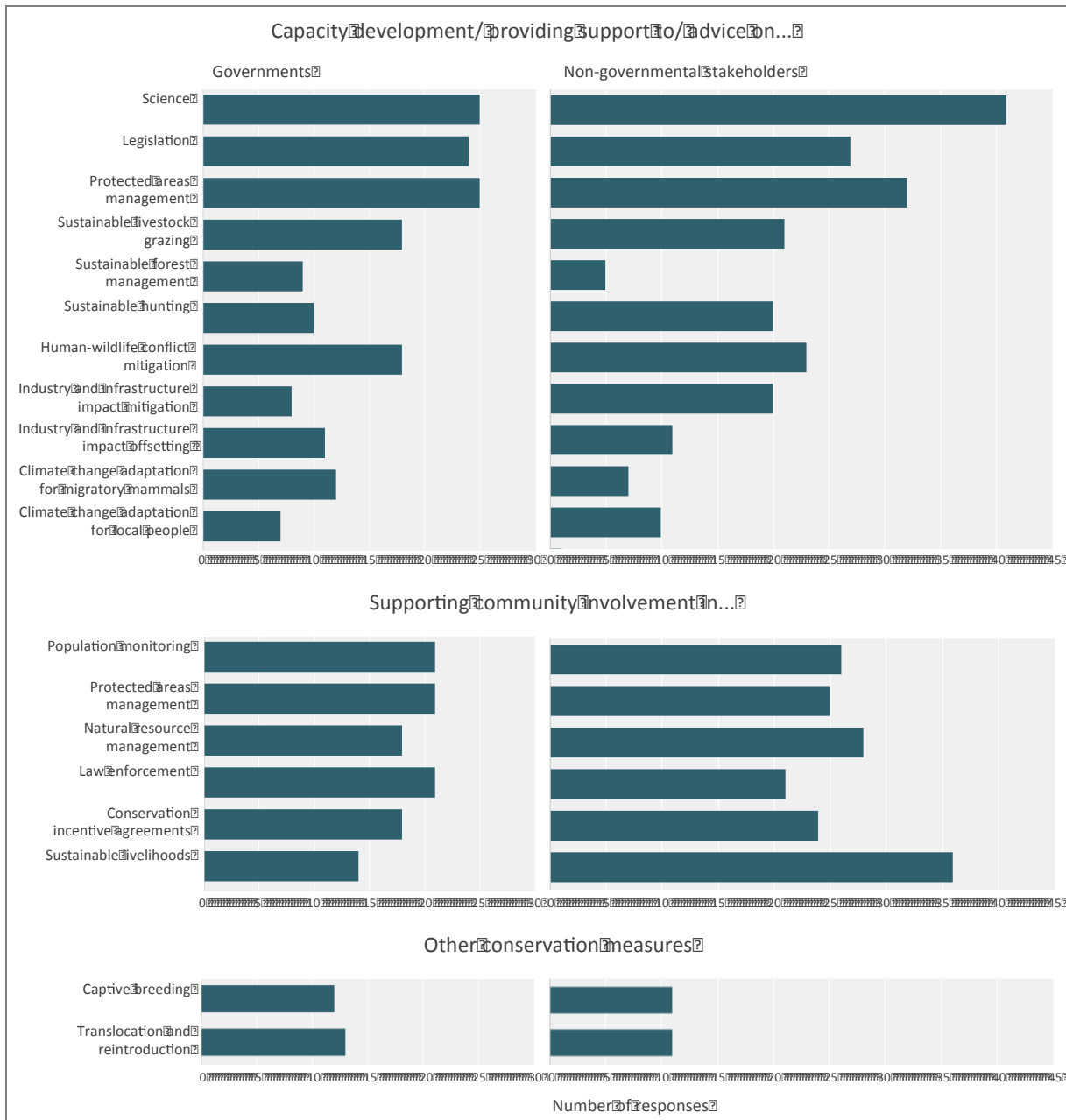


Figure 4b: Conservation measures taken by stakeholders.

Financial means

Information on annual governmental funding for 2013 allocated to migratory mammal conservation in Central Asia was received from Afghanistan, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan. The amount available varied substantially among the countries and was predominately spent on the conservation of saiga and argali, however many countries mentioned there are no separate budget lines for different species, rather the funding is allocated to conserve protected areas or several species and their habitats. Outstanding was the investment of Kazakhstan in saiga conservation with a reported annual budget of US\$ 4,500,000. Financial means for other species, such as kulan, goitered gazelle, Bukhara deer and argali were in the range of approx. US\$ 440,000 per species. Also substantial was the investment of Tajikistan in argali conservation. While about US\$ 700,000 were allocated solely for the conservation of the wild sheep (including approx. US\$ 70,000 received from national donors and approx. US\$ 300,000 from the private sector), another US\$ 200,000 were reported to be allocated to conserve the Tajik National Park and Zorkul State Nature Reserve. US\$ 150,000 were received from national donors to support the conservation of Bukhara deer in Tajikistan. Afghanistan reported state budget allocations for argali (total of US\$

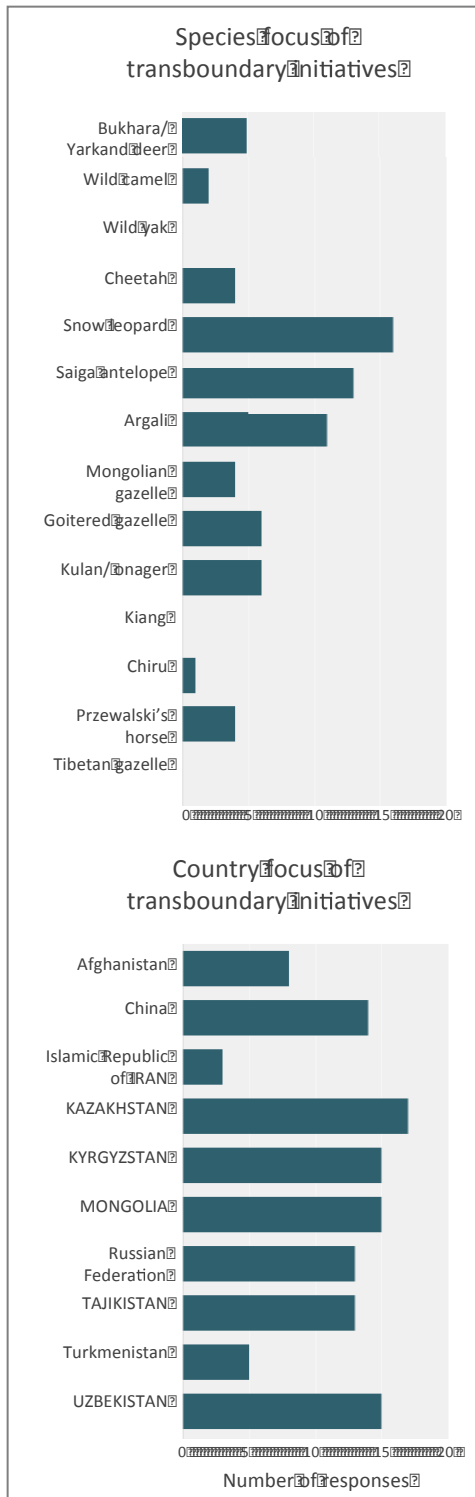


Figure 5: Species and country focus of transboundary initiatives as reported by non-governmental stakeholders.

100,000) and snow leopard (total of US\$ 190,000), whereas a total share of US\$ 180,000 was provided from non-governmental organisations and US\$ 70,000 from international donors. Kyrgyzstan reportedly spent US\$ 100,000 (including US\$ 50,000 received from international donors) on species conservation but mentioned the funding was not allocated to a particular species. While there was no national budget allocation for migratory mammal conservation in the Islamic Republic of Iran according to the respondents, US\$ 25,000 was received from international donors for conserving the cheetah and approx. another US\$ 10,000 for kulan. Uzbekistan reported it spent about US\$ 20,000 on saiga conservation.

From non-governmental stakeholders, information on their 2013 budget was received for 38 country programmes. For all organisations and countries combined this amount was about US\$ 4,100,000. From the responses obtained, Kazakhstan received the largest amount of financial support; organisations reported they provided a total of approx. US\$ 950,000 mainly supporting work on saiga conservation. The second largest total budget was provided for Mongolia with approx. US\$ 770,000, followed by the Russian Federation (US\$ 720,000), Kyrgyzstan (US\$ 580,000), China (US\$ 370,000), Tajikistan (US\$ 170,000), Uzbekistan (US\$ 55,000) and the Islamic republic of Iran (US\$ 30,000). The World Bank spent an additional amount of approx. US\$ 450,000 on meetings in support of the GSLEP Program development. Care needs to be taken when interpreting these figures as information from several organisations was missing. Nevertheless general trends might possibly be derived.

