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CENTRAL EURASIAN ARIDLAND MAMMALS ACTION PLAN

(Prepared by the Secretariat)

Following COP Recommendation 9.1 the Secretariat has prepared a draft Action Plan to complement the Concerted and Cooperative Action for Central Eurasian Aridland Mammals. The document is a first draft, intended to stimulate discussion and identify further action needed to finalize the document in consultation with the Range States and other stakeholders, and to agree on next steps towards its implementation.

Action requested:

The 17th Meeting of the Scientific Council is invited to:

a. Take note of the document and provide guidance on its further development and implementation;

b. Review and advise in particular on the definition of the geographic scope, including the range states, and the target species (listed in table 1); and

c. Provide guidance on the terminology currently used for the Action Plan, agree on a definition of the term *aridlands* and/or consider using the term *drylands* instead.

Central Eurasian Aridland Mammals
Draft Action Plan

Produced by the UNEP/CMS Secretariat
November 2011

Content

1. Introduction

The fragmentation of habitats is one of the greatest threats to global biodiversity and to migratory species in particular. In contrast to the highly fragmented ecosystems in Europe, the open plains of Eurasia are the largest remaining ecosystems on Earth that still support mass migrations of birds, carnivores and large herbivores (Harris et al. 2009). The impact of barriers to migration, such as railways or fences, is still relatively limited, but the growing number of infrastructure projects and especially fences (often along borders) seriously constrain the movements of migratory ungulates and thereby reduce the genetic variety and connectivity of the species. Such connectivity, however, is of crucial importance especially for large migratory mammals that cover long distances through the steppes and deserts. Central Eurasia also represents a virtual "crossroads" of migratory flyways connecting Asia, Europe and Africa.

Much of Central Eurasia is arid due to relatively low precipitation rates and a harsh continental climate. Even in the Tian-Shan, the Pamirs and other mountain ranges in the region there are arid lands, which are also showing typical signs of desertification processes (UNEP 2007). Arid lands[1] harbour a wide variety and abundance of plant and animal species that are perfectly adapted to the extreme climatic conditions. Wetlands and rivers, which intersect the landscape, also play a vital role in the arid mosaic, for example for passing water fowl and even long-distance migratory fish. The Eurasian arid ecosystems include a vast number of different landscapes and biogeographic zones, each with a rich variety of plant and wildlife species highlighting the importance of this region for global biodiversity.

During their long distance migrations, ungulates such as the Kulan (*Equus hemionus*), the Saiga antelope (*Saiga* spp.), the Mongolian and Goitered gazelle (*Procapra gutturosa* and *Gazella subgutturosa*), the Argali mountain sheep (*Ovis ammon*) and wild camels (*Camelus bactrianus*) in particular depend on the intactness of large interconnected steppe landscapes and on the availability of those specific types of habitat for their survival. In turn these migrants have a number of positive feedback effects on grassland condition through grazing and nitrogen fertilization, as well as indirectly by preparing the habitat for other species to co-exist.

The relatively low levels of fragmentation and disturbance of the Eurasian steppes and deserts are linked to their vast size and the low human population density. But with habitat fragmentation increasing at an alarming rate and large infrastructure and mining developments, urgent attention is needed to minimize the negative consequences for wildlife. Illegal hunting for trophies, valuable horns, skins and meat continues to be rife. Poaching and illegal trade are becoming more professional and commercial, posing a serious challenge for law enforcement agencies. Large-scale land use changes, intensive agriculture, overgrazing of pastures, desertification, unsustainable use of water, exploitation for oil, gas and mineral exploitation, as well as climate change, further exacerbate this serious situation.

Compared to other migration ecosystems such as the wildebeest movements in the Serengeti-Mara Ecosystem of Tanzania and Kenya, the large migrations of Mongolian gazelles, Saiga antelopes and Kulans in Eurasia have been largely neglected by conservation efforts. The Central Asian steppes and

[1] Areas with a Length of Growing Period (LGP) less than 1 day are hyperarid (true deserts); less than 75 days arid, 75 to less than 120 days (dry) semiarid, 120 to less than 180 days (moist) semiarid. These areas together correspond closely to the areas denominated as drylands (FAO 1993). For ease of reference, it should be considered to use the term "drylands" rather than "aridlands" in the context of this Action Plan. Drylands are land areas characterized by low overall amounts of precipitation and include different levels of aridity (UNEMG 2011).

deserts are among the most underrepresented eco-region in the global protected area network and urgent action is needed to safeguard these landscapes while they are still intact (Coad et al. 2009).

There are huge opportunities for investment in conservation and sustainable management of the region's unique wildlife and its habitat. Migratory animals are not present in any one place all year round and their mobility requires flexible approaches for habitat and species management (such as seasonal protection). Fundamentally, however, especially in Central Eurasia where the culture and livelihoods of people and migratory species are closely intertwined, the full participation and engagement of local communities are essential to ensure lasting conservation success. Overexploitation is the primary threat to large terrestrial mammals and law enforcement is extremely costly and difficult across the vast ranges inhabited by migratory ungulates. It is thus paramount to address the socio-economic drivers of overexploitation and to establish economic incentives for protection.

CMS is determined to highlight just how vital the Eurasian steppes and deserts are for biodiversity conservation and for migratory species in particular and to take decisive action to conserve these species and their habitats while they are still intact.

Box I. Background of CMS Policy on Eurasian Aridland Mammals

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) was established to address the special threats faced by terrestrial, aquatic and avian migratory species, their habitats and migration routes. With its range of species-specific and regional agreements, the Convention plays a unique role in facilitating the conservation of migratory species. CMS has acquired considerable experience in addressing the specific requirements of aridlands and their migratory mammals, making it a specialized domain of activity.

With a view to emulate the success of the Sahelo-Saharan Concerted Action in similar arid biotopes in Eurasia, Recommendation 9.1 on Central Eurasian Aridland Mammals was adopted at the 9th Conferences of the Parties in 2008. The document recognizes that the populations of many Eurasian migratory mammals are in a profoundly unsatisfactory state of conservation and that these ecosystems and their unique migration phenomena are a crucial area of action for CMS.

Recommendation 9.1, foresees the development of an Action Plan and status reports for all species concerned, linkages to other existing instruments as well as activities already undertaken by Range States and partners. It encourages the Secretariat to pursue efforts to bring into the Convention Range States of the Central Eurasian fauna that are not yet Parties, and to liaise with other concerned Multilateral Environmental Agreements to enhance synergies. With a number of projects already being implemented in that area under other conventions and by many governmental agencies and NGOs, it was seen as important to follow a cooperative approach and that CMS acted as a catalyst for international collaboration, focusing on transboundary and long-distance migration.

1.1 Vision and Main Priority Directions

The present draft Action Plan (AP) has been developed by the UNEP/CMS Secretariat to present the key conservation concerns of migratory mammals in Central Eurasian arid lands and to kick-start negotiations. As a roadmap for CMS engagement in the region, it provides a framework for enhanced conservation and sustainable management of large migratory mammals with a strong focus on strengthening international and transboundary cooperation.

The overall goal is to develop an initial overarching and common strategic framework for action at the international level to conserve, restore and sustainably manage populations of terrestrial migratory large mammals and their habitat in the arid ecosystems of Central Eurasia.

In order to achieve this broad vision, the following priority directions are being proposed. More detailed activities for each of these priorities are outlined in Chapter 5.

1) **Species Conservation:** To conserve and sustainably manage populations of large migratory terrestrial mammals;
2) **Habitat Conservation and Management:** To maintain, or where necessary restore, the intact and interconnected arid ecosystems in Central Eurasia and improve sustainable natural resource management at the local, national and regional level, with full participation of rural communities;
3) **Capacity Building:** To create an enabling legal and institutional environment as well as comprehensive capacity building for relevant national agencies and rural communities based on conservation incentives such as sustainable use.
4) **International Cooperation:** To improve cooperation and coordination of activities at all levels and between all stakeholders.

