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RANGE STATE MEETING ON THE
IMPLEMENTATION AND REVISION OF
THE INTERNATIONAL SINGLE SPECIES ACTION PLAN
FOR THE CONSERVATION OF THE ARGALI (*Ovis ammon*)
Almaty, Kazakhstan, 12-13 September 2024

DRAFT OVERVIEW REPORT ON THE IMPLEMENTATION OF THE INTERNATIONAL SINGLE SPECIES ACTION PLAN FOR THE CONSERVATION OF THE ARGALI (*Ovis ammon*) (2014-2024)

Summary:

This Overview Report is prepared based on the Range State Reports submitted to the CMS Secretariat as of 10 August 2024 and other information available to the consultant such as data and project reports, conference proceedings, scientific and grey literature.

The meeting is invited to review and take note of the Report.

Contents

Abbreviations

AOO	–	area of occupancy
CAMCA	–	Central Asian Mammals and Climate Adaptation project
CAMI	–	Central Asian Mammals Initiative
CEPF	–	Critical Ecosystems Partnership Fund
CITES	–	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	–	Convention on the Conservation of Migratory Species of Wild Animals
EOO	–	extent of occurrence
EIAs/SEAs	–	Environmental Impact Assessments/Strategic Environmental Assessments
ESA	–	Endangered Species Act of the United States of America
GEF	–	Global Environmental Facility
GIZ	–	Gesellschaft für Internationale Zusammenarbeit GmbH (German International Cooperation Agency)
GSLEP	–	Global Snow Leopard Ecosystems Programme
IFC	–	International Finance Corporation
IKI	–	International Climate Initiative of the Government of Germany
IUCN	–	International Union for the Conservation of Nature
MEA	–	Multilateral Environmental Agreements
MOU	–	Memorandum of Understanding
NBSAP	–	National Biodiversity Strategy and Action Plan
NEPA	–	National Environmental Protection Agency of Afghanistan
NNP	–	(State) National Nature Park
SSAP	–	Single Species Action Plan
SSNR	–	State Strict Nature Reserve (Rus.: Zapovednik)
SR	–	Special Reserve (Rus.: Zakaznik)
UNDP	–	United Nations Development Programme
UNEP	–	United Nations Environmental Programme
USFWS	–	United States Fish and Wildlife Service
WCS	–	Wildlife Conservation Society
WSF	–	Wild Sheep Foundation
WWF	–	Worldwide Fund for Nature

1. Introduction

1. The International Single Species Action Plan (SSAP) for the Conservation of the Argali was prepared in 2012-2014 with financial support from the European Union, implemented by GIZ to assist. The work to develop the plan included two workshops on Isle of Vilm, Germany 22-26 March 2012 and in Bishkek, Kyrgyzstan, 2-4 December 2012 with the final draft being discussed at the 18th Meeting of the Scientific Council in Bonn, Germany on 1-3 July 2014. SSAP was presented at the 11th Meeting of the Conference of the Parties in Quito, Ecuador, 4-9 November 2014 as an Agenda Item 23.3.3 and adopted by Resolution 11.24 on the Central Asian Mammals Initiative (CAMI).

2. This SSAP covers the period 2014 to 2024. A revision should have been undertaken in 2019 but was not due to funding issues. For this reason, the CMS Secretariat prepared an overview report towards the end of the covered period, compiled on the basis of information at its disposal pertaining to the Argali currently listed in Appendix II of the Convention as *Ovis ammon*.

3. The Range State reports are the primary source of information for this Overview Report. The Secretariat invited the Argali Range States and collaborating organizations to submit their national reports to the Secretariat. As of 10 August 2024, Nepal, Pakistan and Uzbekistan had submitted their reports. This Overview report is further based on other information available to the consultant such as data and project reports, conference proceedings, scientific and grey literature.

4. This Overview Report consists of a general overview of the conservation status of Argali (Section 2), a review of the progress achieved towards the implementation of the Single Species Action Plan 2014-2024 (Section 3), and a conclusion about the achievements regarding the conservation status of the species (Section 4).

5. This Overview Report serves as the basis for the elaboration of further action for the conservation of Argali during 2024-2032. This action will be integrated in the CAMI Programme of Work.

Taxonomic note

Phylum: Chordata
Class: Mammalia
Order: Artiodactyla
Family: Bovidae
Genus: *Ovis*
Species: *Ovis ammon* (Linnaeus, 1758)

Common names: argali (English), архар / arkhar, горный баран / gornyi baran (Russian), argal' (ugalz – ram; homi – ewe) (Mongolian), 盘羊 pán yáng (Chinese), nyan (Tibetan, Ladakhi), arkar (Kazakh), ak-kiik, kuldja (Kyrgyz); arkhar, gusfandi kuhi (Tajik)

6. Argali taxonomy remains unresolved and further genetic studies may indicate that some Argali populations are in fact characterized by clinal variation over larger range areas. In contrast, Groves and Grubb (2011) raised the nine forms to species status, in a revision of all ungulates utilizing the Phylogenetic Species Concept, but this arrangement has not been adopted by the IUCN Caprinae Specialist Group and has not been further adopted with the exception of the Handbook of the Mammals of the World (Valdez and Weinberg, 2011).

7. The CMS standard nomenclatural reference for terrestrial mammals Wilson and Reeder (2005) lists the following subspecies:

Ovis ammon ammon

Ovis ammon collium

Ovis ammon comosa

Ovis ammon darwini

Ovis ammon hodgsonii

Ovis ammon karelini

Ovis ammon nigrimontana

Ovis ammon polii

Ovis ammon severtzovi

8. The International Single Species Action Plan (SSAP) for the Conservation of Argali under the Convention on Migratory Species (CMS 2014) follows the IUCN SSC Caprinae Specialist Group and recognizes the same nine subspecies except that it applies the name *O. a. jubata* to *O. a. comosa*:

Ovis ammon ammon, Altai Argali

Ovis ammon collium, Kazakhstan Argali

Ovis ammon darwini, Gobi Argali

Ovis ammon hodgsoni, Tibetan Argali

Ovis ammon jubata, North China Argali, Shansi Argali

Ovis ammon karelini, Tian Shan Argali

Ovis ammon nigrimontana, Karatau Argali

Ovis ammon polii, Marco Polo Sheep, Pamir Argali

Ovis ammon severtzovi, Severtzov's Argali

9. Because subspecific taxonomy remains unresolved, most subspecies that are recognized cross international borders, and the species occurs in many countries with differing management regimes, this Overview Report treats *Ovis ammon* by country (and, where appropriate, by population) rather than by subspecies. In cases, where subspecies are well defined and recognized by their range area the subspecies attribution of populations is mentioned.

2. Conservation Status of Argali

10. This Overview Report assesses the status of the species on the basis of the information available to the consultant from national reports, the recent IUCN Red List assessment, information from projects he has been involved with, expert information, grey literature, scientific papers and other relevant sources.

11. In the IUCN Red List Argali is assessed as Near Threatened (NT) "because this species is believed to be in significant decline (but probably at a rate of less than, but approaching, 30% over three generations, taken at 24 years) due to poaching and competition with livestock, likely exaggerated by the impact of ongoing climate change, making the species close to qualifying for Vulnerable under criterion A2de" (Reading et al., 2020).

12. Only the following subspecies were assessed in the IUCN Red List (Reading et al., 2020) at the subspecies level:

- *O. a. jubata*: Extinct (for several decades no records identified based on a literature review, interviews and field work).
- *O. a. nigrimontana*: Endangered (B1ab (iii, v), D, with extent of occurrence less than 5,000 km², only one location, an inferred continuing decline; and less than 250 mature individuals).
- *O. a. severtzovi*: Vulnerable (B2ab (iii, iv), C1, with area of occupancy less than 2,000 km², less than 10 locations, and a continuing decline observed or estimated).

2.1 Distribution

13. Available information suggests that the Argali distribution range has not substantially changed during the reporting period compared to the description in the SSAP (CMS, 2014). For some sections of the range area with uncertain presence the recent occurrence of the species could be confirmed. The map of the global distribution of Argali is presented in Fig. 1.

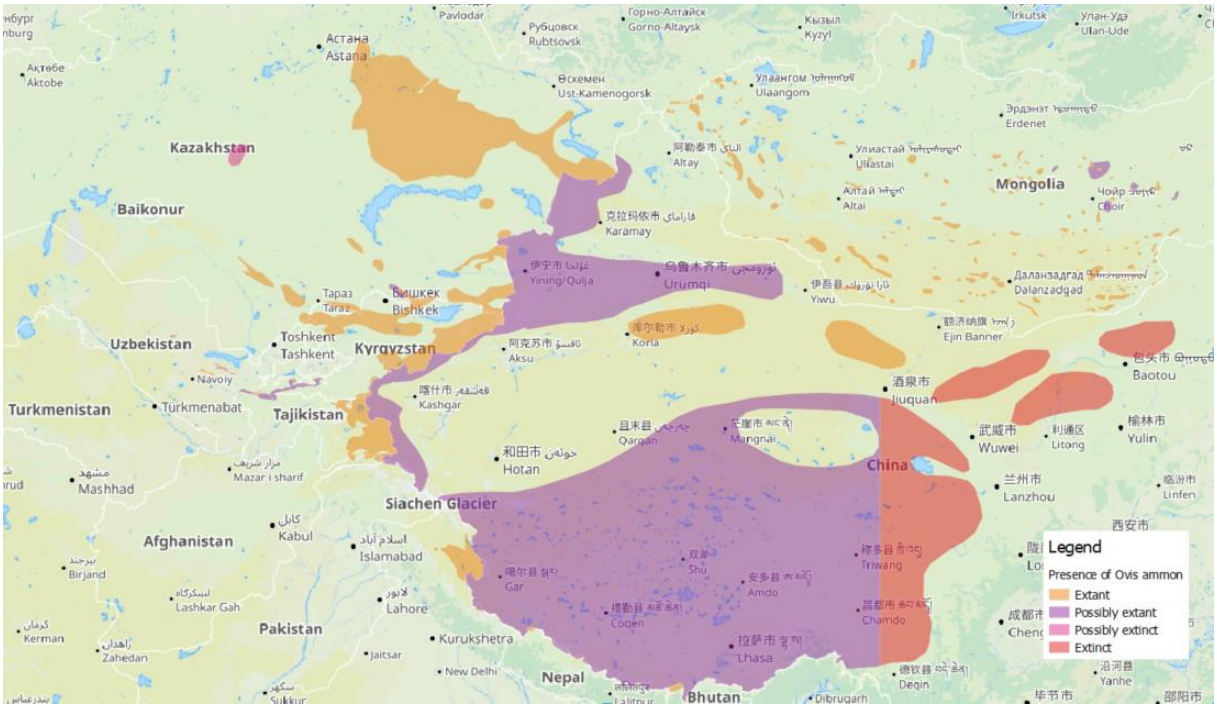

Figure 1. The distribution of Argali (adapted from Reading et al 2020)

14. *O. a. ammon*: This subspecies occurs in the Altai Mountains and adjoining ranges of Mongolia and the Russian Federation extending to the sections of the Altai lying within China and Kazakhstan. During the reporting period only two records are known from Kazakhstan, from the Koksay Range (in 2014 and 2018/2019) and the species might be considered as locally extinct (Baydavletov and Baydavletov, 2023).