More than half of the country programmes of non-governmental stakeholders (24) ran with annual budgets smaller than US\$ 100,000 (contributing a total of US\$ 750,000); the majority of these (18) had budgets smaller than US\$ 50,000. The bulk of financial support was provided by county programmes (11) which had budgets between US\$ 100,000 and US\$ <500,000 (total of US\$ 2,200,000), whereas eight out of these were smaller than US\$ 300,000. Only one budget was bigger than US\$ 500,000 – UNDP Russia reported an annual budget of US\$ 700,000 for 2013. Three (national) organisations reported they had no financial means in 2013 to support the conservation of migratory mammals.

Gaps and needs, and options for enhanced synergies

The following sections summarise the results of the stakeholder survey on i) key obstacles for migratory mammal conservation in Central Asia, ii) successes and supporting factors, iii) an assessment of the legal framework, iv) the role of CMS as seen and proposed by respondents, and v) options for enhanced synergies between stakeholders and CMS.

Key obstacles

It is well recognised and acknowledged that limited funding is a major impediment in developing and implementing sustainable management concepts for migratory mammals in the Central Asian region. Therefore the survey asked respondents to provide feedback on obstacles other than insufficient financial resources.

Among the most frequently mentioned obstacles (33 responses) with a high overall priority⁴⁷ were illegal hunting and trade. Some referred to a strong regional tradition to hunt, both legally and illegally, as main obstacle, while others addressed the involvement of high ranking and wealthy individuals, border security and military personnel and the high economic incentive for poaching and illegal trade which is partly driven by a high global demand (e.g. the Asian traditional medicine market). Illegal trade was mentioned less often (5 out of 33) than illegal hunting (which can be explained by the limited number of species for which this is a critical threat, see above), however, when mentioned, both, domestic and international trade, were mostly classified as highest priority.

Competition with livestock and overgrazing, although, mentioned less frequently (11), were in average classified as high priority. Respondents raised conflicting interests between livestock owners and conservationists, conflicting policies between grassland management and wildlife conservation and the disrespect of relevant legislation by livestock owners. Others referred to an increase in grazing due to human population growth. Six respondents addressed difficulties with ensuring adequate undisturbed natural vegetation, including issues related to habitat fragmentation, degradation and loss (caused among others by illegal tree cutting).

A large number of respondents (31, with a majority from Mongolia and Kazakhstan) addressed issues related to economic development, especially in the industry and infrastructure sector. Issues of concern included inadequate consideration of the needs of migrating mammals in development policies and a lack of appropriate and effective legislation with regard to environmental impact assessments. According to respondents, potential negative direct and indirect impacts on the environment and wildlife are insufficiently taken into account during the planning phase of development sites and there is a general lack of landscape level planning. Respondents claimed that mining and other resource extraction industries cause disturbance at and habitat loss of sites of key importance for wildlife; transport infrastructure (new and existing railroads and roads), an increase in traffic, and pipelines cause linear barriers to migrating mammals. Responses from a large number of countries (China, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Uzbekistan) addressed issues related to border fences causing further fragmentation of habitats. Others referred to a lack of communication between researchers, conservation organisations and extractive industries and infrastructure agencies, and only weak collaboration between development and conservation organisations.

In general and related to any of the above, weak law enforcement was mentioned by 22 respondents as an obstacle of high priority. More than half of these responses referred to corruption and a lack of transparency and accountability as driving forces undermining the rule of law. Linked to this but classified with a somewhat lower priority in average were additional 29 responses concerned with low human and institutional capacity of responsible governmental and scientific institutions and protected area management authorities. In particular, the lack of technical expertise and facilities/equipment were mentioned among others of rangers and scientific institutions (including a missing young generation of scientists). Further, respondents referred to institutions being understaffed and underfinanced resulting in a lack of incentives and motivation (e.g. of rangers) and weak inter-agency coordination and collaboration (e.g. between environmental, internal affairs and national security sectors).

Besides weak inter-agency cooperation, ten respondents mentioned insufficient transboundary cooperation and communication as obstacles of medium priority. Particularly of concern were a

⁴⁷ Interviewees were asked to provide up to five prioritised obstacles.

weak exchange of information on migratory mammals crossing international borders (e.g. the lack of a reliable and transparent mechanism for information sharing) and a lack of consistent joint actions.

Socio-economic drivers were regarded as being of medium concern. Ten responses addressed issues related to poverty, low living standards of the local population and the proximity of settlements to important habitat for wildlife driving illegal hunting and causing competition with livestock. One respondent referred to livelihood development that does not consider wildlife needs. A larger amount of responses (18) dealt with low public awareness and knowledge of and a negative to neutral attitude of communities towards migratory mammals (classified as medium priority). Some respondents referred to a lack of understanding of the value of these species and a lack of incentives to conserve them.

Relating to revenue sharing from sustainable use of wildlife and partly linked to the above with regard to weak law enforcement, another nine respondents saw obstacles in poor governance and lack of legal security. Several responses were concerned with a centralised wildlife governance and science system with only little involvement of local communities in the decision-making process regarding wildlife management issues (e.g. trophy hunting, hunting licencing). Some referred to instances of mismanagement of state bodies, the absence of public control and an accountability mechanism on government spending for the conservation of wildlife (including funding derived from the use of biological resources) and poor communication with local communities. Others mentioned low levels of community organisation, little capability of the civil society to lobby for its interests and a weak NGO sector.

A further 13 responses addressed the poor scientific knowledge on migratory mammal population numbers, distribution, movement patterns (e.g. migratory versus nomadic) and routes, diseases, habitat requirements and status, and factors influencing these (medium priority). This lack of knowledge was seen to result in poorly designed protected areas (insufficient coverage of critical sites and migration corridors) and the absence of scientifically justified targets and systems to sustainably manage wildlife (e.g. the creation of population models to support sustainable management, to control major infectious diseases).

Other, less frequent responses referred to a lack of an appropriate and clear legal framework among others on sustainable hunting management (see also below), a lack of political will and support and detrimental political agendas (e.g. on grazing and hunting management), general unsustainable environmental management (e.g. of water and soil) and legal hunting (with a priority on commercial trophy hunting, inappropriate annual quotas that don't take into account deteriorating trophies), human-wildlife conflict (e.g. livestock depredation by snow leopards), human disturbance, a need for developing (nomadic) livestock pastoralism, and generally little respect for the law at all levels of society. Further, it was criticised that some countries are no Signatories to CMS.

Two respondents said there is a need for more species specific management strategies (e.g. for reintroducing cheetah, captive breeding of Bukhara deer, etc.) and more attention is required from international organisations to the conservation of migratory mammals, as well as more efforts on species reproduction and reintroduction (e.g. restoring wild horse populations in Kazakhstan).

A respondent from Afghanistan mentioned lack of security and stability as an obstacle of medium priority (preventing conservation actions on the ground in some areas), while others referred to natural disasters and the enormous spacious scale of the issue and remoteness of project sites.

Successes and supporting factors

When asked what is working well with respect to migratory mammal conservation in Central Asia, the most frequent response (18) was the engagement of local communities in conservation efforts. Particularly the involvement of children and students was mentioned as well as community based wildlife and natural resource management and community rangers. Also well noted (16) was the good cooperation and networking and improved communication between national and international stakeholders (e.g. governmental authorities, scientific institutions, NGOs, hunters and communities) resulting in combined efforts, joint actions and campaigns. A further nine responses particularly addressed the good cooperation between governmental and non-governmental actors.

Several mentioned (15) increased efforts in research (e.g. regular and systematic wildlife monitoring funded among others by governments, captive breeding, reintroduction, infectious diseases) resulting in an improved understanding of wildlife biology, movements, habitat requirements and disease risks. Findings were integrated in the decision-making process (e.g. reducing hunting quotas), informing management recommendations and conservation action plans.

Some (5) referred to governmental interest and willingness to support and invest in species conservation (8), and several (12) referred to an improved/ revised and elaborated legal framework (e.g. increasing fines, see also below) and the acknowledgement of the importance of endangered species conservation in national strategies for sustainable development. Positively noted (11) were governmental efforts to establish and finance new protected areas, some of which are transboundary and consider corridors for migratory wildlife. Various others (13) referred to an increased effort and investment in targeted law enforcement, especially in anti-poaching measures (e.g. increased numbers of wildlife management personnel and rangers, confiscation of weapons, increase in costs of ammunition) and strong wildlife management authorities in some places. Further, respondents mentioned efforts to reduce livestock numbers, to mitigate impacts caused by border fences and an improved capacity in disease outbreak investigation in wildlife.