1.2 Approach and Structure

This document builds upon the results of three recent workshops focusing on the conservation of migratory mammals in Central Asia[2], as well as on scientific and grey literature. The Action Plan (AP) provides an overview on the situation in the region, including a preliminary definition of its geographic and taxonomic scope. Key threats and conservation needs are analysed and prioritized. Focus is given to a comprehensive assessment of key stakeholders and the potential for cooperation, especially highlighting partnerships and synergies. Section five outlines four main priority directions and associated approaches which can help to achieve the goal stated above. Finally, practical recommendations for the further development and implementation of the plan are outlined.

The document will undergo a full participatory consultation process with all range states and experts, resulting in a range states meeting to adopt the AP and agree on the appropriate institutional and legal framework to ensure its implementation and monitoring. To this end, the present draft aims at stimulating discussion and creating momentum for a thorough evaluation and overview of the potential for effective conservation activities in the region. It offers a general direction for future development, anticipating participation of governmental and non-governmental structures, local communities, and international donor organizations. The final document should be based on a logical framework or similar tools and also consider concrete mechanisms to ensure implementation, monitoring and evaluation of activities such as “SMART” indicators as well as population and species/country specific work programmes.

2. Geographical and Taxonomic Scope

Defining the geographical and taxonomic scope of this AP poses a double challenge: on the one hand it should cover all threatened migratory mammals 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 (UNEP/CMS 2008), while on the other hand, such a large coverage risks

[2] Workshop on the Implementation and Coordination of the Saiga MoU and other CMS Instruments for Migratory Ungulates in Kazakhstan", Astana, Kazakhstan (17-18 February 2011) (http://www.cms.int/species/saiga/other_saiga_meetings.html), Training workshop for Central Asia and Caucasus on wildlife resource assessment, monitoring and quota setting, 22. - 27. Juni 2011, Vilm (http://www.cms.int/publications/Bulletin/2011_05_06_may_jun_e.pdf), and WCS Workshop on the Tajik Pamirs: Transboundary Conservation and Management, Dushanbe, 27-28 September

the AP remaining too ambitious and broad in scope to be implementable and to eventually become effective. This Chapter attempts to define of the geographical area and species covered.

2.1 Geographical Position and Range States

It is proposed to initially focus activities on the deserts, steppes and mountains of Central Eurasia, also synonymously referred to as Inner Asia. Thus defined, the region comprises the five independent Central Asian Republics of Uzbekistan, Turkmenistan, Tajikistan, Kyrgyzstan, and Kazakhstan; the Republic of Mongolia; the Xinjiang Uygur, Inner Mongolia, and Tibet Autonomous Regions of the People's Republic of China; and the adjacent parts of Afghanistan, Pakistan, the Islamic Republic of Iran, and Siberia in the Russian Federation (RIFIAS 2005)[3]. While this region still comprises a vast area of different ecological, historical, socio-economic and political characteristics, there is still a sufficient number of commonalities which are likely to kick-start effective regional cooperation, also leaving potential for spill-over effects and inclusion of further countries. Map 1 roughly indicates the borders of the proposed region. However, options for expanding this geographical definition to encompass additional species and areas such as Western Asia and the Caucasus remain open.

Map 1. Map of Central Eurasia, indicating the preliminary scope of the AP and CMS memberships.

Thus defined, the scope of this Action Plan ranges 4,000 km from west to east between the Pre-Caspian steppes and the Altai mountains, and 2,000 km from north to south between the forest-steppe of the West Siberian plains to the Iranian Plateau and the mountains of Parapamiz and Hindukush, bordering Russia in the north and west, to Iran and Afghanistan in the South and to China and Mongolia in the east

[3] For comparison, please see also the list of Range States as proposed by Devillers 2007.

(see map above). The Caspian Sea separates the region from Azerbaijan and the Caucasus region. Located in the centre of the Eurasian continent, the region does not have access to the oceans, only bordering the largest existing land-locked lake, the Caspian Sea, with a coastline of more than 1,000 km. More than ten per cent of Central Asia is covered with mountains with the Pamiro-Alai and Tien Shan being the most ancient and highest on Earth (UNECE 2004).

The region is enormously rich in natural resources and contains most of the world's known oil, gas and mineral reserves, which are increasingly being exploited, resulting in associated urban areas for workers and infrastructure development. Groundwater resources are also under heavy exploitation pressure due to irrigation and use in the industrial extraction of mineral deposits (UNEP 2006).

2.2 Overview on the Target Species

Nine large terrestrial migratory mammal species occurring in Central Eurasia are currently listed on the CMS Appendices. However, there are several species not listed which would equally benefit from protection and concerted action. Table 1 provides an overview on all species that have been proposed for concerted and cooperative action by Recommendation 9.1, as well as further relevant migratory mammals occurring in the region. The table also briefly indicates their IUCN conservation status, major threats and coverage by CMS instruments and other relevant projects, organizations or treaties. Annex I provides an expanded list of potential target taxonomic units that were proposed to the CMS Scientific Council at its 14th Meeting in 2007 (UNEP/CMS 2007).

For the Saiga antelope and the Bukhara deer (*Cervus elaphus yarkandensis*)[4], single species instruments – Memoranda of Understanding (MOU) – have already been developed under CMS. Both MOUs include specific Action Plans and work programmes outlining a variety of conservation actions to be undertaken by the Signatories throughout the entire range of each species.

Table 1. Overview on the global status, main threats and activities related to the species covered[5]

Species, CMS Appendix and common name	**Global Status[ii] and population trend [iii]**	**Main threats/issues**	**CMS instruments and non-conclusive list of other organizations and projects**
CARNIVORA *Acinonyx jubatus* **I** (except populations in Botswana, Namibia and Zimbabwe) Cheetah	VU ↓	Once distributed across the Middle East, Central and southeast Asia, today the populations of the Asiatic cheetah have been reduced to a small, critically endangered population in Iran: Main threats are overhunting of cheetah prey, habitat degradation from overgrazing and droughts, poaching by herders for the perceived or real threats they pose to livestock	CITES I, Panthera, WCS
Uncia uncia **I** Snow leopard	EN ↓	Depletion of wild prey base (due to hunting and competition with livestock); poaching (for illegal	CITES I NABU, Panthera

[4] Please note that he Bukhara deer is listed on both CMS Appendices as *Cervus elaphus yarkandensis* following Wilson and Reeder 2002 as taxonomic reference, while the MOU refers to the species as *Cervus elaphus bactrianus*.

[5] Adapted from: Review of CMS existing instruments and projects on terrestrial mammals (including bats) UNEP/CMS/Inf.10.15 UNEP-WCMC, July 2011.