15. *O. a. collium*: This subspecies occurs in central-eastern Kazakhstan from the Kazakh Hill Country (Melkosopochnik), south to the mountains on the northern side of Lake Balkhash and east to the Tarbagatay Range on the border with China. In China Argali in the areas bordering the range of this subspecies are considered *O.a.karelini*. (CMS, 2014) The range area is fragmented and in large areas of the central and western parts of the Kazakh Hill Country currently Argali do not occur (Baydavletov and Baydavletov 2023).

16. *O. a. darwini*: The subspecies is distributed in mountains, rolling hills, canyons and rocky outcrops of the Transaltai Gobi, Gobi Desert and Gobi steppe in Mongolia. In China, populations have become reduced and fragmented. (CMS, 2014)

17. *O. a. hodgsoni*: This subspecies is distributed irregularly across the Qinghai-Tibet Plateau in China, from the northern side of the Himalaya north to the Kunlun and Qilian Shan ranges, and extending into the extreme north of India and Nepal. In India, Argali are restricted to the eastern plateau of Ladakh, the adjacent area of Spiti valley of Himachal Pradesh and separately in northern Sikkim close to the Chinese border (CMS, 2014). Argali presence has been confirmed from Nelang valley (Gangotri NP) in India (Pal et al., 2018) and from Upper Humla in Nepal (Werhahn et al. 2015, Kusi et al. 2017).

18. *O. a. jubata*: This subspecies is considered extinct (Harris et al., 2009).

19. *O. a. karelini*: Tien Shan Argali is quite widely distributed across the Tian Shan Mountains in Kazakhstan, Kyrgyzstan and China. The geographic boundary between this subspecies and *O.a.polii* is disputed and both subspecies may represent a clinal variation. Suggested boundaries have been the upper Naryn River, the Ferghana Mountain Range and the Alay Valley, none of which is a barrier for Argali movements. Currently least genetic exchange probably occurs across the Alay valley but Kyrgyz authorities consider only Argali in the northern regions of the country as *O.a.karelini*. During the last decades, the distribution range of the subspecies shrank substantially in some regions, e.g. documented by A. Grachev (pers. com., 2024) for the Ile-Alatau and its spurs. Previously, *O. a. karelini* also occurred in the western Tien Shan in Uzbekistan, but no records are known for the last several decades (S. Zagrebin, pers. comm. 2018).

20. *O. a. nigrimontana*: This subspecies is restricted to the Karatau Mountains of Kazakhstan. Its confirmed range (Reading et al. 2020) had been the western part of the mountain range but Baydavletov and Baydavletov 2023 confirmed that the range area includes also eastern sections and appears almost contiguous (see fig. 2). The subpopulation in the Little Karatau Range, the easternmost part appears to be connected with the range area of *O.a.karelini* and Baydavletov and Baydavletov (2023) suggested to record this subpopulation under that subspecies.

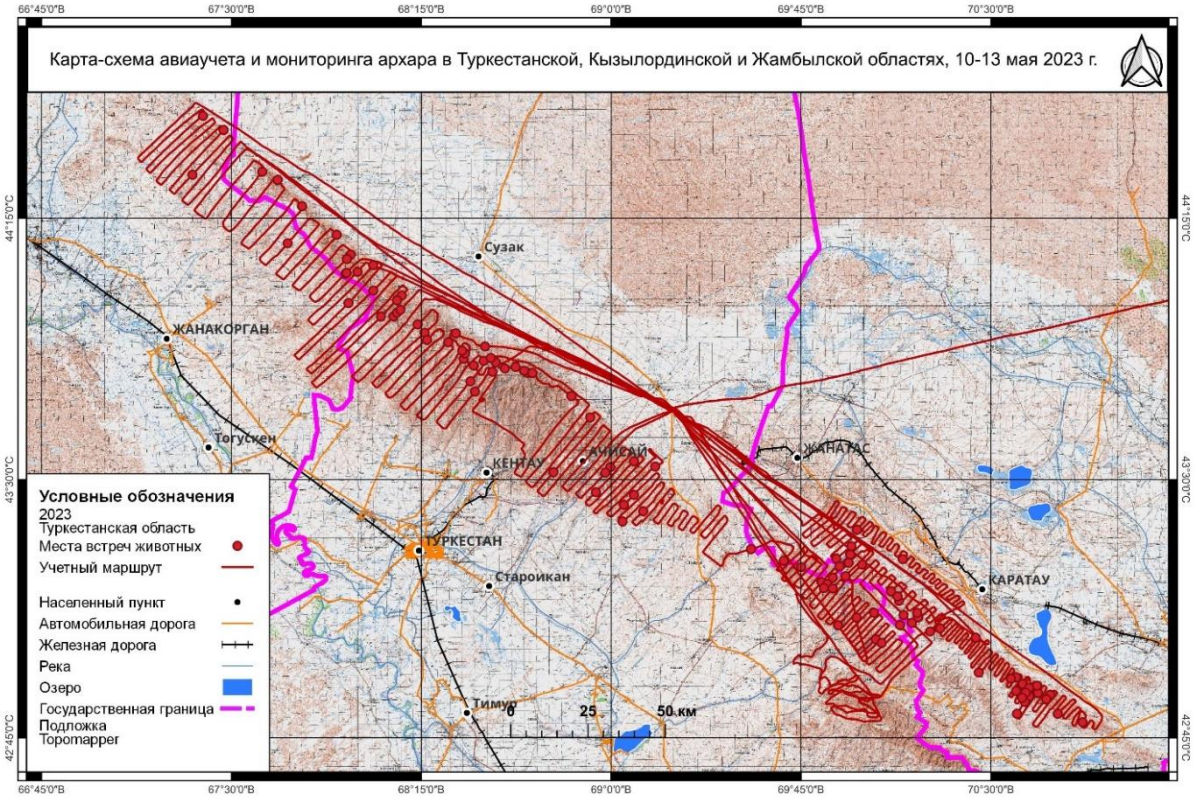

Figure 2. Transects of Argali aerial survey transects in the Karatau Mountain range in May 2023. Dots indicate Argali observations. (Source: Baydavletov and Baydavletov, 2023)

21. *O. a. polii*: The Marco Polo sheep occurs in the eastern Pamirs. Most of the range lies in Tajikistan, extending into adjoining parts of Wakhan (north-eastern Afghanistan), Taxkorgan area of Xinjiang (China), extreme northern Pakistan (around the Khunjerab, Kilik and Mintaka passes) and south-eastern Kyrgyzstan (CMS, 2014). The boundary between *O.a.polii* and *O.a.karelini* in Kyrgyzstan is unclear (see para on the latter subspecies above).

22. *O. a. severtzovi*: This subspecies formerly had a wide distribution in Uzbekistan from the north-western Pamiro-Alay Mountains through to the low mountains and hills of the Kyzylkum Desert. Today, the majority of animals are restricted to the Nuratau Range, primarily within the Nuratau Strictly Protected Area and a small population in the western part of this mountain range. Its range area in the East stretches in the northern spurs of the Pamiro-Alay Mountains (Turkestan Range) into Tajikistan and Kyrgyzstan. The presence in the Aktau range in Uzbekistan, south of the Nuratau range, where the species had previously been thought to be possibly extinct, was confirmed during recent years (Shernazarov, 2020, S. Akhmadov pers.com.2024). Very small populations persist in the Tamdytau (confirmed by Grytsina et al. 2015 and again in 2022 by Gritsyna pers. com.2024), in the Turkestan (N. Beshko, pers. com. 2019), and possibly Malguzar ranges, but not any more permanently in the Koytash Mountains (Shernazarov, 2020).

23. The overall large range area of Argali includes many areas far from international borders. However, there are several populations and subspecies, which have their key habitats and the highest numbers of individuals in areas close to international borders or are transboundary in a substantial extent. For instance, Argali in the Altai move seasonally between Mongolia and Russian Federation; in the Pamirs some Argali groups move between Afghanistan, China and Tajikistan; in the Jungarian Alatau, Tarbagatay and Saur Mountain ranges Argali move between China and Kazakhstan; in the Tien Shan movements occur between China, Kazakhstan and Kyrgyzstan and in the Turkestan Range between Kyrgyzstan, Tajikistan and Uzbekistan. Survival of Argali in China's

Inner Mongolia is likely depending on the ability of dispersing individuals from Mongolia to supplement existing groups or colonize new areas (Harris et al., 2009). Furthermore, in Pakistan continuing Argali presence is likely dependent on migrations from China (Haider et al., 2018). In Sikkim (India) Argali are transboundary with Tibet (China) (Bhatnagar, pers. comm. 2021).

24. Climate change is expected to have an impact on the habitat suitability and on land use, particularly on seasonal livestock grazing in Argali habitats. This direct and indirect climate change impact may affect the distribution range of the species if larger areas of current habitat become unsuitable or currently not suitable areas become new habitat. So far, such changes affecting the distribution range are not yet predicted and different modelling attempts have yielded in parts inconsistent results (e.g. Salas et al. 2018, Ghoddousi et al. 2023). Loss of distribution range is most likely in arid areas where climate change may make large areas unsuitable for the species.