Inter-agency cooperation and the openness of ministries and agencies outside the environmental sector (e.g. customs, border security) was mentioned (4), as well as transboundary collaboration (6) between governments, scientific institutions (e.g. on species monitoring) and NGOs, resulting among others in establishing international conservation agreements. Four respondents commented positively on land-use planning initiatives, which apply the mitigation hierarchy (avoid, mitigate, offset) for negative industry and infrastructure impacts. Other responses addressed the ratification of relevant international conventions (and/or the willingness to move towards ratification) and particularly the support received and actions conducted under CMS.

Also well noted (9) were an increased public and international awareness of and advocacy for migratory mammal conservation among others due to broad and regular information campaigns. Others (7) referred to good knowledge transfer, education (e.g. development of good education material) and capacity building efforts, particularly in training students to becoming qualified researchers and conservationists.

Seven respondents mentioned successful attempts to develop economic incentives for species conservation (through e.g. revenues from sustainable hunting), which have led to empowered local communities in some places. One respondent also positively mentioned the role of private trophy hunting enterprises in managing wildlife.

Others thought that good expertise in conservation measures and several conservation instruments are available, meetings and workshops are generally attended with great interest and practical support is working well (e.g. building of predator-proof corrals). Besides the tradition for hunting mentioned as obstacle (see above), traditions and local beliefs were mentioned as well to support conservation efforts due to their high valuation of wildlife and open land. There has been a long term engagement of some organisations and NGOs in the region; many individuals are highly motivated and countries are taking ownership of global single species initiatives (e.g. the GSLEP Program).

Where countries are signatories to CMS and CITES, all governmental respondents assessed the effectiveness of the cooperation between both conventions on the national level as good (4 responses) or very good (1). Positively mentioned were international meetings on migratory mammals conducted jointly by CMS and CITES.

The legal framework

In the following section responses on the legal framework assessment are summarised for governmental and non-governmental stakeholders. It is noted that due to the rather low number of governmental responses results for this group are not representative. Respondents were asked to share their views on legislation concerning i) the species protection status, ii) hunting, iii) national trade and consumption of wildlife, iv) protected areas, v) livestock grazing, vi) industry and infrastructure development, vii) the involvement of communities in the decision-making process concerning natural resource use, and viii) prosecution and fines.

A majority of both, governmental and non-governmental respondents assessed the protection status of migratory mammals as sufficient (Figure 6). Two respondents thought that opportunities for sustainable hunting should be reviewed also for fully protected/ red listed species, particularly when the population size increases/ stabilises. Other respondents mentioned contradictions in the law regarding the commercial use of species listed on red data books, issues with the taxonomy of subspecies and the need for strengthening legislative protection of red listed species (e.g. increasing penalty fees). Several respondents said that formal protection does mean little for the conservation of endangered species and that the protection of species listed on red lists needs more attention. Respondents from China, Kazakhstan, Mongolia and Tajikistan mentioned that species protection statuses in their countries are currently under review, expecting mostly positive changes. In the Russian Federation, the saiga antelope is in the process of being included in the national red data book (currently listed as hunting species, however, hunting is banned).

The legislation regarding hunting, if not under review, was assessed as largely sufficient by governmental stakeholders versus insufficient by non-governmental stakeholders. Comments on insufficiency concerned the existence of too many hunting concessions with no effective species protection, no reliable monitoring of wildlife and habitat in order to determine appropriate hunting quotas, an unclear licencing system that is open to corruption and difficult to understand by local communities, and more generally missing expertise on and incentives for sustainable hunting. Others referred to a top down decision-making process, no community involvement in wildlife management, insufficient sharing of benefits/ revenues from hunting with local communities (see below) and too little reinvestment in conservation measures.

According to respondents, the hunting law is currently under review in Afghanistan, China, Kyrgyzstan, and Tajikistan. Changes to the laws were largely thought to be positive and, as in the case of Tajikistan, will improve the process of assigning hunting management rights and responsibilities in order to promote incentive driven conservation of game species. However, some said the development of community based wildlife and hunting management is not considered adequately in the revision process and the contribution of the changes to sustainable hunting management remains questionable. Changes expected in China were considered negative.

The majority of respondents considered legislation on domestic trade in and consumption of endangered wildlife as sufficient (however, a large number of responses had no opinion). One

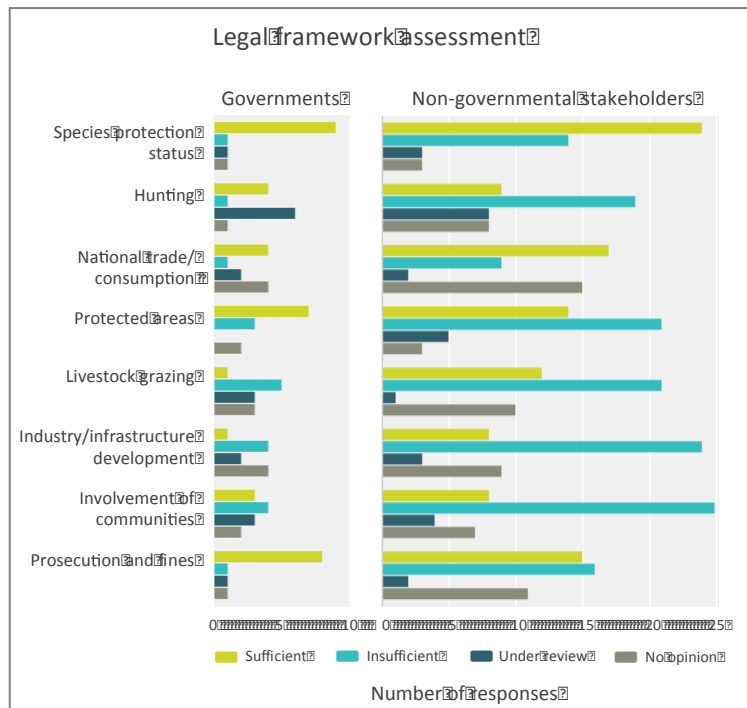


Figure 6: Legal framework assessment.

respondent criticised that a strong ban on trade only exists for certain animal parts such as horn but not for others, e.g. front legs (used as souvenirs) and the keeping of stockpiles (e.g. in the case of saiga). Several comments addressed the weak enforcement of the legislation resulting in only little knowledge on routes and markets for illegally traded animal products (e.g. in the case of kulan) nationally as well as internationally. One respondent mentioned the need to treat sellers and buyers of illegally traded wildlife alike. Legislation in China, Kyrgyzstan and Tajikistan is currently under review; changes are anticipated to be positive resulting among others in an increase in fines in some countries.

Legislation on the management of protected areas (PAs) was considered largely sufficient by governmental and largely insufficient by non-governmental stakeholders. According to some respondents, the process for designating new protected area needs clarification (Afghanistan and Kyrgyzstan) and specific regulations regarding penalties are required (Afghanistan). Several others claimed that the legislation contains uncertainties (e.g. on tourism management inside PAs) and contradictions with regard to legislation on other issues (e.g. water and land management); disputes on jurisdiction over PAs were mentioned for some countries. Respondents called for a greater transparency (e.g. of management plans, where available) and stronger and independent supervision of protected area management involving the public. A large number of responses addressed insufficient staffing, training and resourcing of PAs resulting in weak management capacities and proposed that the respective legislation should provide for adequate funding; it was mentioned that PAs which do not receive contributions from external sources lack greatly behind. Further, reinvestment of PA fees in the management of the site needs to be ensured.

Several commented that PAs are often too small to be effective (particularly for long-distance migrants) and called for an increase in size and number of PAs. Others said that prosecutions of violations of PAs and the general land use law outside of PAs should be enforced. Some claimed the rights of rangers to arrest offenders should be strengthened and criticised the allocation of mining licences inside PAs, no community involvement in PA management and only little attention paid to human-wildlife conflicts such as livestock predation by snow leopards.

According to respondents PAs legislation is currently under review in China, Mongolia and Tajikistan. Issues addressed include specific definitions of habitat protection, extension of existing PAs, increasing the number of rangers and considering options for sustainable financing.