Species, CMS Appendix and common name	Global Status[ii] and population trend [iii]	Main threats/issues	CMS instruments and non-conclusive list of other organizations and projects
	(as *Panthera uncia*)	trade in pelts and body parts for medicinal use); capture of live animals (e.g. zoos and pet trade); human-farmer conflict; and lack of conservation capacity, policy and awareness. Also habitat degradation and fragmentation, military conflict, and lack of trans-boundary co-operation (Jackson *et al.,* 2008).	Snow Leopard Program, Project Snow Leopard, Snow Leopard Conservancy, Snow Leopard Trust, WCS, WWF
Equus hemionus **II** Asiatic wild ass	EN ↓	Overhunting (mainly for meat); habitat loss and degradation (due to human settlement, cultivation, grazing by livestock, infrastructure development and resource extraction); conflict with humans (due to crop depredation); and competition for water (with humans and livestock). Locally, habitat fragmentation (e.g. by fences and transportation corridors); war and civil unrest. Potentially also disease, and severe weather (drought) (Moehlman *et al.,* 2008b).	CITES I/II ACBK, Association GOVIIN KHULAN, WWF Mongolia, WWF Russia
Equus kiang **II** Kiang	LC →	Changes in rangeland use policy; competition with livestock (for food and water); fencing of pastures; and hunting. Potentially also disease transmission from livestock; and, locally, resource extraction (e.g. gold mining and oil exploration) (Shah *et al.,* 2008).	CITES II, WCS
ARTIODACTYLA *Camelus bactrianus* **I** Bactrian camel	CR ↓ (as *Camelus ferus*)	Unsustainable hunting (for sport and food); disturbance and persecution (due to competition with livestock for food and water); habitat degradation by livestock; hybridization with domestic camels; and severe weather (drought, resulting in increase in predation by *Canis lupus* at remaining oases). Potentially also habitat loss due to mining and proposed gas pipeline (Harris and Leslie, 2008).	WCPF
Cervus elaphus yarkandensis **I/II** (populations in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Afghanistan) Bukhara deer	LC ↑ (*C. elaphus*)	Unsustainable hunting (for meat); and habitat loss and degradation (due to logging, conversion of riparian forest to agriculture, livestock grazing, regulation of water flow and water abstraction). Potentially also contamination with pesticides (UNEP/CMS, 2005c; Lovari *et al.,* 2008).	Bukhara deer MOU, CIC, WWF Large Herbivore Initiative, WWF Russia's Programme for Central Asia
Gazella subgutturosa **II** Goitered gazelle	VU ↓	Unsustainable Hunting (for meat and trophies); and habitat loss (due to agricultural development and increase in livestock). Locally, also capture of live animals (for private	

Species, CMS Appendix and common name	Global Status[ii] and population trend [iii]	Main threats/issues	CMS instruments and non-conclusive list of other organizations and projects
		collections), and severe weather (harsh winters) (Mallon, 2008a).	
Procapra gutturosa **II** Mongolian gazelle	LC ?	Unsustainable hunting (for meat and hides); and habitat fragmentation (by fencing along railway lines). Also disease outbreaks and severe weather (harsh winters) (Mallon, 2008b).	WCS, WWF Mongolia
Saiga borealis **II** Saiga antelope (Mongolia)	EN ↓ (as *S. t. mongolica*)	Habitat degradation (due to livestock grazing); severe weather (harsh winters and summer drought); and hunting (for horns and meat) (Mallon, 2008c; 2008e; UNEP/CMS, 2010e).	CMS Saiga MOU, CITES Appendix II, , FFI, CIC, IUSN/SSC, SCA, WCS, WWF
Saiga tatarica **II** Saiga antelope	CR ↓ (as *S. t. tatarica*)	Unsustainable hunting (for horns and meat); severely skewed sex ratios (due to selective hunting of males); loss of habitat and destruction of traditional migration routes; and disease. Locally, encroachment of non-forage plant species following abandonment of grazing land (Mallon, 2008c).	Saiga MOU, CITES Appendix II, ACBK, FFI, FZS CIC, IUCN/SSC, SCA, WCS, WWF
Bos grunniens **I** Yak	VU ↓ (as *B. mutus*)	Unsustainable hunting (e.g. for meat); loss and degradation of available habitat (due to livestock grazing); hybridization with domestic yaks; and persecution (due to conflict with pastoralists). Potentially also disease (from livestock) (Harris and Leslie, 2008).	WCS
Ovis ammon Proposed for **II** Argali mountain sheep	NT ↓	Illegal hunting, habitat loss and degradation, including competition with and disease transmission from livestock, drought, genetic isolation due to migration barriers (in particular border fences)	CITES Appendix II, Nature Protection Team Tajikistan with GIZ, WCS, WWF
Pantholops hodgsonii Chiru/Tibetean antelope	EN ↓	Poaching (for their commercial sale of their underfur, horns), expansion of livestock herding, road building (access of poachers, barriers to migration), fencing of pastures, harsh winters	CITES I, WCS

[ii] **Global threat status according to the IUCN Red List:** DD = Data Deficient, LC = Least Concern, NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critically Endangered, EW = Extinct in the Wild.

[iii] **Global population trend according to the IUCN Red List:** ↓ = decreasing population trend, ↑ = increasing population trend, → = stable population trend, ? = population trend unknown.

3. Main Threats and Conservation Needs

Central Eurasia faces great challenges in achieving sustainable development and its ecosystems are increasingly affected by human activities such as poaching, unsustainable land use and large infrastructure projects, all linked to the socio-economy of the countries and the rural communities. If this trend continues ecosystem services such as water and pasture quality and quantity, as well as livelihoods will be steadily eroded with wide ranging impacts on biodiversity and socio-economies.

Next to threats related to human activities, the region will increasingly suffer from the impacts of accelerated climate change such as drought, desertification, melting of glaciers and increased frequency and intensity of natural disasters.

3.1 Habitat Loss and Degradation

The most immediate drivers for the degradation of the arid ecosystems in Eurasia are desertification and droughts due to climate change, increasing livestock numbers and associated overgrazing of pastures, and illegal logging, as well as fuel wood collection. Livestock remain the mainstay of agricultural production in the region and one of the main assets of local communities, especially for poorer households which often depend on livestock for subsistence and income. However the drivers of degradation processes vary locally and do not apply generally to the whole region.

Being generally unsuited for high-yield agriculture, the great Eurasian steppe sand deserts were typically pastoral nomadic communities, raising animals such as yaks, sheep and horses, or hunters and fishers. Most of these lands are cultivated for grain crops and cotton, but soil fertility has decreased markedly due to large scale grassland conversion into croplands and land reclamation. Together with climate change this resulted in often irreversible degradation and desertification of the steppe landscapes.

The unique tugai, or riparian forests are characteristic of. Illegal logging, collection of fuel wood, water regulation and storage of water in large reservoirs as well as its diversion from the rivers constitutes a major threat to the remaining intact tugai forests along the river basins of the Amudarya and Syrdarya, which provide critical habitat for species such as the Bukhara deer (Krever et al. 1998). The transformation of wetlands into arable land and pastures further aggravates the problem.

3.1.2 Unsustainable Management of Land and Water

In the second half of the twentieth century, the natural environment of the region underwent large changes. For several thousands of years, nomadic land use systems adapted to the steppe ecosystems have proved efficient and sustainable strategies to use pastures and cope with the climatic conditions in the region. During the time of the Soviet Union land use practices dramatically changed with reclamation activities becoming the main drivers of ecosystem degradation and desertification (Fruhauf and Meinel 2006).

The total area of agricultural land and the number and size of irrigated fields, in particular for cotton and wheat production, increased significantly. A huge irrigation system was set up during Soviet times stretching over thousands of kilometres and supported by a vast network of hydroelectric stations and reservoirs. Heavy use of pesticides and fertilizers went along with large-scale industrial exploitation of natural resources such as oil, natural gas, iron, copper, and ores. Combined with the arid and windy climate, these changes have led to the degradation of natural ecosystems and agricultural lands, and are continuing to have serious health implications (Krever et al. 1998).

The drying of the Aral Sea with all its disastrous ecological, socio-economic and political consequences is the most famous example of the unsustainable management of the water resources in the region. Regulation of water flows by the construction of large reservoirs and reduction of inter-seasonal and inter-annual variation of water levels in combination with changes of the seasonality of water levels and flooding have had a disastrous impact on the ecosystems.

The collection of fuel wood and other plants used as fuel poses further threats to ecosystems. In Tajikistan the large scale collection of teresken (*Ceratoides papposa*) for fuel and food for livestock by local people causes shortages of winter forage and general habitat degradation as well as soil and wind erosion. Teresken is a major source of food for wildlife such as the argali as well as for livestock and is dug out completely by herders for fuel, which prohibits regrowth of the already very slow-growing plant.