2.2 Population size and trends

25. No global estimates of the total population size are provided in the IUCN Red List (Reading et al., 2020) and the SSAP (CMS, 2014). The figures in the SSAP summed up to a total number of about 107,000 Argali, but the population information used for the IUCN Red List account (Reading et al 2020) suggested a substantially lower number. Available figures are of varying reliability and refer to different spatial and temporal scales.

Range state	***Subspecies***	**SSAP [1]2014**	**IUCN RL 2020*[2]**	**2024**	**Trend**
Afghanistan	*O.a.polii*	1,700	N/A	350-450[3]	Stable
China	*O.a.darwini*	27,500	N/A		
	O.a.hodgsoni				
India	*O.a.hodgsoni*	550	N/A		
Kazakhstan	*O.a.ammon*	12,775	10	0[4]	
	O.a.collium		12,300	13,543[4]	Increase
	O.a.karelini		2,500	2,399[4]	Stable
	O.a.nigrimontana		480	763[4]	Increase
Kyrgyzstan	*O.a.karelini / polii*	15,350	16,641	21,141[5]	Increase
	O.a.severtzovi			136[5]	
Mongolia	*O.a.ammon*	22,928	3,420	4,000[6]	Stable-Increase
	O.a.darwini		N/A		
Nepal	*O.a.hodgsoni*	77	<50	<10	
Pakistan	*O.a.polii*	150	<50		
Russia	*O.a.ammon*	700	1,314		Increase
Tajikistan	*O.a.polii*	23,711	N/A	29,000[7]	Increase
	O.a.severtzovi		<50	0	
Uzbekistan	*O.a.karelini*	1,800	0	0	
	O.a.severtzovi		<2,000	2,570[8]	Fluctuating
Approximate total		107,000	<100,000	73,570+ N/A	

[1] CMS (2014)
[2] Figures based on Reading et al. (2020) refer to earlier years and various original sources
[3] S. Ostrowski, pers. com. (2024); The figure in the table only includes the number likely permanently present in Afghanistan; migrating argali are part of the population of Tajikistan.
[4] Baydavletov and Baydavletov (2023)
[5] Ministry of Natural Resources, Environment and Technical Supervision of the Kyrgyz Republic (pers. com. 2024)
[6] WWF Mongolia 2023
[7] Official number (A. Abdulnazarov, pers. com. 2024)
[8] National Report, Uzbekistan (2024), Shernazarov et al. (2020), Gritsyna (pers. com. 2024)

Afghanistan

26. Luikart et al. (2011) demonstrated that there is considerable gene flow between Afghan and Tajik/Chinese populations of Argali (subspecies Marco Polo sheep). Individuals from all populations, particularly males, are known to migrate to and from Tajikistan. In general, it is difficult to suggest population trend based on historical reports because of observer and seasonal differences, animal movements, and differential handling of missed animal and double counts. (Ostrowski, pers. com. 2024)

27. WCS has monitored the population of the Big Pamir with double-observer method in 2015 - 2019, 2020 and 2022 and found a relatively stable population of ca. 350-450 individuals perhaps supported by a small-scale immigration of specimens from Tajikistan. Because of the major movements across the international border, it is impossible to suggest the size of an “Afghan” population of Marco Polo sheep in Little Pamir and it should more be considered as an extension of the Tajik population. The Wakhjir population may be highly seasonal and connected with the one in Tajikistan. No comprehensive counts were carried out recently in this area. The Teggermansu Valley is a small area very distant from the Wakhan Valley where Marco Polo sheep are unlikely to remain permanently resident It could possibly host transiently in spring/summer a population as large as 600-700 animals but probably more regularly in the range of 300-400 animals.

28. Since the takeover of power by the Taliban, deployment of armed border guards in the range area in 2022 was detrimental to Urial *Ovis vignei* and Asiatic ibex *Capra sibirica* populations in the Hindu Kush Mountain range (Moheb, pers. comm.), but it is unclear whether the relative isolation of Argali populations in the Pamir ranges protected them from poaching by these forces.

China

29. No more recent information on population size is available than what has been presented by CMS (2014) and Reading et al. (2020).

India

30. No more recent information on population size is available than what has been presented by CMS (2014) and Reading et al. (2020).

Kazakhstan

31. *O.a.ammon*: During the reporting period, presence of the subspecies was recorded in 2014 and 2019/2020, each time less than ten animals. Currently the subspecies is considered to be local extinct in Kazakhstan.

32. *O.a.collium*: The results of aerial surveys presented by Baydavletov and Baydavletov (2023) indicate an overall growing population size between 2019 and 2023 (plus 7.2%). The most substantial relative growth was recorded in Akmola region (plus 29.6%) with a rather small total population of 504 Argali in 2023. In the other regions growth rates varied between 5.7 and 8% within four years. The interpretation of the reported trend requires caution as the figures are based on extrapolations from numbers of animals recorded on survey transects onto assumed larger range areas. These assumptions made about the total size of the range area compared to the surveyed area have substantial influence on the extrapolated population size.

33. *O.a.karelini*: The results of the terrestrial and aerial surveys by Baydavletov and Baydavletov (2023) indicate a stable, slightly fluctuating population size between 2019 and 2023 with an overall slight decline (minus 6.8%).

34. *O.a.nigrimontana*: Baydavletov and Baydavletov (2023) included only the Argali in the western and central parts of the Karatau Range, i.e. in Kyzylorda and Turkistan Regions, into the reported population size for this subspecies (763) while they included animals recorded in the eastern parts, the Little Karatau in Zhambyl Region (86), in the figures for *O.a.karelini*. The reported figures indicate a continuous increasing trend for the Karatau Argali in the narrow sense between 2019 and 2023 (plus 18.7%).

Kyrgyzstan

35. Official numbers in Kyrgyzstan differentiate by the subspecies *O.a.karelini*, *O.a.polii* and *O.a.severtzovi*. The latter subspecies is well distinguished by phenotype and range area not overlapping with other Argali. The differentiation between the first two subspecies is not clear and the geographic distinction applied is rather formal than biologically justified. For two hunting areas even, the presence of both subspecies is reported which is biologically hardly possible. Officially reported numbers for all subspecies show continuous trends of increase. However, in large areas, the official figures rely on the reports by holders of hunting areas and surveys with involvement of independent experts are rare. While biologically not impossible, the overall positive trend, which is similarly reported for Asiatic ibex *Capra sibirica* and other species, appears to be in contradiction with increasing competition with livestock and other threat factors.

Mongolia

36. No more recent information on the national population size is available than what has been presented by CMS (2014) and Reading et al. (2020).

37. WWF Mongolia (2023) reported about surveys in 2023 covering the trans-boundary areas in Bayan-Ulgii and Uvs provinces. There were 4,024 Argali recorded, indicating that the on the Mongolian side remained stable compared to the data (over 4,000) of the previous bi-annual survey, but had increased by 16% compared to 2019.

Nepal

38. No more recent information on population size is available than what has been presented by CMS (2014) and Reading et al. (2020). The numbers are possibly in the lower 10s (K. Suryawanshi, pers. comm. 2020).

Pakistan

39. No more recent information on population size is available than what has been presented by CMS (2014) and Reading et al. (2020). Reported numbers of Argali seasonally migrating from China into Pakistan from 1992 till 2012 varied between 31 and 168 with a declining trend, the most recent figures being a 19 and 41 in 2012.

Russia

40. No more recent information on population size is available than what has been presented by CMS (2014) and Reading et al. (2020).

Tajikistan

41. Official letters from Tajikistan to the US Fish and Wildlife Service (USFWS, 2020) reported about numbers of *O.a.polii* during surveys in winter 2014/2015 (20,418), early 2017 (24,668) and early 2018 (26,464). Latest official numbers (A. Abdulnazarov, pers. com. 2024) report a population size of 29,000. These numbers would indicate an increase in the population size but direct comparison with earlier surveys is difficult due to reported increase the area covered by the surveys.

42. *O.a.severtzovi* presence was not confirmed in the upper Zerafshan Valley during surveys in 2018 and 2019 (Reading et al. 2020).

Uzbekistan

43. *O.a.karelini* presence was not recorded in Uzbekistan during the reporting period.

44. *O.a.severtzovi* numbers have been reported with 2,500 and stable trend in the National Report Uzbekistan (2024). During the 20 years 1999-2018 the estimated population size in the Nuratau Strict Nature Reserve fluctuated around 1,600 animals, but in 2022 a population size of more than 2,200 was estimated. The underlying numbers of recorded observed Argali increased from an average of 876 to 1,400. Outside of this protected area Argali occur only in small numbers. Shernazarov (2020) reported observations in spring 2019 of 147 in the western part of Nuratau Range and of 23 in the Bakhyltau Mountains of Aktau Range.

Conclusion:

45. The global population size of Argali as indicated by official sources appears to be stable or increasing. The range states with the largest reported Argali populations are currently Tajikistan, Kyrgyzstan and Kazakhstan. Similar numbers may occur in Mongolia and China.

46. Only for Kazakhstan a detailed recent report about surveys and the ways of deriving overall population sizes was available for this Overview Report. Numbers provided by Kyrgyzstan are detailed reports by management units, mainly hunting concessions and protected areas. From Tajikistan only numbers from past years, reported to the US Fish and Wildlife Service, and an official number without indication of the underlying surveys, estimates or reports were available. The accuracy and reliability of these reported data cannot be assessed.

47. The overall trend in terms of habitat conditions and availability as well as threats suggests that the reported numbers and trends might be overly optimistic. Reading et al. (2020) suggested that apparent increases in numbers are likely due mainly to more intensive surveys. Area-specific reports suggested locally stable or increasing population sizes, but over large areas trends of decline.