The majority of respondents thought that legislation on livestock grazing is insufficient. Several responses addressed the loss of traditional nomadic lifestyles and a policy and legislation that promotes livestock production at levels that exceed the carrying capacity of the land resulting in overgrazing and degradation. There is only weak provision for monitoring of pasture conditions, which is of particular concern in foothills, and no consideration of critical wildlife habitats outside of PAs, particularly at times of seasonal migrations. Further, livestock grazing is allowed inside of some types of PAs in some countries (e.g. *Zakazniks* – reserves with temporary or permanent limitations placed upon certain economic activities). Respondents called for a grazing reform that takes into account interactions and conflicts with wild grazing species. A new pasture law was adopted in Tajikistan in 2013, by-laws are under development. The respective legislation is currently under review in Afghanistan and China, expected changes were considered negative in the latter.

Legislation on industry and infrastructure development was considered by the majority of respondents as insufficient. Several addressed poor harmonisation of legislation concerning the management of natural resource extraction with other relevant legislation such as on endangered wildlife, hunting and protected areas. Respondents from Kyrgyzstan mentioned that mining, as a priority for the national economy, is in principle allowed anywhere a deposit is found, also inside PAs. Respondents claimed there is overall very little or no compromise from development, the needs of wildlife are not or insufficiently taken into consideration and civil society participation (including public hearings) is not guaranteed in the planning phase of development projects.

Particular gaps were seen in inadequate obligations to conduct environmental impact assessments, which often do not follow international standards or are absent at all. There is no or weak evaluation of potential negative impacts on migratory mammals (e.g. barriers to movements caused by linear

infrastructure) and of economic losses from impacted ecosystem services, and no legal provision for avoiding, mitigating and offsetting negative impacts. Respondents claimed there is a lack of awareness, capacity and experience in adequately addressing environmental impacts of complicated and large-scale projects among governments and the private sector. Some referred to the difficulty of taking into account cumulative effects from neighbouring development sites⁴⁸ in environmental impacts assessments. Where mitigation occurs it is often restricted to larger, international development sites and driven by the requirements and standards of international funding institutions and lender banks; smaller, national projects get less attention. Others criticised insufficient or absent post-mining re-cultivation. One respondent referred to the historic non-consideration of impacts from agriculture on wild ruminants.

The relevant legislation is currently under review in China, Kazakhstan and Mongolia according to respondents; changes were anticipated to be mostly positive. The revision in Mongolia is focusing on regulating access to and benefits from mining licenses and taking requirements of migratory wildlife into consideration. However, it was also remarked that implementation of the new legislation over the large expanse of the country remains a challenge. Further, the removal and modification of fences along railroads is under discussion, as well as plans to build new railways without fences. In Uzbekistan revised criteria for environmental impact assessments and an offsetting mechanism are being drafted.

The majority of non-governmental respondents thought that the involvement of local communities in the decision-making process concerning natural resource use (including the sharing of revenues) is not adequately considered in national legislation. An almost equal number of governmental respondents thought that community involvement is addressed adequately versus inadequately. Critics said there are no legal provisions for community involvement except in, yet insufficient, ESIA legislation and participative approaches were considered as marginal. Community involvement often is limited to supporting sustainable livelihood development promoted by internationally funded projects (compare with results on conservation measurements above). Governments would often ignore co-management approaches and rather focus on awareness raising, which has led to conflicts in the past.

Respondents said that natural resources are owned by the governments in most countries and local communities are often seen as the cause of the problem not as part of the solution. Some claimed that the distribution of revenues from natural resource use is not transparent; communities often only receive a small share and compensation if at all. Others thought that authorities of local communities are insufficiently defined and they have no budget autonomy. Respondents called for an integration of participatory management approaches in development plans for rural areas and an engagement of communities at all levels, from conservation planning through implementation; communities need to be empowered and held accountable at the same time for sustainable natural resource use.

Some respondents referred to positive trends in current policy changes in some countries and good localised examples that require replication elsewhere. In Mongolia, the involvement of local communities in the decision-making process has recently been trialled in buffer zones of some PAs; local governments allocated funding for economic development and environmental protection in negotiation with and with the involvement of local communities. It was hoped that this provides an opportunity for communities to partake in the decision-making process regarding natural resource use and wildlife management.

The new law on hunting in Kyrgyzstan is anticipated to address revenue sharing with communities. In Tajikistan, a new law on involving local communities in environmental decision-making is under development. Similarly, related legislation is under review in China and Turkmenistan; in case of the latter initial experience on sustainable use of natural resources by the local population has been made in some PAs.

⁴⁸ E.g. evaluating barrier effects caused by the construction of a new road leading to/from a mining site when a parallel road to a neighbouring extraction site already causes a barrier for migratory mammals.

The majority of governmental stakeholders considered legislation on prosecution and fines as sufficient whereas an almost equal number of non-governmental stakeholders thought it is sufficient/ insufficient (with many saying they have no opinion). Comments made concerning insufficiency included inadequate rights of rangers to arrest offenders and weak incentives for both, rangers and inspectors (low rewards and salaries, no protection of inspectors after taking poachers into custody resulting in cases of revenge). Arrests and prosecutions are hampered by corruption at all levels, there is weak interaction between wildlife management and law enforcement authorities (and law enforcement mandates are assigned to inappropriate agencies in some countries) and judicial processes are complicated and protracted. Some considered fines as being too low (e.g. not keeping up with inflation in some countries) to deter poachers and noted that revenues made from illegal hunting and trade are much higher. Others criticised that fines were not reinvested in protection measures. A respondent from Afghanistan mentioned that clear regulations regarding violations and penalties are missing.

Some noted that the work of the customs service needs strengthening. Particularly following the establishment of the customs union between Kazakhstan, the Russian Federation and Belarus, special procedures need to be put in place to prevent facilitation of illegal trade of wildlife products across borders. Further, difficulties in and lacking technology to identifying meat from illegally hunted and traded wildlife were mentioned. However, it was also raised that it seems there has been an increasing trend in pursuing wildlife crimes in some countries. The respective legislation is under review in China, changes are expected to be positive.

Besides the detailed comments received on the various legislation assessed, a common tenor of responses was that it is not so much the legislation that is hampering conservation of wildlife but its weak implementation.

The role of CMS

The survey asked stakeholders about their opinion on what support CMS can provide to improve the conservation of migratory mammals in the Central Asian region, particularly with respect to i) fostering dialogue on conserving transboundary populations of wildlife, ii) fostering dialogue with the private sector on applying the mitigation hierarchy, iii) preparing best practice guidelines and/or training manuals in local language on issues of concern, and iv) supporting the revision of the legal framework if required. The vast majority of respondents answered in the affirmative to any of these proposals (**Figure 7**), while some questioned the last three options.

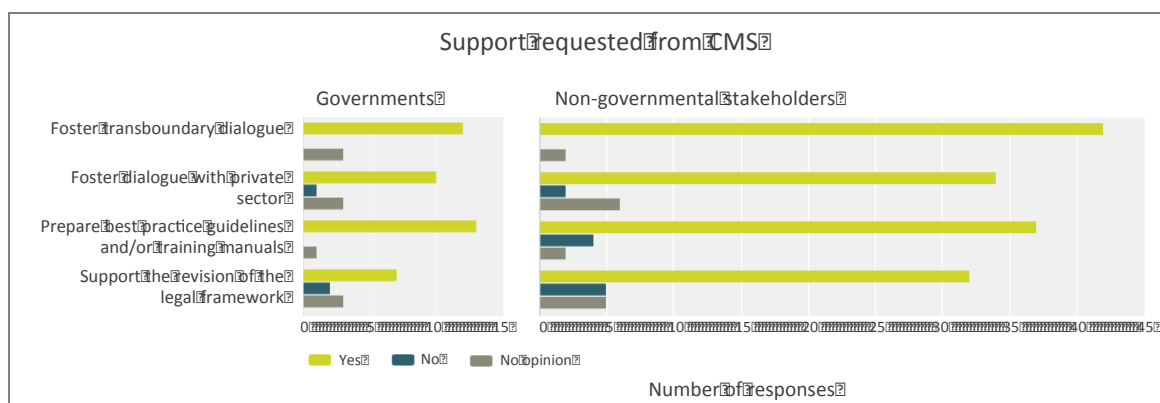


Figure 7: Stakeholder response regarding CMS support to improve the conservation of migratory mammals in Central Asia.

An advantage of CMS was seen in its possibility to provide a platform for inter-governmental meetings and discussions. Thematic fields of concern and interest regarding a transboundary dialogue included law enforcement of illegal hunting and trade (including trophies), developing standardised monitoring methods and coordinating joint monitoring, establishing information exchange mechanisms (sharing news, reports and supporting discussions e.g. through digital media),

removing or modifying border fences (e.g. removing bottom wires), establishing transboundary PAs, developing species specific transboundary management plans, regulating and coordinating sustainable use of wildlife, disease transfer and joint capacity building initiatives.