3.1.1 Fragmentation of Habitat

The construction of linear infrastructure such as roads and railways not only causes increased fragmentation of habitat and create barriers to migration. They also provide better access to remote areas for poachers and those trading in illegal wildlife goods. In Central Eurasia and in Mongolia in particular, the number of large infrastructure projects (including railways, mines, pipelines, border fences, roads, etc.) being developed has increased rapidly over the last years. Sometimes some of these barriers are only problematic during construction, such as underground pipelines, which are only a threat when the trench has been dug but not yet been filled. But if such large infrastructure projects traverse critical habitat and major migration routes this can pose a serious threat for many CMS-listed species, such as Asiatic wild ass and the Mongolian gazelle (Lhagvasuren et al. 2011). Negative effects of railways and fences (e.g. along roads and borders) on the migratory ungulates include genetic isolation, and splitting of populations into smaller groups, which are more prone to extinction. They also prevent seasonal migration to grazing sites and cause direct mortality when fleeing animals run into them or die hanged in the barbed fences.

3.2 Poaching and Illegal trade

Overexploitation is the main threat for large mammals, leading to dramatic population collapses across the region. Among the species most seriously affected by poaching is the Saiga antelope (*Saiga* spp.). Populations crashed by 95 percent from 1 million to less than 50,000 animals within a single decade following the breakdown of the Soviet Union. The species is valuable for its meat and horns, which are only born by the males and are popular in the Chinese Traditional Medicine. Although trade in Saiga horn is strictly prohibited across all range states, illegal trade to consumer countries in South-East Asia is continuing.

In most of the region, mountain sheep such as the argali, urial (*Ovis vignei*), blue sheep (*Pseudois naur*) and goats such as Asiatic ibex (*Capra siberica*), wild goat (*Capra aegagrus*) and markhor (*Capra falconeri*) are illegally hunted for sport and trophies, to a lesser degree also for subsistence. Security groups such as military, police and border guards add further pressure from overharvest. The uncontrolled shooting of animals is leading to an overall contraction in range and decline in populations as well as increased flight distance and overall reduced fitness of the animals. This in turn causes predators to turn to livestock instead. The sustainable use of valuable mountain ungulates, such as the markhor where a trophy fee can reach up to US$80,000, of which 80 percent is allocated to the community where the hunt occurred, can be a vital conservation incentive, as long as it is based on principles of Community-Based Natural Resource Management (Frisina 2009). Once populations are depleted however, this opportunity no longer exists.

3.3 Unsustainable use of wildlife

In many of the range states, trophy hunting for wild sheep and goats is a lucrative business, generating significant income to governments, hunting companies and reserves as well as for local communities. While this can provide important economic incentives to protect wildlife and habitat, there are numerous pitfalls that render these projects a highly sensitive issue. If not well managed and controlled

and or if harvest levels are set inappropriately and unsustainably, this may result in serious problems for both social community structures as well as for the population status of the species. Especially for migratory species, exact estimates of population sizes are often impossible due to the movements of the animals across various countries which each have different monitoring techniques and timing.

Likewise, the sharing of benefits derived from hunting is complicated especially for migratory species as many different communities, private concessions, administrative units and countries are involved. This also relates to the problem that user rights and obligations are often not clearly defined, making it difficult to develop ownership and accountability of users and managers.

Another fundamental constraint to building up efficient conservation management structures refers to corruption. This is particularly relevant to trophy hunting projects, e.g. when licenses are illegally sold or when illegal hunting is allowed locally in undesignated places and times. Foreign hunters who lack awareness and respect for national laws further aggravate the problem. Also, the benefits made from harvesting both sedentary and migratory ungulates often do not benefit local communities in the way they should because the revenues are held at a higher governmental level (McCarthy et al. 2003).

3.4 Human-Wildlife Conflict

Human-wildlife conflict is a serious problem and common to all areas where wildlife and human populations coexist and share limited resources. If those resources are important for people's livelihoods, conflicts and competition between communities and wildlife are likely to become more intense. Carnivores such as the snow leopards (*Uncia uncia*) are not only poached for their skins, but also to retaliate and prevent further predation on livestock. Snow leopards and wolves (*Canis lupus*) that prey on livestock can pose a serious threat the precarious livelihoods of poor farmers. However, predators prefer wild prey if it is abundant, and impoverished wildlife populations are one of the major causes for carnivores to shift their diet to livestock. (Morrison et al. 2009, McCarthy et al.2003)

While most of the species concerned are carnivores, competition for rangelands between livestock and wild ungulates for grazing and water resources is intense in many parts of the region. Understanding the interactions between livestock production and the environment including wildlife is crucial to reduce conflict over land use, access to pastures, fuel material and water. Driving forces include land use transformation and privatization, increasing demographic pressures, the introduction of modern transport and low-cost irrigation techniques, increasing livestock numbers and the expansion of arable farming into more and more marginal and remote areas (FAO 2001). This places further pressure on the rangeland vegetation as well as on pastoralists and herders, resulting in reduced resilience of rangelands and poor availability and quality of biomass for both livestock and wildlife (FAO 2001). Furthermore, in the case of the wild camel, the yak (*Bos grunniens*) and the Przewalski horse (*Equus ferus przewalskii*), hybridization with domestic forms of the species is a serious threat to the genetic composition of the wild populations.

3.5 Wildlife Diseases

Epizootic diseases such as foot and mouth disease (FMD) can have significant impacts on human, livestock, and environmental health leading to loss of life, livelihoods and food security. They can also impact heavily on migratory species through death, injury, reduced productivity and competitive fitness, and increased susceptibility to predation and other disease. They can moreover worsen human-wildlife relationships. Mongolian Gazelle are repeatedly affected by foot-and-mouth disease with the most recent outbreak in 2010 which occurred concurrently with a large livestock mortality event.

Next to the disease itself, the management response to address its spreading can have much worse impact than the disease itself. Migratory species have been blamed to spread the infection from livestock and disseminate it geographically through migration. Responses to minimize the economic impacts to famers from epidemics have already led to widespread slaughter of both wild and domestic animals (Jacob et al. 2011). In many cases, functional strategies and livestock health programs as well as the necessary infrastructure to effectively protect domestic animals and wildlife from diseases are missing. In addition, centralized land use planning and incentives favouring unsustainable agriculture practices in marginal arid lands that outcompete ecologically sound natural resource management result in reduced ecosystem resilience that are more prone to disease infection.

3.6 Information Gaps and Institutional Weaknesses

While for many of the above-mentioned species, knowledge about their cross-border migration routes and critical habitat sites is improving, there are fundamental gaps in the sharing of such knowledge and the cross border collaboration. Coordinated research, management and monitoring of the populations and migration routes is urgently needed in order to fill the information gaps on the status and population dynamics of species, their transboundary movements and corridors as well as on the management practices in the respective countries. Due to a lack of human and financial capacities, appropriate equipment and of transboundary information sharing, the quality of available data is often very poor although reliable data on the status of the species is essential to inform effective management. Furthermore, monitoring methodologies often differ considerably among the countries, when harmonization is much needed. Agencies responsible for nature protection and protected area management are often in dire need of capacity building, better equipment and appropriate salaries. This is unfortunately a common feature across the entire region, but with a few notable exceptions.

4. Stakeholders, Partnerships and Synergies

International organizations, governmental institutions, local people as well as national and international NGOs are actively engaged in the protection of arid lands in the region in a variety of ways. This section aims at identifying conservation capacities as well as common objectives and synergies between the different mandates, programmes and initiatives. CMS promotes collaboration by acting as an international platform bringing together stakeholders that commit to a common goal, such as the implementation of a work programme, action plan or legal instrument. Analyzing the current landscape of stakeholders and activities in order to identify common interest and synergies constitutes a first step to harness these synergies and make efficient use of existing resources.