2.3 Habitat Conditions and Availability

48. Argali live in mountains from 300 to 5,750 m above sea level. They inhabit hills, mountains, areas with rocky outcrops, canyons and plateaus, and prefer open or moderately broken terrain, though females use more precipitous areas only during lambing and for 2–3 weeks thereafter. Argali are rarely found on extensive plains and usually avoid forested slopes, except in Nuratau and the Turkestan Range, and in places where poaching and livestock force them to seek refuge in atypical habitat. Argali prefer areas with well-drained soil with little or no snow, or areas with winds that blow snow off the slopes and plateaus; many populations use lower elevations in winter (CMS, 2014).

49. Argali habitat is usually very suitable for livestock grazing, being one of the major drivers of habitat degradation and displacement. Locally, mining and infrastructure development affect Argali habitat. Climate change may in the future substantially alter Argali habitat, causing large losses of suitable habitat and some limited gains in currently unsuitable sites. Increasingly, habitat degradation, loss and human-made barriers cause fragmentation of suitable habitats. The habitat-related threat factors are further explained in section 2.4 below.

2.4 Threats and Problems

50. Argali are threatened by various direct and indirect factors. These can be roughly grouped in factors related with direct increase in mortality such as poaching, overexploitation, disease transmission from livestock and predation by domestic dogs, and factors related with habitat degradation and loss, such as overgrazing by livestock and forage competition, mining, other industrial, urban and infrastructure development, fences and other barriers, and climate change impact. The fragmentation of habitats and populations is a result of the combined impact of the other threats. Knowledge limitations and insufficient transboundary cooperation hamper the addressing of the threats. The order of the following subsections follows this logic.

51. To describe the importance of each threat, the following categories are used:
    - **Critical**: a factor causing or likely to cause very rapid declines and/or extinction;
    - **High**: a factor causing or likely to cause rapid declines;
    - **Medium**: a factor causing or likely to cause moderately rapid declines;
    - **Low**: a factor causing or likely to cause low or negligible declines;
    - **Local**: a factor causing or likely to cause declines in small parts of the range;
    - **Unknown**: a factor that is likely to affect the species to an unknown extent.

2.4.1 Poaching and Overexploitation

52. Poaching is defined as the major threat for Argali. Although Argali receive legal protection in all Range States, its enforcement sometimes might be rather weak and ineffective. An accurate monitoring of poaching cases and their impact on Argali population and is difficult, as most Argali inhabit remote areas, making surveillance and enforcement challenging. Indirect evidence is often used to derive the level of poaching.

53. Local declines or absence in suitable areas where nearby located similar areas with good protection host large populations indicate the impact of poaching. Such examples are the Nuratau State Strict Nature Reserve (Uzbekistan), Sarychat-Ertash Strict Nature Reserve (Kyrgyzstan) as well as well-managed hunting concessions in Tajikistan all with Argali populations numbering in the hundreds or thousands, while in neighbouring or adjacent areas absence of Argali can mainly be explained by the impact of poaching. Also, fast population recoveries in areas where protection was intensified, indicate the impact of poaching, such as in Karatau State Strict Nature Reserve (Kazakhstan) with a population increase from 38 in 2004 after establishment to 450 in 2023 (Baydavletov and Baydavletov, 2023) or in a community-based wildlife management area (Tajikistan) where numbers increased from 106 (December 2012) to 577 (December 2018).

54. Poaching and hunting can have a substantial influence on the behaviour of Argali, depending on the intensity and applied methods. Argali tend to keep a large distance from humans and livestock in areas, where poaching occurs and/or livestock is protected by dogs. In hunting concessions, where vehicles are used for approaching Argali during the hunts, the animals flee from vehicles. But in the absence of poaching and where livestock is free-ranging or herded without dogs, Argali can become habituated to

presence of people and domestic animals and even share pastures with them. (Zuther et al., 2024)

55. Current quotas for legal hunting in Kyrgyzstan, Mongolia, Tajikistan and Uzbekistan are low enough not to cause a threat at the level of the countries' populations. Local overexploitation is nevertheless a risk when quotas are not allocated on the basis of site-specific data and conveniently located or particular popular hunting areas are overused. Selective over-harvesting for horns of the largest, most mature males may alter the age and sex structure of populations, disrupt breeding, depress the age of mean male breeding and so can reduce reproductive fitness and even have evolutionary consequences. Anecdotal evidence in form of reports from individual hunters suggest that in some cases hunts are staged and even trophies manipulated. Such practices may not only harm the respective Argali populations but can trigger import bans and thus jeopardize hunting tourism as the main source of revenue of the overall successful incentive-based conservation of Argali.

Importance: Critical

2.4.2 Disease transmission from livestock and predation by dogs

56. Argali are prone to the same diseases as closely related domestic sheep and to some important diseases affecting various ruminants such as foot-and-mouth disease and peste de petits ruminants (PPRV). Also, pasteurellosis, rinderpest, malignant anthrax reportedly can infect Argali. However, there is little about the impact of contagious diseases on the Argali populations, perhaps as a result of the difficulty of detection and low diagnostic capabilities of animal health services across Argali range.

57. Coexistence of Argali and livestock is a necessity for conservation of the species beyond strictly protected areas and for maintaining connectivity between subpopulations and habitats. This coexistence can, however, foster disease transmission and the risk is high where veterinary care of livestock is insufficient and where wild and domesticated animals are in weak condition due to forage shortage and habitat degradation. In 2023 and 2024 a die-off killing dozens of Argali was reported by local people in Tajikistan, but the reason could not be established (A. Abdulnazarov, pers. com. 2024).

58. Livestock herders are often accompanied by guard dogs, which chase Argali, further increasing stress and sometimes killing Argali lambs and even adults (Singh 2008, Young et al. 2011).

Importance: High

2.4.3 Disturbance

59. Argali are perceived as being generally prone to disturbance and to avoid people and livestock by large distances. This sensitivity to disturbance and avoidance of people and livestock is commonly observed in many areas but it is directly linked to poaching, hunting practices and harassment or predation by herders' dogs. This may force them to forage in suboptimal areas and increase their energy requirements making them more vulnerable to harsh weather conditions, predators and diseases, hence decreasing their productivity. Human presence across the landscape makes large tracks of otherwise suitable area inaccessible for Argali.

60. Exceptional observations in areas without poaching and disturbance by livestock and dogs, suggest that Argali can become habituated to human presence (Young et al., 2011), e.g., at the Kumtor Gold Mine and in a researchers' camp in Sarychat Ertash Strictly Protected Area. Where poaching is prevented, Argali can coexist with livestock as was observed in several sites in Kyrgyzstan, Mongolia and Tajikistan. Marco Polo Sheep avoid the vicinity of tended herds of sheep and goats but are more tolerant and

even sometimes mix with free-ranging herds of domestic yak. (CMS, 2014) Therefore, disturbance as such is not as much a threat by itself but and strongly associated with the above-mentioned threats.

Importance: Medium

2.4.4 Overgrazing and competition with livestock

61. Across Argali range, overgrazing is causing degradation and thus can be considered as the key factor of habitat destruction. Total livestock numbers in most Argali Range States further increased during recent years continue to cause forage competition and significant habitat degradation. Occupation of rangeland by herders can force Argali to use sub-optimal habitats, in particular, where poaching occurs, and herders' dogs harass and kill Argali. In mountainous regions livestock grazes on summer pastures which are important winter habitat of Argali and intensive grazing deprives them of forage during this critical season. This threat is sometimes overlooked when reclamation of apparently underutilized remote pastures is promoted and often under international projects supported and financed. Competition with livestock and habitat degradation by overgrazing are caused in part by lack of environmentally friendly pasture use planning and poor or non-existent regulations for the use of Argali habitat by livestock.

62. The collection of subshrubs and shrubs is an associated issue affecting the forage base of both, Argali and livestock. In the eastern Pamirs of Tajikistan, the subshrub *Krascheninnikovia ceratoides* (teresken) is used for fuel and became depleted in large areas in other parts of the range area, where shrubs are an important habitat feature, such as for *O.a.severtzovi*, also the harvest of other shrubs (almond *Amygdalus spec*. and others) for fuel or fencing contributes to habitat degradation.

Importance: Critical

2.4.5 Mining and other industrial development

63. Mining and other forms of resource extraction are increasing within parts of Argali range. Habitat destruction can be extremely severe at mine sites themselves, but these sites often occupy a limited area and currently only a very small proportion of the current global range of Argali is affected, though this could expand rapidly. Hydroelectric projects, installation of wind power and tourism development are rapidly increasing, especially in high mountain areas. An associated serious factor is the rapid local increase in human population due to new employment opportunities. This can increase disturbance, poaching and overgrazing (in many cases herders move into the area so to seek work at the mines, while the rest of the family continues to graze livestock to supplement income and/or continue a family tradition). Road construction associated with large scale infrastructure developments can furthermore ease the access to remote areas for poachers.

64. Large-scale mining developments are under way in Mongolia and gold is mined in the Tian Shan in Kyrgyzstan. In Uzbekistan, wind power and mining industries development is going on in the Tamdytau, the range area of a small relic population of *O.a.severtzovi*. This development currently takes place not exactly in but near the known sites of Argali presence. However, also on the industrial site itself previous or actual Argali presence is possible, as the habitat is suitable and excrements similar to those of Argali were found. (M. Gritsyna, pers. com. 2024). The establishment of a new protected area had been planned for the conservation of Argali, its habitat and several threatened bird species but the plans were rejected by the government due to the priority of industrial development. No information is available to what extent conservation issues are properly identified in the Environmental Impact Assessments and adequately addressed through effective mitigation and compensation measures.

Importance: Local

2.4.6 Fences and linear barriers

65. Fences are mainly associated with international borders but also fencing of individual pasture lands, and linear infrastructure represent issues that affects movements and range use of Argali. Furthermore, fences can also result in direct mortality when Argali get injured or entangled.

66. Border fences have in some parts of the Argali range be installed by one country only, in other areas by both countries so that double-fenced areas become isolated from the adjacent habitats. Soviet time fences along the Kyrgyzstan-China, Tajikistan-China and Afghanistan-China border deteriorated since the end of the Soviet Union allowing Argali to cross the border. However, during recent years new fences have been erected in some of these and other sections by China. In the Tarbagatay Mountain range the Soviet time fence is maintained by Kazakhstan while China has erected a second fence. Further fences have been built between Uzbekistan and Tajikistan and between Mongolia and Russia. The proposed China-Kyrgyzstan-Uzbekistan railway is expected to cross Argali habitat in China and Kyrgyzstan.