A respondent from Mongolia proposed to establish a MOU/ Agreement under CMS between neighbouring countries in addition to already existing transboundary agreements on the conservation of biodiversity (focusing on issues such as illegal international trade in CMS listed species). Similarly, a respondent from Kyrgyzstan saw a need to establish MOUs on single species with its neighbouring countries.

Concerning CMS support to foster the dialogue with the private sector on avoiding, mitigating and offsetting negative impacts from development, stakeholders responded they would like to learn from experience made with private sector engagement and the development of offset schemes in other countries. They proposed to share best practice case studies, provide guidelines for mitigating impacts in different sectors (e.g. natural resource extraction, linear infrastructure development, energy generation and transport, husbandry) and support capacity development at all levels of the government. Some asked to particularly support research on the impacts of linear infrastructure on wildlife movements and the effectiveness and feasibility of mitigation measures (e.g. fence removal and modification along railroads, road curfews). A further role for CMS was seen in increasing the awareness of the private sector about the importance of considering negative impacts on migratory wildlife from development (including increased access to remote areas facilitating illegal hunting) and in developing a business case that demonstrates benefits from applying the mitigation hierarchy in the planning phase.

Others, however, questioned if CMS can play an effective role in the engagement process with the private sector, as the Convention might not have the right skills to do so. Some argued it would be better if CMS engages with responsible governmental agencies to work towards environmental impact assessment processes that are transparent, legitimate and follow global standards of best practice.

Regarding the preparation of best practice guidelines and/or training manuals in local language, issues of concern/ interest included law enforcement (e.g. for rangers and customs), wildlife population and habitat monitoring (including the use of the GPS, satellite and radio collars, camera traps and remote sensing), mitigating and offsetting negative impacts from development (e.g. wildlife friendly infrastructure, see above), civil society participation in industrial and infrastructure development planning, sustainable and community based hunting, sustainable grazing, habitat management/ protection, inter-agency and international cooperation and international treaties. Others requested to develop and disseminate a rationale on why it is important to conserve migratory mammals to raise national and regional awareness on the matter. A positive comment was made regarding the usefulness of having internationally agreed guidelines which can be referred to by decision-makers.

However, it was commented that what works in one region might not work somewhere else and one respondent proposed to assess the effectiveness of current 'best' practices and how these can be adapted to different countries and regions. The development of criteria and enabling conditions for best practices would help conservationists judge the usefulness of a particular practice according to specific circumstances. Beyond sharing best practice guidelines and manuals, several respondents repeated the proposal of developing an information/ data sharing mechanisms.

Others thought the development of guidelines and manuals should not be a priority for CMS as this would miss to solve urgent issues. One respondent commented that the Convention should rather invest in strengthening the capacity of responsible authorities to enable them to access already available literature; a local language manual is only useful if there is political will to act upon.

Thematic fields of interest with regard to CMS support for revising existing legislation included sustainable hunting, public engagement in industrial and infrastructure development planning, land use outside PAs (particularly on maintaining and/or improving connectivity), development of special protected areas for mobile wildlife, strengthening legislation of red listed species (e.g. increasing penalty fees), provisions for transboundary cooperation on conservation measures (e.g. monitoring),

infectious disease management, involvement of regional administrations and local communities in the decision-making process, integrating CITES requirements in regulating frameworks of the customs union between Kazakhstan, the Russian Federation and Belarus, and general harmonisation of national legislation with international conventions. Some requested support in assessing gaps and needs of their legal framework with regard to specific species and in developing mechanisms to increase responsibility for implementing legislation more effectively. Some remarked that CMS is already playing a useful and critical role in informing legislation revisions.

However, others questioned if the capacity of CMS is sufficient in terms of funding, staff and political influence to take a meaningful role in supporting legislation revisions. It was proposed that CMS could disseminate guiding information on the matter and/or foster exchange of experience between countries rather than engaging directly to facilitate national integration of the requirements of the Convention.

Other support from CMS was requested in the fields of population monitoring (both nationally and across borders), research on species biology and illegal trade routes, enforcement of controls on illegal cross border trade, thematic regional meetings, awareness raising among governments, development of funding mechanisms for conservation measures, fence removal and modification, engagement of all range countries in conservation measures, improving habitat conditions, developing management/ conservation strategies for threatened and/or endemic species and considering specific needs of nomadic versus migratory mammals.

One respondent referred to the strength of CMS of being a neutral body, which convenes key stakeholders of different countries to stimulate discussions while providing a legally binding framework Signatories have agreed to adhere to. However, some noted that CMS requirements are often poorly translated into national legislation and implementation is dependent on committed individuals. It was proposed to put in place national CMS representatives to support close and regular communication and collaboration with CMS Focal Points and technical working groups and to play a moderating role in case of conflicts.

Options for enhanced synergies

Enhancing synergies between stakeholders

When asked how **synergies between governmental agencies** can be fostered to improve effectiveness of migratory mammal conservation, respondents proposed to enhance existing and/or establish new inter-agency communication and notification mechanisms (e.g. a cross-sectoral working group) to share, review and discuss relevant information (e.g. with regard to the conservation of specific species or cross-cutting themes such as illegal hunting and trade of endangered species, livestock-wildlife interactions with regard to grazing and disease transfer). Some suggested to coordinate joint actions between among others the customs, border security, ministries for economic development and agencies responsible for ecological inspection. Other suggestions included the conduction of meetings with participation of all relevant state agencies and an elaboration and adoption of joint action plans, including the establishment of a commission to monitor and report on their implementation.

With regard to enhancing **synergies between governmental and non-governmental stakeholders**, respondents proposed to establish and where existing strengthen the role of public and scientific councils in relevant state agencies. Others suggested to establish a coordination mechanism for conservation measures, undertake joint actions and conduct regular themed technical workshops and exchange visits between countries to improve communication and share experience on issues related to wildlife management (e.g. monitoring of wildlife, illegal hunting and trade controls, reintroduction of species, transboundary management, etc.) and to assess progress made.

Some referred to the usefulness of having international agreements on biodiversity conservation and proposed to establish a MOU on Central Asian mammals between Range States. Positive reference in this regard was made to the CMS MOUs on Bukhara deer and saiga and the related Meetings of the Signatories. It was requested to give more responsibility to non-governmental stakeholders and enhance their involvement in relevant decision-making processes such as the development of CMS

MOUs and Action Plans. Others suggested establishing a sub-regional UNEP representative office for Central Asia to ensure synergies between different environmental initiatives in Central Asia including on climate change and green economy.

Some stressed the importance of strengthening governmental capacity for adaptive management of natural resources based on scientific data and suggested exchange programmes for both, young governmental and non-governmental academics and practitioners to study abroad. Further, the provision of small grants to governmental agencies was proposed to facilitate more practical engagement in conservation measures.

One respondent expressed concerns that NGOs aim to address too many issues outside of their competence and expertise and they should rather focus more directly on biodiversity conservation. Others mentioned that non-governmental stakeholders should link their activities more clearly to political agendas and stress their relevance for supporting the implementation of national strategies (e.g. on climate change adaptation, poverty reduction, green/sustainable development).

Some mentioned there are already good synergies between governmental and non-governmental stakeholders and the currently taken approaches are working well (compare as well with successes/supporting factors above). One respondent proposed declaring special days to celebrate successes and share lessons learned, including failures, by involving schools, PA management and local and/or national authorities.

Besides regular technical meetings, several respondents thought that **synergies between non-governmental stakeholders** can be enhanced by establishing a communication platform/coordination mechanism to avoid overlapping and duplication of activities and to promote the implementation of joint initiatives in order to combine funding (e.g. research on population monitoring, public awareness, etc.). The platform could provide an overview of ongoing, completed and planned activities, information/ education material as well as contact details of stakeholders to facilitate exchange of experience. One respondent particularly stressed the importance of and need for academic collaboration between NGOs.

Several claimed that the establishment and development of local community based organisations should be encouraged and generally more support for local NGOs is needed. Their understanding for conservation issues should be increased to gain a common language and their role in implementing and reporting on conservation measures should be promoted and strengthened.