Following the collapse of the Soviet Union, an increasing number of regional and international bodies or initiatives have either been newly established (such as the CACILM, CAREC, IFAS, EnvSec) or started programmes in the region. Many focused their attention on the environmental problems of the region, e.g. related to the Aral Sea crisis and the political tensions relating to transboundary water management. Considering that the conservation of migratory terrestrial mammals and their habitat is closely interlinked with other environmental and developmental concerns, there is a great deal of potential to address many of those issues under a common framework while maintaining individual mandates, missions and objectives.

In order for CMS to fulfil its role as a catalyst for cooperation, a sound assessment of the institutional and stakeholder landscape is needed. The wide spectrum of international organizations and donors present, often addressing similar issues, necessitates finding ways to harmonize the various operating frameworks in order to avoid overlap and duplication as well as to increase coordination. Table 2.

provides an overview on stakeholders and their relevant activities in the region, identifying common interest and synergies towards a joint vision. It should be considered to conduct a full stakeholder analysis and assess individual interest, support, influence/relevance and strengths/weaknesses.

Table 2: Stakeholders in the Central Eurasian region and potential synergies (in alphabetical order)

Stake holder	Program/Activity	Synergies
National Governments	National Governments and their relevant ministries and agencies are responsible for all legal and policy related matters related to wildlife conservation; they decide and lead on development and implementation of activities.	The implementation of CMS and this Action Plan entirely relies on the governmental support and political will of the range states.
Local communities	The culture and livelihoods of rural communities and migratory wildlife in the region are closely intertwined. Agricultural practices (crop production, irrigation, herding) have a direct impact on ecosystems and it is necessary to understand and address the incentives (e.g. market forces/subsidies) that drive unsustainable behaviour.	Without the support, acceptance and participation of local people, conservation activities are likely to fail and lose their credibility especially if they have negative effects on local people's livelihoods.
International/Regional initiatives and platforms		
CACILM	The Central Asian Countries Initiative for Land Management aims at combating land degradation, improving rural livelihoods and adapting to climate change. It is a partnership between Central Asian countries and the international donor community with the goal to restore, maintain and enhance the productive functions of land in Central Asia, to improved economic and social well-being of those dependent on these resources and preserving the ecological functions of the land.	With its focus on improving sustainable land management to halt land degradation, CACILM also contributes to reducing threats to migratory species inhabiting those arid lands. Furthermore, it constitutes a regional partnership between countries fostering overall cooperation.
CAREC	The Central Asia Regional Economic Cooperation (CAREC) Program is a partnership of 10 countries and 6 multilateral institutions (ADB, EBRD, IMF, ISDB, UNDP and WB) working to promote development through cooperation, to achieve economic growth and poverty reduction. Priority areas: transport, trade facilitation, trade policy, and energy.	The 10 CAREC countries are Afghanistan, Azerbaijan, China, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan. CAREC is an important partner to address infrastructure issues and integrate EIA in planning processes.
ENVSEC	The Environment and Security Initiative was established initially by OSCE, UNDP, UNEP and further strengthened by the Regional Environmental Center, NATO and UNECE. About 50 projects in the Central Caucasus, Central Asia and Russia focus on natural resource and security risk management; environment and security risk reduction; frozen conflict and climate change adaptation; information on environment and security, participation in risk management.	ENVSEC projects aim at sustainable natural resource-, land- and water management. Its recent report[6] highlights the potential of migratory species not only to foster transboundary cooperation on the protection of those species but also to increase stability, trust and peace building among the range states.
International Biodiversity Conventions		
CBD	The Convention on Biological Diversity, whose 193 Parties are required to regulate or manage biological resources important for the conservation of biological diversity,	All range states are Parties to CBD. CMS has a formal joint programme of work with CBD, who recognizes CMS as the

[6] UNEP 2011: Environment and Security in the Amu Darya River Basin (http://www.envsec.org/publications/AmuDarya-EN-Web.pdf)

	promote the recovery of threatened species, and the protection and restoration of habitats as well as promotion of sustainable use. Relevant programmes are the Programme of Work on protected areas, the revision of the National Biodiversity Strategic Action Plans (NBSAPs), and the Dry and Sub-humid Land Work Programme. The last of these aims at identifying best practices to address conflicts between biodiversity conservation, sustainable use, pastoralism and agriculture in dry and sub-humid lands.	lead partner for migratory species. Both are members of the Liaison Group of Biodiversity-related Conventions, aimed to enhance coherence and cooperation. Collaboration exists in revising the NBSAPs for which CMS has developed guidelines about how to integrate CMS strategic targets and the conservation of migratory species into the NBSAPs.
CCD	The Convention to Combat Desertification addresses land degradation in arid, semi-arid and dry sub-humid areas. Priority areas of its National Action Programmes and Sub-Regional Action Programmes include monitoring and evaluation of desertification processes, improvement of water use in agriculture, management of forest resources, agroforestry, pasture management, conservation of biodiversity and nature protection, economic capacity building of local communities. Central Asia is one of the focus areas.	16 countries covered by this AP are parties to UNCCD and subject to its NAP and SRAPs. Common issues include habitat degradation, biodiversity conservation and sustainable land and water management. A Memorandum of Cooperation between CMS and UNCCD Secretariats was signed in 2003 in order to pursue joint activities.
CITES	The Convention on International Trade in Endangered Species of Wild Fauna and Flora, with 175 Parties, aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Each Party to the Convention must designate one or more Management Authorities in charge of administering a licensing system and one or more Scientific Authorities to advise them on the effects of trade on the status of the species. CITES developed training and capacity building material for customs and border control and is a cooperating organization to the Saiga MoU. Many CMS species are also listed on the CITES Appendices.	Of the range states covered by this AP, only Tajikistan and Turkmenistan are not yet a Party to CITES. CITES is an important ally in addressing illegal and unsustainable hunting, illegal trade and poaching. Joint activities of CMS and CITES are outlined in a formal joint work programme and include harmonization of taxonomy and nomenclature, joint actions for the conservation and sustainable use of shared species and administrative and fundraising cooperation.
International Organizations (bi- and multilateral development cooperation)		
CIC	The International Council for Game and Wildlife Conservation promotes sustainable hunting through knowledge sharing and networks to benefit people and conserve nature. CIC together with the Food and Agriculture Organization set up a strategic partnership called the Wildlife Initiative for Central Asia and the Caucasus (WICAC). Its aim is to assist the countries in the Caucasus and Central Asia to strengthen their wildlife sectors and promote responsible and sustainable hunting that contributes to the improvement of rural livelihoods.	The CIC has signed the Bukhara deer and Saiga antelope MOU. CIC has scientific expertise on nature and wildlife conservation issues, especially as they relate to hunting and sustainable use. CIC has also contributed to the elaboration of the Principles for developing sustainable wildlife management laws in Western and Central Asia.
FAO	The Food and Agriculture Organization is a specialized UN agency whose aim is to achieve food security by improving agriculture, forestry and fisheries practices and acting as a knowledge network. FAO works on many livestock and wildlife health issues. In its various departments (e.g. on natural resources and environment), FAO *inter alia* examines issues related to land, water and genetic resources, and the access to and tenure of these resources.	CMS and FAO have jointly launched the Scientific Task Force on Wildlife and Ecosystem Health; FAO is a partner in the WICAC initiative in the frame of which the Principles for developing sustainable wildlife management laws in Western and Central Asia were elaborated.
GIZ	Through its different organizations, the German	The activities carried out under this