67. Zhuo et al. (2024) modelled suitable habitat and ecological corridors of *O.a.polii*, simulated the impact of border fences on potential transboundary migration and found a strong negative impact. The CAMI Migration and Infrastructure Atlas (CMS, 2019) indicated conflict areas regarding border fences, roads and railroads across the Argali range and needs to be updated to reflect newer developments.

Importance: Local

2.4.7 Climate Change

68. Climate change affects the patterns of temperature and rainfall across the range areas of Argali. An increase in temperature values is already observed and climate change projections indicate a further warming trend. Regional time series of annual precipitation shows a great interannual variability and a weak wetting tendency. The projection for precipitation is less clear, however a tendency towards increasing precipitation in winter is reported, especially in the second half of the century. Besides mean temperature, also extreme heat conditions are projected to increase. The annual totals of intense precipitation are also projected to increase by the end of the century. Snow cover is expected to decline significantly (EURAC, 2022). Climate change in the range areas of Argali is expected to cause increasing temperatures, shifts towards overall higher aridity in terms of annual water balance, changing seasonal patterns of precipitation, reduced share of snow in the annual precipitation and high interannual variation of temperature and precipitation amounts and patterns.

69. Climate change may cause heat stress in summer and during the rut in fall, but reduced snow cover in winter may have an immediate positive impact in their survival. They have moderate but regular freshwater requirements, satisfying of which might become affected during extended droughts under projected climate change. The more significant impact caused by climate change on Argali will be through the modification of their habitat and forage base. Argali occur mainly in areas with high variability of forage and access to it, depending on variations in seasonal weather conditions. Climate change may thus affect the availability and quality of fodder plants due to the likely increasing aridity and shifting phenology as well as increasing frequency of untypical seasonal conditions like snowless winters, summer droughts or extreme rainfall. Such changes would also affect human land use and patterns of livestock grazing, with potential indirect impacts on Argali (CAMCA, 2023).

70. Salas et al. (2018) modelled current and future habitat of Argali in south-eastern Tajikistan, predicting sharp losses under RCP 4.5 and 8.5 scenarios by 2050 and 2070

in the areas with currently highest population numbers and density. Another study under the UNEP Vanishing Treasures project (Ghoddousi et al., 2023) modelled habitat suitability for Argali in Tajikistan and predicted that these areas would shrink under SSP245 and SSP585 scenarios until 2050 and more until 2070. Modelling of habitat suitability for Argali in the Pamirs of Afghanistan under RCP 2.6 and RCP 8.5 scenarios for the mid- and end-century predicted that under the lower emission scenario 90% of the currently suitable area in the country remains and under the high emission scenario the suitable area declines to 70% by the mid-century and almost disappears to less than 9% by the end of the century. (Elsen et al., 2023) The results of these three studies – although both highlighting critical habitat loss – vary substantially in details, illustrating the difficulty of modelling the indirect and direct impact of climate change on various habitat features and of predicting site-specific future climate change impact.

71. Climate change may also increase the risk of emergence of vector-disseminated diseases to Argali.

Importance: High in the long-term

2.4.8 Fragmentation

72. All the preceding threats, acting singly or in combination contribute to fragmentation of Argali into smaller and more isolated subpopulations. Small populations are inherently more vulnerable to extinction from stochastic events and generally contain reduced levels of genetic diversity, while greater distances between them reduce inter-connectivity and the exchange of individuals. Isolated protected areas and the absence of migration corridors between them and hunting concessions aggravate this factor. Fragmentation has been reported as a negative factor affecting Argali in the Altai in the Russian Federation and Kazakhstan (Kashkarov et al. 2008; Subbotin et al. 2005), in Inner Mongolia, China (Harris et al. 2009), and in India (Singh 2008). In the Aktau, Tamdytau, and Malguzar Mountains as well as the Turkestan Range (Uzbekistan and border areas of Kyrgyzstan and Tajikistan) very small, isolated populations of Severtzov's Argali are threatened by losses due to poaching and predation, inbreeding and harsh climatic conditions (Beshko, pers. comm. 2012). Marco Polo sheep in the Afghan Pamir do not show reduced genetic diversity, due to migration of animals to and from Tajikistan. However, the subpopulation of Argali in Taxkorgan, China is potentially becoming genetically isolated (Luikart et al. 2011).

Importance: High

2.4.9 Weak transboundary cooperation

73. While not directly a threat, insufficient transboundary cooperation is a problem as it hampers the addressing of threats. Given that so many Argali populations have a transboundary character, full cooperation between the relevant Range States is essential. Without coordinated monitoring of transboundary populations and sharing of relevant information, it is difficult to make accurate assessments of the trends of these populations and implement appropriate management decisions. The increasing impact of linear infrastructure and border fences requires cooperation and joint development of solutions.

Importance: Medium

2.4.10 Knowledge limitations

74. The taxonomy, genetics and possible phylogeographic structure of Argali are not settled, complicating the identification of important conservation units. Data on distribution, population size and structure, are often outdated or unreliable. Research and population monitoring are expensive and generating robust estimates of population size and monitoring trends are problematic. The impacts of disease and climate change are

currently unknown. The results of hunting are rarely documented in detail and data on trophy hunts (success rate, number harvested, age, horn size) are rarely available for scientific monitoring. Poor knowledge of population size and structure may cause inadequate management of hunting operations and detrimental off take quotas.

75. Research information is rarely translated into practical management recommendations and even more rarely are these recommendations applied in practice. Decisions on the conservation, management and use of Argali are often driven by political and commercial interests rather than based on knowledge about the species and ecosystem and the principles of wildlife management.

Importance: Medium

2.5 Legal status, use regulation and protected areas

2.5.1 International status

Convention for the Conservation of Migratory Species of Wild Animals (CMS) – listed in Appendix II, Single Species Action Plan adopted 2014 and included in the Central Asian Mammals Initiative.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) – listed in Appendix II except for *O. a. hodgsoni* and *O. a. nigrimontana* which are included in Appendix I.

European Union (EU): Annex B of the EC Wildlife Trade Regulations, except for *O. a. hodgsoni* and *O. a. nigrimontana*, which are included in Annex A (EC Reg. No 709/2010, amending EC Reg. No. 338/97). In addition to the CITES export permit or re-export certificate, issued by the country of export or re-export, an import permit, issued by the EU Member State of destination, is generally needed for Annex A and B species.

The United States of America Endangered Species Act (ESA): “Endangered”, except in Mongolia, Kyrgyzstan and Tajikistan, where the species is listed as “threatened” (a classification that allows for import of trophies from legally taken Argali in those countries under limited and specifically authorized permits from the U.S. Fish and Wildlife Service). As in Kyrgyzstan a Government Decision from the 1990s allows only the hunting of *O.a.polii* under a special quota, only the importation of trophies belonging to this subspecies can be permitted.

2.5.2 National status

Afghanistan: Since 2006 all hunting of wild animals has been prohibited by Presidential Decree. In addition, Argali is specifically listed as a protected species under Article 47 of the Environment Law (2007). The Taliban authorities have continued the hunting ban but enforcement appears to be weak and there are very serious concerns about poaching of wild ungulates by Taliban troops stationed in the Wakhan (Ostrowski pers. com. 2024).

China: All Argali are classified as a Category II “key species” under the Chinese National Wildlife Protection Law of 1988. Permits to take Argali must be obtained from provincial authorities. Only trophy hunting programmes have procured permits to hunt Argali under this legislation, but no trophy hunting of Argali is currently authorized.

India: Listed as ‘endangered’ under Schedule I (highest protection) of the Wildlife Protection Act (1972) of the Government of India.

Kazakhstan: Listed in the national Red Book (2008) as *O. a. ammon* – endangered (Category I); *O. a. collium* – rare (Category III); *O. a. karelini* – vulnerable (Category II); *O. a. nigrimontana* – endangered (Category I); *O. a. severtzovi* – endangered (Category I) and possibly

disappeared from the country. Hunting permits can be issued only by particular governmental decree following a special procedure, but there have been no legal hunts since 2003.

Kyrgyzstan: Listed in the Red Book (2007) as *O. a. polii* – near threatened (Category 3); *O. a. karelini* - vulnerable (Category 2); and *O. a. severtzovi* – endangered (Category 1). Taking from the wild is in theory possible only for scientific purposes, but in practice the government issues about 70 permits annually for trophy hunting and scientific purposes.

Mongolia: Listed as "Endangered" after the 2009 nationwide assessment, protected as "Rare" under the 2001 revision (Mongolian Government Act No. 264) of the 2000 Mongolian Law on Animals. General hunting by local people of Argali has been prohibited since 1953, although foreign trophy hunters can purchase special licences under an annual quota (CITES trade data base: for both subspecies combined up to 50 per year reported).

Nepal: Vulnerable, protected under HMG Nepal's National Parks and Wildlife Conservation Act, 1973.

Pakistan: Critically endangered, protected at provincial level, no hunting permits are issued.

Russian Federation: Listed in the Red Book of the Russian Federation - endangered (Category I), hunting prohibited.

Tajikistan: Listed in the Red Book, hunting is in theory possible only for scientific purposes but in practice the government annually issues about 100 permits for trophy hunting; for hunts during the season 2024/225 the government allocated a quota of 115 Argali.

Uzbekistan: Listed in the Red Book (2019), limited trophy hunting is irregularly permitted, export permits issued (CITES trade data base 0-3 per year reported). In 2023 the quota had been 9 animals.

2.5.3 Protected areas

76. Protected areas (PAs) have been established within Argali range in each of the Range States, some of them of substantial size. However, some PAs exist only on paper, and many suffer from insufficient funding, staff, training, equipment and transport. Although each site in theory has a management plan that sets out priority activities, these plans are not always up to date or fully implemented. In many protected areas livestock grazing and harvest of wild plants, as well as poaching take place. The area figures given below refer to the whole PA and not the amount of suitable Argali habitat, which may be much smaller (CMS, 2014).