Some requested clear guidance from CMS on the need and possibility for engagement with the Convention and/or other non-governmental stakeholders on issues of concern. Only 10 out of all non-governmental respondents were aware of the Migratory Wildlife Network, a network established by Wild Migration⁴⁹, to support NGOs, wildlife scientists and wildlife policy experts worldwide, to coordinate and progress migratory wildlife conservation, with a particular focus on CMS and its Agreements. One respondent commented the information received through the network is useful at times while others mentioned despite being aware of the Network they haven't used it.

Some mentioned that due to their non-profit status, NGOs have to compete for funding from donors, which is hindering cooperation. It was proposed that CMS could play a moderating role by developing a support programme for NGOs to sponsor the conservation of CMS listed species and help coordinate the work of NGOs to foster cooperation. Others proposed the provision of competitive small grant opportunities to address priority issues. Yet, several respondents thought that NGOs generally tend to work well together.

Improving communication with national Focal Points

With respect to improving communication between national Focal Points to CMS (incl. Scientific Councillors, MOU Administrative and Technical Focal Points) and the Convention several respondents mentioned the language barrier given the official languages of CMS do not include Russian. Others

⁴⁹ Wild Migration is an international non-profit organisation whose primary purpose is to benefit migratory and transboundary wildlife and the habitats on which they depend (<http://www.wildmigration.org>).

mentioned it is essential for Focal Points to read and write in English in order to actively participate in CMS meetings such as the COP and/or meetings of the Standing Committee and the Scientific Council. It was proposed to have regular direct communication between the UNEP/CMS Secretariat and the focal points. Others requested to receive invitations to official meetings such as the COP well in advance as the process for obtaining approval for attendance takes rather long in some countries.

With regard to improving communication between Focal Points and non-governmental stakeholders, respondents referred to issues related to frequent staff changes in ministries and agencies, which have led to changes and/or pending designations of new Focal Points. It was suggested that representatives of the UNEP/CMS Secretariat consider travelling to the region in case communication issues and/or uncertainties concerning the Focal Point designation arise. Related to this, some mentioned that the names and contact details of the CMS administered list of Focal Points (accessible through the CMS website) need more regular updating.

Several respondents requested CMS to provide more support for Focal Points and foster their cooperation with NGOs and the private sector. Some mentioned that people designated as Focal Points need to have the required level of competence; otherwise their capacity needs strengthening. Others referred to the workload of Focal Points, who are often overburdened with duties, and proposed to involve/ designate additional people/ coordinators who are on the ground to provide support to Focal Points. Some referred to unclear roles and responsibilities of Focal Points besides attending related meetings and requested more clear guidance in local language.

Several respondents repeated the mentioning of more regular technical meetings to improve communication, including electronic meetings and email distribution lists (e.g. listservs) and the sharing of newsletters. One respondent requested more direct communication between CMS and NGOs. Besides these comments, several mentioned that communication with national Focal Points is generally working well.

Discussion of survey results

Threats assessment

The results of the threats assessment of the stakeholder survey largely replicated results of previous studies concerning migratory mammals. Habitat loss, degradation and fragmentation were considered to be the most important threats to terrestrial mammals by Parties to CMS according to national reports submitted to the Tenth Meeting of the COP (COP10, UNEP-WCMC 2011), followed by poaching and to a lesser extent illegal trade.

Further, a report of the Millennium Ecosystem Assessment (MEA 2005) found that areas of particularly rapid changes in terrestrial ecosystems over the past two decades included Asia, specifically causing land degradation in drylands. Similarly, a recent paper from the FAO names overgrazing as the single most serious threat to biodiversity in CIS countries and Mongolia (Rosales & Livinets 2005) caused predominantly by disruption of transhumance herding, overstocking and changes in the livestock composition.

Several authors have recently called for regional planning on the scale of mammal migrations to prevent the potential risk of landscape fragmentation in Mongolia caused by economic growth and rich mineral and fossil fuel deposits that are anticipated to lead to an unprecedented upsurge in industry and infrastructure development in the region (Batsaikhan *et al.* 2014).

Conservation efforts

Species and country focus of stakeholders

Saiga, snow leopard and argali seem to receive the greatest attention from non-governmental stakeholders, whereas the majority of these seem to work in Kazakhstan, Mongolia, Tajikistan and Kyrgyzstan. This can partly be explained by the need for urgent action with respect to single species status (e.g. the saiga is listed as Critically Endangered by IUCN and experienced one of the fastest declines recorded for mammals in recent decades) and the large range of distribution (argali and

snow leopard occur in 11 and 12 countries, respectively). However, other critically endangered species, such as the wild camel and cheetah, and species with a large number of range countries, such as the goitered gazelle, receive less attention from non-governmental organisations. Moreover, the goitered gazelle has a more severe global conservation status than the argali (being listed as Vulnerable by IUCN versus argali being listed as Near Threatened).

The potential for economic revenues from harvesting (today or in future) are likely aspects contributing to the focus on saiga and argali conservation of both, non-governmental and governmental stakeholders, while snow leopards are highly charismatic animals with a widespread popular appeal to donors and the public.

Conservation measurements

While a large number of governmental and non-governmental stakeholders reported to conduct research on issues such as population monitoring, species biology, habitat requirements and migration routes, fewer efforts were taken to understand drivers for movements. This result is to some degree correlating with findings of the state of species knowledge assessment, which suggest that factors driving movements are not well understood for many species.

Governmental respondents reported comparably little involvement in socio-economic research as well as in supporting community involvement in conservation measures, particularly related to sustainable livelihoods development. While this might indicate that the understanding of the relevance of interdependency of both, human and wildlife needs, might need strengthening in national policy (and legislation, see below), the results can also be explained by conflicting mandates of wildlife management authorities and ministries responsible for rural development. While only the former contributed to the stakeholder survey, only the latter might be responsible for conducting the related work. In this case, however, the need for an interdisciplinary approach to wildlife management involving various relevant ministries needs emphasising.

Efforts of non-governmental stakeholders on law enforcement seem to concentrate heavily on supporting and collaborating with rangers and local communities. A broader approach, involving the local and transport police, customs and border security might be advisable in some circumstances, especially if illegal trade, domestic or international, is of concern for the species.

While a relatively large number of stakeholders reported to be engaged in providing support for mitigating impacts caused by industry and infrastructure development, only few addressed offsetting of residual impacts. Further, only comparably few non-governmental stakeholders reported to work with the private sector in terms of awareness raising and education. This might not be surprising as industry and infrastructure development is an emerging threat at many sites. All the more it is important to act now to prevent potential irreversible damage to critical habitats.

Financial means

Financial means of both governmental and non-governmental stakeholders differed considerably between the countries assessed. While the large amount of investment from governmental and non-governmental stakeholders in Kazakhstan has proven to be successful in stabilising and increasing total saiga numbers in the country, the size of the funding gap in some of the other countries is of great concern and will likely have implications as well for the success of the CAMI.

Medium and long term planning and implementation of sustainable conservation measures require resource security. In a recent review of existing CMS instruments and projects on terrestrial mammals, the main weakness of CMS was considered to be the lack of funding and resources (UNEP-WCMC 2011). Respondents to a related questionnaire expressed their reluctance to adopt new CMS instruments unless it was certain that they could be fully resourced. In a recent civil society dialogue about the CMS agenda convened by the Migratory Wildlife Network and Friends of CMS, NGOs recommended developing a CMS budget that provides core funding to pursue implementation strategies (Prideaux 2013).

CMS and the CMS Family rely heavily on voluntary contributions to fund their activities including conservation projects, meetings and publications (Lee *et al.* 2010). In particular, most conservation projects contained in agreement Action Plans are funded voluntarily. Only a small share of Party core

contributions are currently allocated to conservation work (Lee *et al.* 2010). CMS's Small Grants Programme, which contributes to small-scale conservation and research projects, was previously funded by the core budget's accumulated surplus but is now being funded as well by voluntary contributions.

Target 16 of the new CMS Strategic Plan for Migratory Species 2015-2023 (SPMS) aims at substantially increasing the mobilisation of adequate resources from all sources, including international and domestic funding from public, private and other sources (UNEP/CMS 2014). While the target implies policy choices that reduce the costs of repairing damage to migratory species, the plan also stresses that increased/ available funding depends on the effectiveness and sustainability of international and national financial flows for biodiversity, which needs the necessary institutional, national, administrative and managerial capacities to ensure the enabling environment for more effective and sustainable use of resources and to mobilise private and public-sector investments.