	Development Cooperation, notably the Gesellschaft fuer Internationale Zusammenarbeit (GIZ) operates a range of programmes in the region, including the "Sustainable use of natural resources in Central Asia" by GIZ. Project components include sustainable pasture and forest management as well as wildlife management.	programme *inter alia* aim to revise and improve existing forest and hunting laws. The wildlife component of the programme significantly contributes to much of the activities envisaged under this AP.
IUCN	Through its Regional Office for Western Asia and its Regional Office for Europe, IUCN coordinates a range of environmental activities including water, biodiversity, and protected areas management, and environmental legislation. Relevant programmes include the Regional Water Resources & Drylands and Protected Areas Programme	IUCN works to enhance the development of adequate regional approaches and models for effective protected area management, with a focus on community participation and involvement at all levels. IUCN is a Signatory to the Saiga MOU.
UNEP	The United Nations Environment Programme helps decision-makers in governments, the private sector, NGOs and the MEA Secretariats to make informed choices in relation to sustainable land management. The project on Land Degradation Assessment in Drylands (LADA) develops tools and methods to assess and quantify the nature, extent, severity and impacts of land degradation on dryland ecosystems, watersheds and river basins.	Especially the project on mitigation of land degradation and sustainable land use of drylands contributes to the objectives under this AP. The CMS Secretariat itself is administered by UNEP, ensuring close cooperation.
UNDP	The United Nations Development Programme operates various projects in the region, addressing threats to migratory species and arid ecosystems restoration and conservation, including steppe and wetlands management. The Integrated Drylands Development Programme (IDDP) aims at reducing the vulnerability of poor populations to environmental and socio-economic challenges, and to improve natural resources management at local level.	Projects includes steppe and tugai forests conservation and management, , integrated water management and efficiency plans for various river basins, mainstreaming biodiversity into oil-and-gas sector policies and operations, strengthening national capacities to implement biodiversity conventions, strengthening of protected area systems
World Bank	The Central Asia Energy-Water Development Program (CAEWDP) of the World Bank aims to improve diagnostics and analytical tools to support the countries of the region in well-informed decision-making to manage their water and energy resources, strengthen regional institutions, and stimulate investments. It focusses on energy development, energy-water linkages and water productivity.	The World Bank is an important stakeholder to address infrastructure issues and integrate EIA and migratory species concerns in the planning and construction processes of their projects.
International Non-Governmental Organizations		
FFI	Flora and Fauna International runs a programme in the Central Eurasian region, helping to raise awareness of the need for action within the donor sector and amongst other international conservation and development charities. It aims to build the capacity of local partners to conserve priority species and habitats. Its focus is primarily in three core areas: Central Asia, the Caucasus, Central-Eastern Europe, and the Balkans.	FFI projects contribute to the conservation of the Saiga, especially in the transboundary Ustyurt plateau between Kazakhstan and Uzbekistan, addressing diseases and illegal trade. Main countries are Georgia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan. FFI is a Signatory to the Saiga MOU.
FZS	The Frankfurt Zoological Society is an internationally operating conservation organisation with its main focus on eastern Africa. However, FZS runs a long-term project in Kazakhstan on the conservation of the remaining population through the creation of large reserves in Kazakhstan steppe landscapes and through the support of anti-poaching units.	The Altyn Dala Conservation Initiative, a large scale programme to conserve the steppe and desert ecosystems include protected area networks and corridors, environmental education, research and collection of baseline data on ecosystems

		and species.
LHI	Large Herbivore Foundation is a nature conservation and-restoration program for large plant eating mammals and their habitats in Eurasia. The LHF program is addressing over 45 species of large herbivores with the aim to raise awareness about the benefits of ecosystems and landscapes inhabited by populations of large herbivores in all regions, where those species occur in the wild.	Under the program some 30 projects aim at protecting the large herbivore fauna and restore their ecological role within their historical ranges with a focus on khulan, wild camel, goitered and mongolian gazelle, saiga, argali and bukhara deer.
WCS	The Wildlife Conservation Society has priority landscapes in Tibet, the Daurian Steppe, and the Pamirs Mountains of Central Asia. WCS mission is to save wildlife and wild places worldwide through science, global conservation and education. WCS works to address climate change, natural resource exploitation, the connection between wildlife health and human health, and the sustainable development of human livelihoods.	In China, Mongolia, Afghanistan and Pakistan, WCS *inter alia* helps collecting baseline data, training of community rangers, operates community conservation programmes, assists in developing monitoring protocols for wildlife, encourages transboundary conservation, surveys disease, works on improving protected area management. WCS is a Signatory to the Saiga MOU.
WWF	The Central Asia Programme of the WWF supports *inter alia* Saiga conservation, especially public awareness raising within range states and socio-economic assessments in order to develop alternative incomes for local communities. WWF runs anti-poaching activities for the Betpakdala population of Saiga in Kazakhstan and on snow leopard focusing on rural development, education and illegal wildlife trade. The GEF funded "econet" project of WWF aimed at developing a protected area network, including restoration of riperian forests.	Its regional offices are conducting conservation projects across the whole region. WWF-Russia is a Signatory to the Bukhara Deer and Saiga Antelope MOU and supported the implementation of the Bukhara Deer Action Plan. Many WWF projects cover the species of this AP, contributing to the conservation of these species and the implementation of CMS.
Private Sector		
Hunting and Tourism companies	Hunting companies, outfitters, tourism associations organizing hunting tours/tourism are interested in high wildlife abundance and appropriate tourism infrastructure. The high prices (up to US$ 50,000) for the horns of wild sheep such as argali generate large profits. Hunting reserves often monitor populations, enforce law, control illegal hunting, and provide social services to the communities.	The private sector engaged in hunting and tourism is an important stakeholder especially in terms of raising awareness about the opportunities and risks of tourism and trophy hunting programs and in applying clear sustainability criteria for their programs.

5. Priorities for Conservation Action

Based on the information above, this section attempts to draw conclusions and formulate activities for each of the four priority direction that have been defined in the introduction: 1) monitoring and technical species conservation activities, 2) sustainable management and conservation of habitat, 3) capacity building and local community involvement, and 4) political aspects relating to international and institutional cooperation, information exchange and networks. The following activities are being proposed as a first step in order both to stimulate discussion and provide the basis for further development of the AP.

5.1 Species Conservation

Create incentives for conservation

- Define appropriate incentives to ensure local support and compliance with hunting regulations and restrictions on land use by evaluating the various incentives utilized and study their benefits and limitations in the relevant local context.
- Identify suitable sites for the development of sensitive and appropriate ecotourism, including hunting tourism, in order to provide direct benefits from the existence of wildlife as an incentive for local communities to conserve animals and their habitats.
- Consider establishing or restructuring trophy hunting programmes that are sustainable, well managed and controlled and provide returns to local people. Such programmes should be based on:
    - Appropriate involvement and co-management of local communities;
    - Solid information about the population status of the animals and the sustainable trophy harvest levels,
    - Baseline surveys and impact monitoring of the target species, using appropriate scientific monitoring methods as well as socio-economic and cultural assessments within target communities.
- Establish a harvest monitoring system and database as well as (transboundary) hunting plans with an equitable and transparent financial distribution structure, to set annual quotas and enhance local and national capacities to conduct wildlife surveys, monitoring and reporting to ensure sustainability.
- Improve and/or modify national relevant legislation in terms of sustainable exploitation of the target species to enable direct benefit sharing, between the relevant state agencies, hunting concessions and local communities.
- Publish information about the opportunities and pitfalls of trophy hunting including best and worse practices to raise understanding and awareness among user and conservation groups and involve national and international hunting business in these campaigns.

Prevent Poaching

- With input from local people, develop, or if available implement, guidelines for community-based natural resource management projects on migratory species, providing them with legal rights and responsibilities related to the sustainable use of these species, especially in places that will never benefit from ecotourism. Successful pilot projects could guide and inform further policy.
- Mobilize the financial and political means necessary to strengthen the mandate and capacities of the nature protection agencies (e.g. provide appropriate cars, petrol, uniforms, increased salaries, more staff, equipment) as well as the users of private or community-based game management areas, like conservancies or hunting concessions, in order to enable them to enforce the law, to monitor their populations and control illegal hunting.
- Involve armed forces such as the police, military and border guards in anti-poaching activities and projects to ensure their role in illegal hunting is minimized. Improve transboundary cooperation to avoid poaching across borders.