Afghanistan: In April 2014 the Government of Afghanistan declared the whole of Wakhan corridor with Great and Little Pamir as a National Park 10,910 km²), including all habitat of Argali in the country.

China: A vast reserve complex totalling over 586,500 km² in area is located on the Qinghai-Tibet Plateau, made up of four contiguous protected areas: Chang Tang Nature Reserve (300,000 km²), Sanjiangyuan NR (158,000 km²), Kekexili NR (83,500 km²) and Arjin Shan NR (45,000 km²). To these can be added Qilian Shan NR (>20,000 km²) and Qomolongma NR (33,910 km²) on the northern and southern edges of the plateau respectively. Argali (*O.a.hodgsoni*) occur sporadically in all of these sites. In Xinjiang, Taxkorgan NR (14,000 km², *O.a.polii*), West Tien Shan National Nature Reserve (280 km², *O.a.karelini*) and Tomur Feng NR (100 km², probably *O.a.karelini*) on the southern side of the Tien Shan also host the species.

India: *O.a.hodgsoni* occur in a small areas within Hemis National Park (3,350 km²), Ladakh, and Khangchendzonga NP (849 km²), Sikkim.

Kazakhstan: Argali occur in Karatau State Strict Nature Reserve (343 km²), Borolday section Syr Darya-Turkistan Regional Nature Park, Aksu-Zhabagly State Strict Nature Reserve (1320 km²), Andasay State Nature Sanctuary (10,000 km²), Zhusandala State Nature Reserved Zone (27,575 km²), Ile-Alatau State National Nature Park (1,997 km² – currently absent!), Almaty State Strict Nature Reserve e (915 km²), Almaty State Nature Sanctuary (5,424 km²), Kolsay Kolderi State National Nature Park (1,610 km²), Altyn-Emel State National Nature Park (1,611 km²), Zhongar-Alatau State National Nature Park (3560 km²), Upper Koksu State Nature Sanctuary (2,400 km²), Tokhty State Nature Sanctuary (1,870 km²), Katon-Karagay State National Nature Park (6,434 km², currently absent), Bayan-Aul State National Nature Park (507 km²), Karkaraly State National Nature Park (903 km²), Kyzyltau State Nature Sanctuary (600 km²), Buyratau State National Nature Park (889 km²), Kyzylaray State Nature Sanctuary (182 km²), Tarbagatay State Nature Sanctuary (2,400 km²).

Kyrgyzstan: Argali occur in Karatal-Japyryk State Strict Nature Reserve (364 km²), Kulun-Ata State Strict Nature Reserve (274 km²), Naryn State Strict Nature Reserve (370 km²), and Sarychat-Ertash State Strict Nature Reserve (1,492 km²); and Besh-Tash State Nature Park, Kara-Bura State Nature Park (114 km²); also, formerly in Chon-Kemin State Nature Park (possibly occasional incursions from Kazakhstan) and Besh-Aral State Strict Nature Reserve (867 km²).

Mongolia: At least 14 protected areas harbour Argali including: Great Gobi Strictly Protected Area (SPA) Unit A (44,190 km²); Khokh Serkh SPA (723 km²); Otgontenger SPA (955 km²); Turgen Uul SPA; Tsagaan Shuvuut unit of Uvs Nuur SPA (7,125 km²); Gobi Gurvansaikhan National Conservation Park (NCP) (27,000 km²); Altai Tavaan Bogd NCP (6,362 km²); Silkhemin Nuruu NCP (140 km²); Khar Uvs Nuur NCP; Khangain Nuruu NCP (8,978 Tsagaan Shuvuut; Khustain Nuruu NCP (506 km²); Ikh Nart Nature Reserve (NR) (666 km²); Burkhan Buudai NR; and Eej Kharkhuun National Monument (225 km²). About 23 per cent of the Argali's range falls within federal protected areas. The species also occurs in dozens of locally protected areas.

Pakistan: Occur irregularly seasonally in a small area within Khunjerab National Park (2,270 km²).

Russian Federation: Argali are confirmed in Altaiskiy State Nature Reserve (864 km²) and Sailyugemskiy National Park (total area 1,180 km² but inhabit only two clusters with a total area of 350 km²).

Tajikistan: Argali occur in Tajik National Park – declared a World Heritage Site in 2013 (26,000 km²) and in Zorkul State Strict Nature Reserve (877 km²) in the south-east Pamirs.

Uzbekistan: The main population of *O.a. severtzovi* occurs in the Nuratau State Strict Nature Reserve (170 km²), probably in Aktau State Nature Sanctuary (154 km²) and possibly in Zaamin State Nature Reserve (156 km²) and Zaamin National Nature Park. *O.a.karelini* occurred formerly in Chatkal State Biosphere Reserve (573 km²) and in Ugam-Chatkal National Nature Park. The in 2022 established Aktau-Tamdy State Strict Nature Reserve (400 km²) was originally planned for the protection of Argali and its habitat but was eventually established outside of the Argali range to avoid conflict with plans for development of wind power and extractive industries (Anonymous experts, pers. com. 2024).

3. Implementation of the International Single Species Action Plan for the Conservation of Argali for the period 2014-2024

77. This section provides a brief summary on the progress towards the implementation of the Single Species Action Plan (SSAP) for the period 2014 till 2024 adopted at the 11th Meeting of the Conference of the Parties, Quito, Ecuador, November 2014. The information provided is based on the Range States reports, official national statistics, the IUCN Red List (Reading et al. 2020) as well as from data of special surveys, compiled in the frame of projects implemented by or with support from GIZ, WCS and UNEP's IKI-funded CAMCA project, and includes data from other sources, stakeholders and activities.

78. This section is structured along the main objectives of the SSAP. This SSAP and the template for National Reports are not fully consistent in structure and content. The template for the National Reports lacks questions about the achievement of the objectives and results of the SSAP but focuses on the implementation of activities. The available National Reports therefore do not provide a straightforward assessment of the achievement of the SSAP's objectives and results and their indicators. The implementation of activities as reported in the National Reports is not repeated here but taken into consideration with regard to the achievement of Objectives and Results.

Overall goal: To maintain and restore Argali populations to favourable conservation status throughout their range.

Achievement: Partly – The conservation status of Argali as species remained stable during the reporting period. The IUCN Red List assessment (Reading et al. 2020) maintained the category Near Threatened (NT). The recent official figures from several Range States with a large share of the global population of Argali (Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan) show positive trends in the overall numbers and indicate a favourable conservation status in all or parts of the respective distribution ranges. From other Range States (China, India, Mongolia, Russia) no recent information is available. In Afghanistan, Nepal and Pakistan the populations are small, declining or the species does not permanently occur anymore. However, also in countries with reported overall positive trends, Argali is absent across large parts of its former range, locally populations are in decline and threats continue to adversely affect the conservation status.

Objective 1: To stabilize Argali numbers and range, maintain a healthy sex/age ratio and reverse negative trends.

Achievement: Partly – The numbers and range appear stable in large parts of the distribution range but appear declining in other parts as explained above under the achievement of the SSAP's Goal. Sex/age ratios are only in some areas systematically monitored. Negative trends could be reversed for some populations. A remarkable success is the recovery of Karatau Argali in Kazakhstan. On the other hand, population and range area of Tien Shan Argali in parts of its range as well as of other subspecies and populations are apparently in a continuing decline.

1.1 Poaching and other human-caused sources of mortality are reduced

Indicators:

- Improved protection for Argali in all range states
- Vaccination programmes in disease hotspots

Means of verification:

- Revised legislation where appropriate
- Adequate numbers of ranger / inspection staff

- Rangers / inspectors adequately resourced
- Livestock vaccinated in key sites

79. In ***Afghanistan***, NEPA, has officially included the Argali among the species covered by Target 4 of its revised NBSAP (December 2023), i.e., Afghanistan is committed to maintain the numbers of targeted species. WCS continued its conservation work in the Afghan Pamirs, including facilitating the designation by NEPA of Wakhan as a national park in 2014, law enforcement, developing alternative livelihoods and employments for communities, land management programs, education and public awareness, livestock disease control, science, and monitoring. However, there are very serious concerns about poaching of wild ungulates by Taliban troops stationed in Wakhan, especially since late 2022.

80. In ***Kyrgyzstan***, WCS is implementing a SMART project in partnership with Ilbirs Foundation that aims to improve law enforcement. SMART is developed in Besh-Aral SSNR, Besh-Tash NNP, Sarychat-Ertash SSNR, Sary-Jaz and Khan Tengiri NNP, PAs that actually or potentially host Argali populations.

81. In ***Mongolia***, WCS was active in monitoring the PPR outbreak affecting Saiga Antelope *Saiga tatarica mongolica* beginning in 2017, which also affected Asiatic Ibex and Argali. They developed a participatory epidemiology project with local populations to improve disease surveillance in wildlife (including Argali) and prophylactic response targeting livestock.

82. ***Nepal*** reported about law enforcement and collaboration with local people in general. Staff is well equipped. Veterinarians are present in the areas and awareness of local livestock herders is raised.

83. ***Pakistan*** reported that effective protection is in place where Argali seasonally occurs and no poaching incidents were registered. Training and capacity building of field staff is a regular component of different projects being implemented by government and NGOs/donors. Furthermore, livestock vaccination programme is a regular component of different projects being implemented by government and NGOs/donors. For example, Snow Leopard Foundation Pakistan has been implementing “Ecosystem Health Program (EHP)” which aims to protect local livelihoods by protecting livestock against major diseases and creating a participatory community-based veterinary service available at the community door steps. Across 42 Valleys in Northern Pakistan, over 100 community Ecosystem Health Workers have been trained and more than 600,000 livestock belonging to 32,000 households have been vaccinated biannually, resulting in up to 60% reduction in the mortality rate of livestock at the program sites.