Gaps and needs

Obstacles and successes/ supporting factors

Obstacles identified by this assessment can be classified in more or less repetitions of threats, such as illegal hunting and trade, competition with livestock and overgrazing, economic/ industry and infrastructure development, and underlying causes, such as weak law enforcement, low human and institutional capacity, insufficient transboundary cooperation and communication, socio-economic drivers, poor governance and lack of legal security, and poor scientific knowledge on migratory mammals. These underlying causes were largely in line with obstacles identified by UNEP-WCMC (2011) in a recent survey on migratory mammal conservation⁵⁰.

Similarly, contributing factors identified by this same survey⁵¹ resembled more or less the response we received. Particularly encouraging in this respect is the positive engagement with communities, increased efforts made in research and the integration of findings in the decision-making process, increased efforts and investment in targeted law enforcement, and successful attempts to develop economic incentives for species conservation.

The legal framework

Several respondents commented positively on elaborated and/ or improved/ revised legal frameworks. However, the legal framework assessment also revealed a series of gaps in relevant legislation, particularly concerning hunting, livestock grazing, industry and infrastructure development and the involvement of communities. Harmonisation of national legislation with relevant international conventions was regarded as insufficient.

It was repeatedly suggested that CMS needs a legally enforceable compliance regime (Prideaux 2013), a matter also discussed during the CMS Future Shape Process (Lee *et al.* 2010). The latter, however, saw an advantage in the non-binding nature of agreements (e.g. MOUs) in that they may make it easier to attract Parties because they do not result in direct financial obligations and complicated ratification procedures can be avoided.

Recommendations of a recent study of DLA Piper (2014) commissioned by the United for Wildlife partnership could be of relevance as well for the Central Asian region. The recommendations resulted from a review and evaluation of the state of legislation and judicial processes with respect to illegal trade in wildlife in ten countries from Asia and Africa (among others China⁵²). Each of the countries analysed is a Party to CITES and has enacted principal legislation implementing the

⁵⁰ Main obstacles included limited capacity of Range States, issues with non-compliance, lack of accountability or lack of political will and widespread corruption that hinders conservation efforts in certain regions, making it difficult to tackle threats such as illegal hunting and trade (UNEP-WCMC 2011).

⁵¹ Contributing factors included strong support and political will of Range States, strong collaborations between governments, international organisations, NGOs and experts, organisation of regular meetings and active discussion on conservation issues and sharing of data and expertise (UNEP-WCMC 2011).

⁵² Other countries than China were Cameroon, Democratic Republic of Congo, Kenya, Malaysia, the Philippines, Tanzania, Thailand, Uganda and Vietnam (DLA Piper 2014).

Convention into domestic law. Nevertheless the study revealed a host of weaknesses and issues, which the authors thought are equally relevant in a substantial number of other CITES member states. To strengthen the enforcement of wildlife crime legislation around the world DLA Piper proposed a number of general recommendations as follows:

- Development of a model wildlife act that could be used as a basis for countries as they update domestic legislation to achieve greater consistency
- Coupled with a model act, model sentencing guidelines could be developed as a basis for the establishment of domestic sentencing guidelines for wildlife crimes
- An international database could be developed for the publication of judicial decisions and prosecution statistics relating to wildlife crimes
- Develop multilateral initiatives and exchange information to foster collaboration on legislative and judicial initiatives, particularly in countries that share borders, and enhance partnering with demand country
- Development of standardised training modules made available online or delivered locally or regionally; the CITES Secretariat, international organisations dedicated to monitoring wildlife trade, TRAFFIC, or another entity or organisation could maintain a database of training programmes for access by prosecutors and judges around the world

With respect to China the authors noted that despite strengthened judicial and administrative measures to control wildlife crime, these are unlikely to result in permanent and effective solutions without a change in cultural attitudes (DLA Piper 2014) – which is probably true not only for China.

The role of CMS

A particular strength of CMS was seen in its neutral role of convening meetings to provide a platform for inter-governmental discussions. However, CMS representation in the region was considered weak. Some respondents proposed to put in place national CMS representatives to support close and regular communication and collaboration. The lack of an institutional presence in regions where the Convention works was also raised as an issue during the CMS Future Shape Process. Several options were proposed during the Process to enhance CMS' global presence, among others by increasing synergies with other relevant MEAs and institutions and by developing its local presence in the regions (Lee *et al.* 2011b).

Synergies

Frequently mentioned options for enhanced synergies between the various governmental and non-governmental stakeholders included the implementation of joint actions, regular themed technical workshops, exchange visits between countries, and the establishment of a communication platform/coordination mechanism for conservation measures to support the exchange of information. A centralised service for the collection, management and storage of data has also been considered under the CMS Future Shape Process; the creation of a migratory species scientific data hub would: i) improve access to data, ii) facilitate identification of data gaps, iii) reduce duplication of effort, and iv) encourage greater integration across the CMS Family (Lee *et al.* 2011b, UNEP-WCMC 2011).

Several information sharing portals concerning migratory mammals in Central Asia have been recently established or are under development with mixed results (e.g. Saiga Resource Centre: <http://saigaresourcecentre.com>, Argali Conservation Network: <http://argalinetwork.wordpress.com>, Snow Leopard Network: <http://www.snowleopardnetwork.org>, Global Snow Leopard Forum: <http://en.akilbirs.com>, Large Herbivore Network: <http://www.lhnet.org>, Global Register of Migratory Species: <http://www.groms.de>). As a database is only as good as the information that is fed into it, stakeholders would need to be willing to commit to an extra burden of reporting if a further platform were established under the CAMI. If the database is not being kept up-to-date it will likely lose attention very quickly. Language barriers cause additional difficulties in maintaining an international database and keeping it relevant for all users. Other, more simple options suggested by respondents, would be electronic mailing lists, such as the MongolBioweb (an environmental newsletter and information sharing network for biologists, conservationists and environmentalists interested in

Mongolia, <https://uk.groups.yahoo.com/neo/groups/MongolBioweb/info>), which has proven to be successful in sharing information and is widely used.

The current CMS Strategic Plan 2006-2014 recognises that the objectives of CMS and other biodiversity-related conventions are mutually supportive and CMS instruments have a strong history of formal and informal collaboration with conservation or environmental institutions and frameworks (UNEP/CMS 2011p). However, a recent analysis of threats to terrestrial mammals indicated that CMS and its associated instruments need to strengthen their collaboration with a wider range of institutions (UNEP-WCMC 2011). Questionnaire respondents taking part in this analysis suggested increased cooperation and collaboration among others with the Traditional Chinese Medicine industry, INTERPOL, WTO, CITES, TRAFFIC, and ICCWC.

Working more closely with partner organisations and developing further collaboration and synergies with MEAs, NGOs and relevant international organisations has also been a key objective of the CMS Future Shape Process. Given the considerable array of MEAs currently in existence, many of which are charged with addressing cross-cutting issues affecting the conservation status of migratory species, the importance of developing strong links with other regulatory bodies, as well as civil society was stressed (Lee *et al.* 2010). According to Lee *et al.* (2011b) seeking synergistic working requires clear high level policies to drive results, alignment of goals, division of labour, maintaining long term relationships and on the ground coordination of conservation actions.

The selection of priority species

In the following we discuss the selection of priority species considered in this assessment taking into account comments received by respondents. Given that CMS is concerned with migratory species, the inclusion of highly mobile long-distance migrants such as saiga, Mongolian gazelle, kulan, chiru, and wild camel is self-explanatory, same as species undertaking long-distance movements on occasion, such as cheetah and snow leopard.

Given further the strong emphasis of CMS on species that move across national boundaries (CMS 1979), species making shorter movements (to our current knowledge), which however would critically benefit from transboundary cooperation, include argali, Bukhara/ Yarkand deer, goitered gazelle and Przewalski's horse. However, one respondent commented the Initiative is only partly applicable to the Przewalski's horse, as currently there are no transboundary populations. Most horses, with the exception of the Dzungarian Gobi population in Mongolia are held in small habitat islands with no potential for transboundary movements. The main impediment to potential cross-border migration in the Dzungarian Gobi are fences along the Mongolian/ Chinese border.

Tibetan gazelle, kiang and wild yak do not fall under either of the criteria above. They are relatively sedentary; cross-border movements do exist within some populations of these three species, however, populations outside China are small, thus making transboundary cooperation less relevant for their conservation. A circumstance, which was also reflected in the results of the stakeholder survey concerning species addressed by transboundary initiatives, none of which targeted any of these mammals. Yet, kiang and yak are both listed on CMS Appendices. The yak was listed under CMS at its First Meeting of the COP in 1985, at a time when still little justification for species inclusion was required. The listing of kiang is a 'by-product' of the listing of *E. hemionus* at a time (in 2002) when kiang was still considered the same species as kulan. When becoming classified as separate species *E. kiang* the listing status under CMS was maintained. The Tibetan gazelle is not listed under CMS and one respondent suggested excluding it from the CAMI arguing the species is fairly sedentary and abundant (listed as Near Threatened under IUCN) and an inclusion might weaken the credibility of the Initiative.