Address illegal trade of wildlife products

- Understand the drivers of illegal trade, which could be livelihoods related and connected to increasing market demands. The incentives of local people to engage in such illegal practice need to be assessed and possibly changed.
- Build and train multi-agency teams, including customs officials, trade authorities, inspection officers, border guards, and rangers, to monitor hunting and prevent illegal trade of species and their products across borders.
- Encourage cooperation between in-situ conservation and consumer countries to financially contribute to the conservation and sustainable use of the respective species.[7]

Research and Monitoring

- Develop an international network of specialists and organizations involved in research, monitoring and conservation of migratory terrestrial mammals (including trophy hunting concessions/guides) in order to build up a common data base which might be linked to existing ones such as MoveBank or the Saiga Resource Centre.
- Improve the knowledge about the species covered by this AP through coordinated research and monitoring, e.g. by agreeing on standardized methods for data collection and processing, mechanisms for information sharing, as well as on coordinated (simultaneous) timing of the population surveys to improve quality and reliability of data. This could link to the database above, which could also include standard or species-specific monitoring guidelines.
- Consider setting up a monitoring commission with representatives from all range states dealing with particular species to coordinate and arrange for joint, transboundary monitoring missions, and secure funds to provide appropriate equipment and international experts to join those missions in order to combine training, research and data collection.

Single species action plans

- Develop and implement single-species action plans in close collaboration with technical experts, range states and other stakeholders. These plans should outline specific actions for threatened populations, assist in coordinating conservation activities and sustainable use across the species' range and contribute to the overall implementation of this AP.

Human-wildlife conflict

- In order to reduce the predation of livestock by carnivores, it is necessary to assess and document thoroughly the exact location, nature and extent of the problem, using participatory appraisal methods.
- Develop appropriate measures to alleviate the conflict such as livestock insurance programmes and the use of especially trained guard dogs that protect domestic animals. In order to develop and implement such programs, the necessary community structures, resources and skills need to be identified.

Wildlife diseases

- Reduce threats from disease transmission through livestock by separating wildlife and livestock in cases of weak health conditions, by improving the overall health [status] of livestock and reducing the level of ecto-parasite infestation in livestock in order to help control the risk of transmission of vector-borne diseases to wildlife.

[7] See also the International Medium Term International Work Programme under the Saiga MOU (http://www.cms.int/species/saiga/saiga_Action_Plan_MTIWP.htm)

- Conduct epidemiological and other research on wildlife diseases to inform mitigation, control and action in the event of a disease outbreak or mass mortality episode. Based on this information, integrate prevention of disease transmission into the management of protected areas and game management areas.
- Improve the response capacity to emergencies involving wildlife diseases, through the CMS/FAO wildlife disease task force with the participation of governmental authorities, international organizations and local partnerships.[8]

Emergency measures

- Ensure close cooperation among range states and other stakeholders whenever possible and relevant, develop and implement emergency measures, when exceptionally unfavourable or endangering conditions (e.g., oil spills, wildlife disease, harsh weather) occur anywhere in the AP Area (see also CMS draft resolution on emergencies). This should also link to the expert network database mentioned above.

5.2 Habitat Conservation and Management

Reduce dependence on the collection of fuel wood

- Develop renewable energy and energy efficiency programmes in close consultation with local communities that especially address the needs of impoverished people directly dependent on the collection of fire wood and other plant fuel sources, in order to reduce the collection and overharvest of these plants, which are essential for many wildlife species.
- Consider the provision of micro-credits as an option for enabling impoverished people to invest in energy efficiency (e.g. to buy new stoves, insulate houses) in order to address the problem of unsustainable harvest of trees, shrubs and dwarf-shrubs for fuel. Evaluate the costs, benefits and the impacts resulting from consumptive and non-consumptive use of selected species and sites.

Habitat inventories

- Investigate opportunities to conduct national inventories on habitat quality and usage in order to identify critical sites and migration routes of migratory mammals as the basis for designating additional sites and corridors under the appropriate national and international protection categories.

Conservation and management of habitat

- Develop appropriate pasture and hunting management plans taking into account wildlife concerns in close consultation with authorities, non-government organizations, local communities and hunting concessions. The capacity of local agencies and interest groups to support development and implementation of such plans needs to be strengthened.
- Increase awareness about the impacts of desertification upon human populations and migratory species and about the opportunities to be derived by local communities by incorporating the preservation and sustainable management of such species within the solutions developed to combat desertification.
- Review and raise awareness about the inter-relations and contribution of migratory species for the conservation of fertile arid land ecosystems that in turn support rural livelihoods.

[8] See also the CMS Resolutions 10.22 on Wildlife Disease and Migratory Species.

Establishment of an ecological network of critical sites

- Develop appropriate measures to enhance and protect ecological connectivity, critical sites and migration routes by strengthening and expanding both protected areas and community conservation areas, along with enhancing their capacity and funding.
- Design and implement feasible capacity building activities to enable training and institutional strengthening of protected area staff and other relevant stakeholder *inter alia* to apply flexible protection approaches such as seasonal and temporary protection as well as community-based management approaches for pastures and wildlife.

Climate change

- Improve the cooperation among the range states to determine and monitor the impacts of climate change on migratory mammals and their habitats and develop appropriate adaptation strategies to mitigate the negative impact of threats related to climate change[9].
- Promote the conservation and sustainable use of wildlife populations as an element of improved resilience of livelihood and ecosystems against climate change.

Barriers to migration

- Create guidelines to mitigate the negative impact of infrastructure on aggregated migrations. This might also entail the development and implementation of a strategy for infrastructure development that takes into account conservation issues and includes Environmental Impact Assessments (EIA) for all planned infrastructure projects. Enable consultations among the private sector, state agencies and donors constructing new barriers.
- Cooperate among all range states to avoid the construction of border fences or other facilities that might hinder the migration of species and to ensure that if such fences are necessary, appropriate technical devices are being used to mitigate the negative effects on the species.

5.3 Training, Education and Public Awareness

- Considering the fact that within the global general public there is little attention and awareness about the unique wildlife and landscapes in Central Eurasia, a strategy might be developed to highlight their importance among the international donor community and the general public.
- Develop and arrange appropriate training programmes for national officials, stakeholders and experts on large migratory mammals and arid lands, including habitat monitoring, protection and management, in close cooperation with all stakeholders in order to make the best use of existing programmes and resources.
- Develop education and awareness activities and provide positive examples in local languages where local people have directly benefitted from the existence of wildlife, if possible and appropriate, to improve the level of awareness of the general public with regard to the value of arid lands and the important ecological role of large mammals and their migrations.
- Provide access to decent education to children, which is often sufficient to make them more aware of their environment, resources and conservation.

5.4 International Cooperation

- Convene an international conference on the conservation of mountain ungulates in Central Asia in order to present the findings of the surveys and to develop a joint strategy for the

[9] See also the CMS Resolutions 9.7 and 10.19 on climate change.

conservation and sustainable use of these species, including guidelines about how to involve local communities in planning, management and distribution of revenues.

- Set up an information and communication platform on Eurasian arid land mammals in Russian and English, to facilitate exchange of information, experiences and best practice as well as to foster professional relationships and networks.
- Overall, many of the activities mentioned above involve transboundary aspects: Issues such as border fences, transboundary monitoring, sustainable use programmes and benefit sharing; prevention of illegal trade and cross-border poaching need to be addressed on a regional level. It is therefore proposed to set up a working group dealing with the transboundary aspects related to the management of migratory terrestrial mammals and develop clear criteria and guidance (possibly within the CMS Scientific Council).

6. Next Steps and Recommendations

As a first step, the consultations with range states and all relevant stakeholders, which was already initiated by Mongolia in 2008, should be re-initiated and options for the convening of a meeting of the range states involving government officials, relevant experts and stakeholders should be envisioned in order to finalize and adopt the proposed Action Plan.