84. ***Uzbekistan*** in its National Report (2024) reported that in addition to the protection work by protected areas’ staff, with the participation of police officers, preventive activities are conducted with the local population to assist in the prevention of illegal hunting and compliance with fire safety measures. The role of the public in controlling and detecting violations of environmental legislation has been increased, and a helpline system and a 24-hour call centre directly at the Ministry of Environment have been introduced. The new law "On hunting and hunting economy" (2020) includes trophy hunting in the types of hunting with all relevant provisions. Trainings with participation of law enforcement, customs and protected area rangers are conducted since 2018. Regulations on the use of confiscated wildlife are under elaboration. The veterinary service works across the country and implements prophylactic measures. Livestock grazing is banned in strict nature reserves but there is a high frequency of illegal livestock grazing.

Achievement: Partly – Poaching remains the key threat across large parts of the Argali distribution range. In some areas the situation has improved during the reporting period, e.g.

in protected areas in the Karatau Range (Kazakhstan), in protected and community-based wildlife management areas in Kyrgyzstan and Tajikistan or an adequate level of protection was maintained, e.g. in well-managed hunting concession areas in Kyrgyzstan and Tajikistan and in Nuratau SSNR in Uzbekistan. However, outside of some protected and hunting areas, poaching remains a problem and has high adverse impact on the conservation status. Livestock vaccination is implemented routinely in all range states but few programmes specifically target the disease transmission risk in areas where Argali and livestock share the habitat.

1.2. Argali is used and managed sustainably, with support of local communities

Indicators:

- Trophy hunting operations follow international good practice (IUCN 2012)
- Quotas are scientifically based and sustainable
- Process for setting quotas, licences and allocating concessions is transparent
- Community involvement in trophy hunting programmes

Means of verification:

- Transparent regulations and quota process
- Monitoring results
- Community-based conservancies established
- An adequate proportion of the revenues from trophy hunting reinvested directly in local community development and conservation

85. In ***Kazakhstan***, WSF is working with national biologists in their development of a model Argali conservation sustainable use program which, if implemented, would transparently direct funds derived from conservation permits to local communities, to agricultural interests to encourage leaving forage for Argali, to population and distribution surveys and providing a horn plugging program that can be implemented to minimize illegal trade and poaching.

86. In ***Kyrgyzstan***, hunting tourism takes place in several hunting concession areas managed by private businesses. Assigning hunting areas to legal entities is based on a competitive process, which takes place every few years in each region Until 2015 assigned hunting areas were often too small for meaningful management, and as a result, hunting enterprises received quotas that were too low for being economically viable and fragmentation of suitable areas caused difficulties for an effective protection from poaching and control of area boundaries during hunts. To address these issues, in recent years the sizes of newly delineated hunting areas were increased and are now up to several hundred thousand hectares. In the Alay valley in Osh Region, the community-based NGO Jan-Aydar, supported by the NGO Ilbirs manages a hunting area where during the recent years increasingly frequent Argali are observed, entering from Tajikistan. The hunting quotas are at a sustainable level. Hunting moratoria for Argali and some other species with the goal of population recovery were introduced for certain regions until 2030. As legal hunting quotas for Argali are low, the effectiveness of the moratoria has been questioned by many stakeholders.

87. ***Nepal*** does not have trophy hunting on Argali. Generally, communities are involved through buffer zone user committees, buffer zone community forest user groups and community-based anti-poaching units supporting ownership of protected areas. 30-50 percent of the revenue collected from the protected area goes to its buffer-zone management and protection. Local guides are along with park staff engaged in accompanying hunters. Hunting is based on the findings of scientific studies and part of the wildlife conservation program. Compliance with international regulation is ensured and illegal trade control supported by regular training of law enforcement staff.

88. In ***Pakistan***, Argali due to irregular occurrence in small numbers is not hunted. Under community-based trophy hunting programmes of other ungulates, communities are involved in community-based conservation activities including protection and surveys for all species. Revenue generated through trophy hunting is used for community-based conservation activities from which all species including Argali benefit. 80% of the revenue generated through community-based trophy hunting programmes goes to local communities, used on community-based conservation activities and socio-economic uplift of the communities. The system of quota setting, and allocation is established and based on population surveys. Capacity of law enforcement staff is developed through activities under government and donor-funded programs.

89. WCS facilitated in 2016-2018 the institutionalization of the communities of Misgar (Hunza) as a community-controlled hunting area, focused on trophy hunting of Himalayan ibex, but the area was prized by the Argali not so long ago. Now it only occurs in the district immediately east of Misgar. The structure of the CCHA would allow the community to host Argali trophy-hunting should it becomes a visitor to Misgar again.

90. In ***Tajikistan***, the hunting quota is in the range of 0.4% of the overall population size. Most suitable habitat of *O.a.polii* outside of Zorkul SSNR is controlled by hunting concessions. Between 2013 and 2022 an area was managed by a local NGO which achieved remarkable success in rehabilitating the local populations of Asiatic Ibex and Argali and to use hunting revenues for conservation activities and community well-being (Zuther et al., 2024).

91. In ***Uzbekistan***, most Argali occur in the Nuratau SSNR where no hunting is possible. Hunting is organized in adjacent areas and the quota of 9 Argali in 2023 is about 0.4 percent of the overall population number. This quota might be too high if only a minor part of the population of the SSNR uses areas outside during the hunting season and is available for hunting. It is not clear, if improved protection in the hunting area already contributes to an increased use of the area by Argali. Involvement of local people is so far achieved only through employment by the protected area and by the hunting company. The National Report, Uzbekistan (2024) states the general option of developing community-based hunting areas but better understanding of international experience and elaboration of mechanisms would be needed. The National Report, Uzbekistan (2024) noted mechanism of revenue sharing and use without specifics and mentioned the establishment of a breeding enclosure and “other measures for the conservation of the species and its habitat”. The report mentions the low number of harvested animals and the resulting low revenues as an obstacle for the development of equitable benefit sharing. Further development of ecotourism and trophy hunting is among the activities of the NBSAP 2019-2028. CITES and EU regulations are implemented and supported and enforcement staff receives the needed training.

92. **Wild Sheep Foundation (WSF)** is coordination and collaborating with the USFWS, Mongolia and Kyrgyzstan in their interests in conservation of Argali through ESA and CITES regulations. WSF is prepared to provide the training and hornplugs to any organization that is willing to institute this method to curb or minimize illegal trade in Argali.

Achievement: Partly – Generally, the trophy hunting operations are largely sustainable. Locally, problems have been reported by hunters and other stakeholders. The determination of country-wide quotas in countries with hunting programs follows established procedures but allocation of quotas to specific areas appears not always fully transparent and independent population assessments are only in some cases available. The allocation of concessions is transparent in Kyrgyzstan and Mongolia. In Tajikistan, a hunting area with Argali has been successfully managed by a community-based group in terms of conservation outcomes and benefits for local people, but the area was reassigned to a private business. In Kyrgyzstan,

community-based management has been locally initiated but so far Argali numbers are still too low for hunting.

Objective 2: To maintain and restore intact Argali habitat and migration routes.

Achievement: Not achieved – The decline of size and quality of Argali habitats continues across large parts of its distribution range. Connectivity of Argali habitats and migration routes suffer from this habitat loss and from existing and newly built barriers.

2.1. Rangelands are sustainably managed, and availability and quality of Argali habitat have improved.

Indicators:

- Rangeland management plans developed

Means of verification:

- Plans available and implemented

93. ***Nepal*** in its National Report (2024) highlighted the existence of traditional rotational grazing systems.

94. ***Pakistan*** in the National Report (2024) explained that Rangelands are generally managed under the Gilgit Baltistan Forest Act, 2019. However, there are no dedicated activities for Argali. All known Argali habitat is located in protected areas.

95. ***Uzbekistan*** has a programme on conservation and effective use of pastures, adopted by the President in 2023 and clarifications about its impact on the rangeland management plans taking into account needs of Argali conservation beyond protected areas might be needed. The Nuratau SSNR in 2023 received additional equipment including 20 camera traps, 10 binoculars, spotting scope, GPS and field gear for rangers.

Achievement: Not achieved – Across the distribution range of Argali the livestock numbers continue to increase. Rangeland management plans are often not effectively implemented and rarely take into consideration the needs of Argali. Remote pastures can be often perceived as “underused” and decision-makers, NGOs and donor-funded programmes often aim at their intensified use for livestock grazing.

2.2. Forage shortages for Argali in critical areas and times of the year are reduced.

Indicators:

- Measures included in rangeland management plans

Means of verification:

- Plans available and implemented

96. ***Nepal*** did not report measures in place beyond the existing transhumant grazing system but highlighted the need for zoning of protected area and alternative livelihoods. The limited available rangeland is a challenge.

97. In ***Pakistan*** activities for improving energy efficiency in rural areas are undertaken under government and donor funded projects. No temporal and spatial restrictions on livestock grazing and hay making are in place which specifically address the need of Argali. It is not clear if the protected area status of known Argali habitat already provides sufficient regulation. Haider et al. (2018) mention forage competition with livestock (and other wild herbivores) as potential reason of decline but do not provide details.

98. In ***Uzbekistan***, a project on alternative energy sources has been prepared but so far, no funding source was identified. Beyond SSNR livestock grazing can be restricted in other protected areas but in the National Report no specifics are provided if such restrictions have been imposed in areas with Argali. Enforcement of grazing restriction is reported as insufficient.

Achievement: Not achieved – Same situation as 2.2.

2.3. Disturbance and displacement by herders and other human activities are minimized.

Indicators:
- Measures included in rangeland management plans
- Herders supportive of reducing Argali disturbance and displacement

Means of verification:
- Plans available and implemented

99. ***Nepal*** reported collaboration with local people, awareness raising and law enforcement. From the formulation in the National Report, it is not entirely clear if the listed results have been achieved or are only expected: reduction of feral dog presence and poaching and increase in Argali numbers.

100. ***Pakistan*** reported that the protected area status and active protection of Argali habitat prevent significant disturbance. Haider et al. (2018) mention human disturbance as potential reason of decline.

101. In ***Uzbekistan***, the number of stray dogs is supposed to be controlled and no facts of predation or disturbance of Argali by dogs has been registered. Further, the National Report (2024) quotes the legal framework but does not provide specific information. Focus is on protected areas while addressing the threats to Argali beyond protected areas might receive less attention and resources.