Other respondents suggested including the Persian leopard (Endangered) and markhor (Endangered) due to their transboundary movements. Further, Mongolia suggested the listing of ibex, reindeer *Rangifer tarandus* and red deer *Cervus elaphus* under CMS Appendices in its national report submitted to the CMS COP10 (UNEP-WCMC 2011). Another species that should possibly be considered in future due to its conservation status and transboundary movements is the urial (Vulnerable).

Conclusion and next steps

A multitude of stakeholders work on conserving migratory mammals in the Central Asian region and a large number of frameworks, instruments and initiatives exist. Highly motivated and enthusiastic individuals from governments, scientific, national and international organisations invest in a myriad of projects often collaborating closely on the ground and beyond national borders. A lot has been learned from past work and good expertise and experience in conservation measures is available for the region. Progress has been achieved in some fields, and promising engagement has been made with non-environmental sectors, such as customs, border security, the private sector, and not least local communities.

Addressing many of the threats associated with unsustainable use of natural resources, economic development and climate change sustainably requires a long term approach and adaptive management. Urgent action is needed with respect to some, such as the prospective industry and infrastructure development. Costs for modifying existing infrastructure and/or for compensation of damage to species and habitats are many times more than preventing negative impacts from the onset if possible at all at a later stage. Economic development is important for providing the necessary state funding in support of conservation measures, thus can be part of the solution. However, great care needs to be taken that this development is not at the expense of species and habitats and reversing positive trends already achieved.

There is a lot of thematic overlap in responsibilities of MEAs and the scope of work of governmental and non-governmental organisations. While this encourages different approaches to tackle issues from varying angles, there is a need to enhance the sharing of lessons learned, successes as much as failures, combine strengths from various sectors (also non-environmental, such as the sustainable development and animal husbandry sectors) and upscale.

In order to develop and enhance synergies between the diverse array of stakeholders and instruments, it is recommended that the purpose of and justification for an additional instrument, such as the Programme of Work under the CAMI, should be to serve as a:

- i) Guiding framework to support the integration of missing aspects in already existing work programmes and action plans of the various stakeholders and initiatives
- ii) Coordination mechanism, highlighting and prioritising gaps on a regional scale
- iii) Platform for enhanced knowledge exchange and the promotion of synergies
- iv) Tool for fundraising

Being situated under the auspices of UNEP, in conjunction with other MEAs CMS is well placed to lobby for and influence higher level decision-making, such as at the WTO and/or other UN organisations involved in regional transport infrastructure development initiatives (e.g. at UNECE, ESCAP). Non-governmental stakeholders play an important role for supporting localised conservation measures. Ultimately however, the conservation of migratory mammals in Central Asia requires a strong commitment from governments for concerted action on the scale required.

Next steps

Stakeholder consultation meetings were held in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan in May/ June 2014 to present the results of this assessment and initiate discussions on the development of a Programme of Work under the CAMI. A draft Programme of Work was discussed at a Stakeholder Meeting on the Conservation of Large Mammals in Central Asia, in Bishkek, Kyrgyzstan, 23-25 September 2014 to be presented for adoption at the 11th Conference of the Parties to CMS (4-9 November 2014, Ecuador).

Abbreviations

ACBK	Association for the Conservation of Biodiversity in Kazakhstan
AP	Action Plan
ADB	Asian Development Bank
ADCI	Altyn Dala Conservation Initiative
ALTID	Asian Land Transport Infrastructure Development
ASBP	Aral Sea Basin Programme
CACILM	Central Asian Countries Initiative for Land Management
CAMI	Central Asian Mammals Initiative
CAREC	Central Asia Regional Economic Cooperation
CAREC	The Regional Environmental Center for Central Asia
CAEWDP	Central Asia Energy-Water Development Program
CBD	Convention on Biological Diversity
CIC	International Council for Game and Wildlife Conservation
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CIS	Commonwealth of Independent States
CMS	Convention on the Conservation of Migratory Species of Wild Animals
COP	Conference of the Parties
CSBI	Cross Sector Biodiversity Initiative
CTMA	Chinese Traditional Medicine Association
DFID	Department for International Development
EATL	Euro-Asian Transport Links
EBRD	European Bank for Reconstruction and Development
ECNC	European Centre for Nature Conservation
EDGE	Evolutionarily Distinct and Globally Endangered
ERCA	Ecosystem Restoration in Central Asia
EC	European Commission
EC IFAS	Executive Committee of the International Fund for Saving the Aral Sea
ECO	Economic Cooperation Organization
ENVSEC	Environment & Security Initiative
EP	Equator Principles
EPFI	Equator Principles Financial Institutions
ESAP	Environment and Social Action Plan
ESCAP	Economic and Social Commission for Asia and the Pacific
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
EU	European Union
EURECA	European Union Regional Environmental Programme for Central Asia
FAO	Food and Agriculture Organization of the United Nations
FFI	Fauna & Flora International
FZS	Frankfurt Zoological Society
FLERMONECA	Forest and Biodiversity Governance Including Environmental Monitoring
GBPP	Green Bridge Partnership Program
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German Agency for International Cooperation)
GPS	Global Positioning System

GSCs	Global Support Components
GSLEP	Global Snow Leopard and Ecosystem Protection Program
GTI	Global Tiger Initiative
ICCWC	International Consortium on Combating Wildlife Crime
ICIMOD	International Centre for Integrated Mountain Development
ICMM	International Council on Mining and Metals
ICS	Iranian Cheetah Society
ICSD	Interstate Commission on Sustainable Development
ICWC	Interstate Commission for Water Coordination
IDB	Islamic Development Bank
IFAS	International Fund for Saving the Aral Sea
IFAW	International Fund for Animal Welfare
IFC	International Finance Corporation
IMF	International Monetary Fund
INTERPOL	International Criminal Police Organization
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
IPIECA	International Petroleum Industry Environmental Conservation Association
ITG	International Takhi Group
IUCN	International Union for Conservation of Nature
JWP	Joint Work Plan
LHNet	Large Herbivore Network
MAB	Man and Biosphere
MDGs	United Nations Millennium Development Goals
MEA IKM	Multilateral Environment Agreement Information and Knowledge Management
MEAs	Multilateral Environment Agreements
MOU	Memorandum of Understanding
MTIWP	Medium Term International Work Programme
NABU	Nature and Biodiversity Conservation Union
NATO	North Atlantic Treaty Organization
NBSAPs	National Biodiversity Strategies and Action Plans
NGO	Non-governmental organisation
NPT	Nature Protection Team
NSLEPs	National Snow Leopard and Ecosystem Protection Priorities
OECD	Organisation for Economic Co-operation and Development
OSCE	Organization for Security and Co-operation in Europe
PAs	Protected Areas
PAGE	Partnership for Action on Green Economy
PEBLDS	Pan-European Biological and Landscape Diversity Strategy
PEI	Poverty-Environment Initiative
PoWPA	Programme of Work on Protected Areas
PR	Performance Requirement
PS	Performance Standard
RBSAPs	Regional Biodiversity Strategies and Action Plans
REC	Regional Environmental Center for Central and Eastern Europe
RSPB	Royal Society for the Protection of Birds
SCA	Saiga Conservation Alliance
SDC	Swiss Agency for Development and Cooperation
SEC	Subregional office for Central Asia
SIC	Scientific Information Center

SLC	Snow Leopard Conservancy
SLN	Snow Leopard Network
SLT	Snow Leopard Trust
SPECA	Special Programme for the Economies of Central Asia
SPMS	Strategic Plan for Migratory Species 2015-2023
SRAP	Sub-Regional Action Programme
SSC	Species Survival Commission
TNC	The Nature Conservancy
TPN	Thematic Programme Networks
TRACECA	Transport Corridor Europe-Caucasus-Asia
UK	United Kingdom
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNODC	United Nations Office on Drugs and Crime
USA	United States of America
USAID	United States Agency for International Development
WB	World Bank
WCS	Wildlife Conservation Society
WCO	World Customs Organization
WCPF	Wild Camel Protection Foundation
WICAC	Wildlife Initiative for Central Asia and the Caucasus
WTO	World Trade Organization
WWF	World Wide Fund For Nature
ZGAP	Zoological Society for the Conservation of Species and Populations
ZSL	Zoological Society London

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