In order to improve communication, a network involving all stakeholders should be envisaged, for example by establishing a bilingual information and communication platform (Russian/English) to facilitate exchange of information, present species-specific monitoring guidelines (in close cooperation with the relevant IUCN SSGs), share experiences and best practice, coordinate activities as well as to foster professional and personal relationships. Building up such a network of very varied capacities and international exposure pursuing the idea of capacity building through sharing information and experience will be a powerful catalyst for strengthening biodiversity conservation throughout the region. A common database, with a regularly updated list of all partners and their projects might be envisaged as a very useful tool for harmonization and communication (see for example the Dinaric Arc Initiative, Vasilijević et al. 2011). This will not only help to reduce duplication of effort and increase harmonization of activities and programmes carried out by the different stakeholders, it might also become a tool to ensure effective, joint funding and the sustainable implementation of activities.

Emphasis should also be given to capacity building and training of young local people to increase their effective engagement in conservation. The lack of educated and trained young people choosing a career in conservation is one of the most fundamental problems in the region. Training and scholarship programmes, student wildlife clubs at universities, small grants for student conservation projects and university exchange programmes could be a way to address this problem. Many of the organizations mentioned in this document have already started initiatives along those lines and there are surely many opportunities to develop combined programmes and also build on existing efforts.

Setting up these mechanisms and implementing the various steps forward that have been proposed necessitate a joint vision and common goal among all partners. This document is a first attempt to define such a vision and to outline possible ways to achieve it, inviting all existing and potential new stakeholders in the region to contribute. CMS will play its role as a platform and facilitator for cooperation, which might also include the development of and servicing the appropriate type of legal

instrument, be it a stand-alone regional Action Plan, a legally binding agreement or a non-legally binding Memorandum of Understanding.

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Abbreviations

ACBK – The Association for the Conservation of Biodiversity of Kazakhstan

CACILM – Central Asian Countries Initiative for Land Management

CAREC – Central Asia Regional Economic Cooperation

CBD-POWPA – Programme of Work on Protected Areas

CIC – International Council for Game and Wildlife Conservation

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

CMS – Convention for the Conservation of Migratory Species of Wild Animals

EnvSec – Environment and Security Initiative

EIA – Environmental Impact Assessment

FFI – Flora and Fauna International

FZS – Frankfurt Zoological Society

GEF – Global Environmental Facility

GIZ – Deutsche Gesellshaft für Internationale Zusammenarbeit (German Agency for International Cooperation)

IFAS – International Fund for Saving the Aral Sea

ISDC – Interstate Sustainable Development Commission

IUCN – International Union for Conservation of Nature

IUCN-ROWA – Regional Office for West Asia

MOU – Memorandum of Understanding

SCA – Saiga Conservation Alliance

UNCCD-NAP – United Nations Convention to Combat Desertification – National Action Plan

UNCCD-SRAP United Nations Convention to Combat Desertification – Sub-Regional Action Plan

UNDP - IDDP- Integrated Drylands Development Programme

UNDP – United Nations Development Programme

WCS – Wildlife Conservation Society

WWF – World Wildlife Fund for Nature

ZGAP – Zoological Society for the Conservation of Species and Populations

Annex I. Expanded list of potential target taxonomic units[10]

Scientific name	English name	IUCN Red List 2004	CMS listing
Carnivora: Canidae			
Cuon alpinus	Dhole, Asiatic wild dog	EN	
Canis (lupus) lupus	Grey Wolf		
Canis (lupus) laniger	Himalayan Wolf		
Canis (lupus) pallipes	Indian Wolf		
Carnivora: Felidae			
Acinonyx jubatus venaticus	Asiatic cheetah	CR	
Felis lynx	Eurasian Lynx		
Felis caracal	Caracal		
Panthera leo persica	Asian lion	CR	
Panthera pardus saxicolor	North Persian leopard	EN	
Panthera pardus tulliana	Anatolian leopard	CR	
Panthera tigris virgata	Caspian tiger	EX (probably extinct)	
Uncia uncial	Snow leopard	EN	App.I
Carnivora: Hyaenidae			
Hyaena hyaena	Striped hyaena	LR/nt	
Carnivora: Ursidae			

[10] As proposed in CMS/ScC14/Doc.24 Central Eurasian Aridland Concerted Action, at the 14th Meeting of the CMS Scientific Council, Bonn, Germany, 14-17 March 2007 (http://www.cms.int/bodies/ScC/14th_scientific_council /pdf/en/ ScC14_Doc_24_Central_Eurasian_Aridland_Concerted_Action_Eonly.pdf)

Ursus arctos	Brown Bear		
Ursus (arctos) gobiensis	Gobi Bear	EN	
Ursus thibetanus	Asiatic Bear	VU	
Perissodactyla: Equidae			
Equus africanus	African Wild Ass	CR	
Equus caballus	Tarpan †		
Equus przewalskii	Przewalski's horse	EW (reintroduced)	
Equus hemionus	Mongolian khulan	VU	App.II as *Equus hemionus* s.l.
Equus kiang	Kiang	DD-LR	App.II as *Equus hemionus* s.l.
Equus onager	Onager	CR	App.II as *Equus hemionus* s.l.
Equus khur	Khur	EN	App.II as *Equus hemionus* s.l
Equus hemippus	Syrian onager	EW	App.II as *Equus hemionus* s.l
Perissodactyla: Rhinocerotidae			
Rhinoceros unicornis	Indian Rhinoceros	EN	
Artiodactyla: Camelidae			
Camelus ferus	Asian camel	CR	App.I
Camelus dromedarius	Dromedary †		
Artiodactyla: Cervidae			
Cervus albirostris	White-lipped deer	VU	
Cervus (elaphus) bactrianus	Bukhara deer	VU	App I

Cervus (elaphus) yarkandensis	Yarkand deer	EN	
Cervus (elaphus) wallichi	Tibetan red deer	DD	
Cervus (elaphus) affinis	Shou	DD	
Cervus (elaphus) hanglu	Hangul	EN	
Cervus (elaphus)maral	Maral		
Dama mesopotamica	Mesopotamian fallow deer	VU	
Dama dama	Fallow deer		
Artiodactyla: Bovidae			
Antilope cervicapra	Blackbuck	VU	
Bison bonasus	European Bison	EN	
Boselaphus tragocamelus	Nilgai	CD	
Bos gaurus	Gaur	VU	
Bos mutus	Yak	VU	App.I
Bos primigenius	Aurochs †		
Bubalus arnee	Water Buffalo	VU	
Capra caucasica	West Caucasian tur	EN	
Capra cylindricornis	East Caucasian tur	VU	
Capra falconeri	Markhor	EN	
Capra aegagrus	Wild goat	VU - CR	
Capra nubiana	Nubian ibex	EN	
Capra sibirica	Siberian ibex	Not listed	
Gazella subgutturosa	Goitered gazelle	NT	App.II
Gazella bennettii	Indian gazelle		
Naemorhedus goral	Goral	LR/nt	

Ovis ammon	Argali	VU-EN-CR	
Ovis arkal	Arkal	VU-EN-CR	
Ovis gmelini	Mouflon	VU	
Ovis vignei	Urial	VU-EN	
Pantholops hodgsoni	Chiru, Tibetan gazelle	EN	
Procapra gutturosa	Mongolian gazelle	not listed	App.II
Procapra picticaudata	Tibetan gazelle	not listed	
Procapra przewalskii	Przewalski's gazelle	CR	
Pseudois nayaur	Bharal, Blue sheep	not listed	
Saiga tatarica	Saiga antelope	CR	App.II (only *S.t.tatarica*)
Oryx leucoryx	Arabian Oryx	CR	
Uranotheria: Elephantidae			
Elephas maxima	Asian Elephant	EN	