Achievement: Not achieved – Not much information is available on this specific result but the overall insufficient consideration of Argali in rangeland management makes it highly likely that at best only local improvements have been achieved.

2.4. Negative impacts of mining and infrastructure development are minimized and mitigated.

Indicators:
- Argali and their habitat are fully considered in EIAs/SEAs
- Fences and other barriers to Argali movements removed or adjusted

Means of verification:
- Transparent EIAs/SEAs conducted for all major developments
- Compliance with IFC Performance Standard 6
- International borders permeable for Argali

102. In ***Nepal***, Environmental Impact Assessments are legally required for large projects in protected areas. It is not clear in what extent this is effective. There is a concept of biological corridors and landscape level conservation for biodiversity conservation which this is reportedly in conflict with development but no specifics have been reported.

103. In ***Pakistan***, Environmental and Social Impact Assessments are mandatory for large projects but their effectiveness is not reported.

104. ***Uzbekistan*** in its National Report (2024) quotes the general provisions under the Concept for Environmental Protection and of the Guidelines Nr. 6 on biodiversity conservation of the International Finance Corporation without mentioning any specifics.

Achievement: Not achieved – There is no information available that actual or potential importance of an area as permanent or seasonal habitat for Argali or as corridor connecting populations has influenced planning and implementation of potentially harmful industrial or infrastructure projects. No border fence removal or mitigation has been reported, but in some areas border fences have been newly built or enforced, e.g. by China.

2.5. Conservation management and international cooperation are maximized to maintain connectivity of Argali populations.

Indicators:

- Well managed networks of protected areas and hunting management areas include all key areas for Argali
- Transboundary agreements in place for relevant populations

Means of verification:

- Coverage of Argali habitat by networks of PA and hunting management areas
- Transboundary agreements signed
- Regular intergovernmental dialogue and information exchange

105. In ***Kazakhstan*** a new protected area has been established in the range area of Argali in the Karatau Range – the Borolday branch of Syr Darya Turkistan Regional Nature Park.

106. ***Nepal*** mentioned in the National Report transboundary collaboration and coordination with China for the protection and conservation of biodiversity. Nepal is party to several relevant MEAs but not yet to the CMS. Further details, achievements and specific relevance for Argali are not provided.

107. ***Pakistan*** is party to all relevant MEAs, a member of South Asia Wildlife Enforcement Network (SAWEN) which is a dedicated forum to curb illegal wildlife trade, and participates in the Global Snow Leopard and Ecosystem Protection Programme (GSLEP).

108. ***Uzbekistan*** reported about the annual trainings of selected rangers of Nuratau SSNR, implementation of various projects with international involvement (UNDP, GEF, WWF) and highlighted the collaboration of various agencies, including Interpol, in combating illegal wildlife trade.

Achievement: Partly achieved – The networks of protected areas and hunting management areas have been expanded in some areas, e.g. in the Karatau (Kazakhstan), but still parts of the Argali range are not effectively managed.

Objective 3: To fill knowledge and information gaps.

Achievement: Partly – Research and monitoring activities are implemented in many parts of the Argali distribution range but there are still important knowledge gaps. Survey methodology is not always clearly documented and may not in all cases adhere to contemporary standards. Monitoring in hunting areas is not always done with involvement of independent experts and results are in some Range States (e.g. Kyrgyzstan) transparently communicated while in others they are not publicly accessible.

3.1. Sufficient information on Argali status, trends, ecology and management is available to all stakeholders.

Indicators:

- Standard monitoring methods in use
- Monitoring programs for all Argali populations in place
- Needs and resource assessments undertaken
- Genetic analysis completed

Means of verification:

- Best practice monitoring manual available
- Monitoring results available
- Assessments available
- Taxonomy of Argali clarified

109. In ***Afghanistan***, WCS continued to monitor the population of the Big Pamir and did not observe a significant decline in this population until 2022. Unfortunately, the WCS team was not able to do a survey in 2023. The next survey is planned in fall 2024 (after the CMS meeting but the results should be available at the end of 2024). Elsewhere in the Afghan Pamirs, the situation of the Argali is currently unknown to us, but no mortality events (possibly due to disease or famine) were reported as in spring 2024 in Tajikistan.

110. In ***Nepal***, no new targeted research was undertaken.

111. ***Pakistan*** reported the studies by Zafar et al. 2014 and by Haider et al. 2018 and occasional monitoring of the species by Gilgit-Baltistan Forest and Wildlife Department in collaboration with some universities and NGOs like Snow Leopard Foundation, Pakistan and WWF-Pakistan.

112. ***Uzbekistan*** has elaborated and approved two monitoring guidelines and undertakes twice a year surveys of Argali in Nuratau SSNR. Research on factors negatively affecting Argali is undertaken and sampling for genetic research has started.

113. ***Internationally***, Zhuo et. al. (2024) produced a study on habitat connectivity and corridors of Argali populations (attributed to *O.a.polii*) across five range states and assessed the potential impact of border fences.

114. **WCS** contributed to the modelling to assess the effects of border fences on Marco Polo sheep and now the effects of climate change (Zhuo et. al. 2024). Internally, WCS has also modelled the effect of climate change on the Argali population in Afghanistan.

115. **WSF** is actively supporting and funding efforts to bring Central Asia biologist together in the field to collaborate and share survey methodologies.
    - In 2018, WSF funded an Argali survey in Kazakhstan
    - In 2022, WSF funded a second Argali survey in Kazakhstan and funded travel for biologist from Mongolia, Kyrgyzstan and Tajikistan to participate, collaborate and coordinate methodologies.
    - In 2023, WSF participated in and funded two Kazakhstan biologists to participate in a large-scale Argali survey in Mongolia.
    - Furthermore, WSF is preparing a grant in collaboration with biologists from Kazakhstan, Mongolia and Kyrgyzstan to establish a CA wild sheep and wild goat working group (which will also include biologists from Uzbekistan and Tajikistan) to providing funding for an in-person meeting and surveys in Kyrgyzstan and Kazakhstan in 2025, and has committed to work with Mongolia in their development of a countrywide Argali management plan.

Achievement: Partly – The use of standard monitoring methods across all Range States and distribution areas appears an ambitious target. Attempts by WSF and WCS as well as in the frame of GSLEP continue to establish monitoring methods which are based on good documentation of all observations, adequate sampling and analytic methods. In Kazakhstan aerial surveys are conducted. However, not for all Argali populations regular monitoring is in place. Often the last surveys guided by independent experts have been undertaken long ago or repeated surveys are limited to specific areas so that reliable detection of trends is often difficult. Monitoring reports by entities in charge of protected areas and of hunting concessions often show continuous trends of increase and might be positively biased. The envisaged genetic analyses for better understanding of intraspecific genetic diversity and potential differentiation of subspecies have not yet been undertaken. E.g. in Kyrgyzstan a major obstacle was the limited readiness of hunting enterprises in coordination and insufficient pressure on them by the respective government authorities.

Objective 4: To ensure effective implementation of the Action Plan

Achievement: Partly – The Action Plan has in parts be implemented but only few Range States provided National Reports.

4.1. An implementation mechanism is established

Indicators:
- Argali National Action Plans developed
- Argali page on CMS website established
- Lead government agencies and Argali contact points appointed
- Argali Working Group TORs agreed
- MOU/other Argali agreement established
- Funding plan developed

Means of verification:
- Action Plans published
- Webpage available
- Argali Working Group established and functional
- TORs published
- MOU / agreement published
- Funding bids submitted to donors

116. ***Nepal*** expressed the intention to become a Party to CMS and participate in the international collaboration for implementing the SSAP.

117. ***Pakistan*** has designated contact point and lead agency.

118. ***Uzbekistan*** has adopted the NBSAP 2019-2028 and updated the Management Plan of Nuratau SSNR but a species-specific action plan for Argali is not considered as necessity. Agreements with adjacent Range States are under elaboration.

119. **WSF** provided funding for the IUCN Sustainable Use and Livelihoods Specialist Group (SULi) Central Asia Subcommittee meeting in Bishkek, Kyrgyzstan in 2018. Hosted the 7th World Mountain Ungulate Conference and provided travel assistance to biologists from Kazakhstan, Tajikistan, Pakistan, and India. WSF also provided financial support for biologists from Kazakhstan, Mongolia and Tajikistan to attend and present to members of the North American Western States and Provence's Association of Wild Sheep Working group. WSF is funding cross boundary collaboration within and between Central Asian countries in the development of an on the ground wild sheep and wild goat working group.

Achievement: Partly – The Action Plan was published and the Argali is presented in the frame of the CAMI webpage. Species Focal Points have been appointed on the basis of ToR but no active Argali working group evolved and exchange remained at an informal level and through the IUCN SSC Caprinae Specialist Group and its newsletter. With the integration of Argali in CAMI no species-specific MOU / agreement is necessary. Some fundraising has perhaps used the SSAP as justification.

4. Conclusions

120. During the reporting period the conservation status of Argali in terms of population size and distribution range apparently remained stable or improved (see also section 3 – Achievement of the Goal of the SSAP). Lack of recent information from China and incomplete information from Mongolia – both important Range States – is the reason that the total number presented in Section 2.2 is below the figures presented by CMS (2014) and Reading et al. (2020). The total population size is likely still in the range of about 100,000 animals or even higher.

121. Given the uncertainty about population size, trends and actual presence in large areas of the species' distribution range, the IUCN Red List category Near Threatened (NT) is still warranted. The species does not show a decline justifying the assessment in any of the "Threatened" categories, but known negative trends in parts of the distribution range, ongoing loss and degradation of habitat, increasing competition with and risk of disease transmission from livestock, barriers to migration and fragmentation as well as other threats make larger and overall population declines in the future likely.

122. The achievement of the objectives and results under SSAP and the implementation of the planned actions appears only partially satisfactory. Transboundary collaboration between experts and between governmental agencies has rarely improved. Only few national governments report about the implementation. Many activities appear to be planned and implemented independently of the SSAP although certainly contributing to its realization.

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