UN environment programme

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CONVENTION ON MIGRATORY SPECIES

UNEP/CMS/BKD/MOS3/Doc.3

2 August 2024

Original: English

3rd MEETING OF THE SIGNATORIES (MOS3) OF THE MEMORANDUM OF UNDERSTANDING CONCERNING CONSERVATION AND RESTORATION OF THE BUKHARA DEER (*Cervus elaphus bactrianus*)
Almaty, Kazakhstan, 10-11 September 2024

DRAFT OVERVIEW REPORT ON THE CONSERVATION STATUS AND IMPLEMENTATION OF THE BUKHARA DEER MOU

Summary:

This Overview Report is prepared in accordance with Paragraph 5 of the Bukhara Deer MOU based on the National Reports submitted to the CMS Secretariat as of 30 July 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
CIC	–	International Council for Game and Wildlife Conservation
CMS	–	Convention on the Conservation of Migratory Species
EOO	–	extent of occurrence
IKI	–	International Climate Initiative of the Government of Germany
ISDC	–	Inter-State Sustainable Development Commission
IUCN	–	International Union for the Conservation of Nature
LABR	–	Lower Amu Darya Biosphere Reserve
MOU	–	Memorandum of Understanding
NEPA	–	National Environmental Protection Agency of Afghanistan
NNP	–	(State) National Nature Park
SSNR	–	State Strict Nature Reserve (Rus.: Zapovednik)
SR	–	Special Reserve (Rus.: Zakaznik)
UNEP	–	United Nations Environmental Programme
WWF	–	Worldwide Fund for Nature

1. Introduction

1. The Memorandum of Understanding Concerning Conservation and Restoration of the Bukhara Deer *Cervus elaphus bactrianus* (Bukhara Deer MOU) was signed by Kazakhstan, Tajikistan, Turkmenistan as well as WWF Russia during a special event of a meeting of the Inter-State Sustainable Development Commission (ISDC) in Dushanbe, Tajikistan, on 16 May 2002. The Republic of Uzbekistan signed the MOU on 18 September 2002 through its Ambassador in Germany, and the International Council for Game and Wildlife Conservation (CIC) signed the MOU as a cooperating organization. While the MOU was signed by four Bukhara Deer Range States, the First Meeting of the Signatories to the MOU in 2011 recognized Afghanistan as an additional Range State and invited the country to sign the MOU.

2. The Second Meeting of the Signatories to the MOU did not take place due to the COVID-19 pandemic. A Technical Workshop of experts, Range State and NGO signatory and partner representatives was held online 19-22 October 2020. In preparation of this Technical Meeting an Overview Report (CMS 2020) was prepared and reviewed by the participants of the meeting. The Technical Meeting adopted the Work Programme 2021-2026 and the reporting format for the national reports.

3. In accordance with Paragraph 5 of the Bukhara Deer MOU, the Secretariat shall prepare an overview report compiled on the basis of information at its disposal pertaining to the Bukhara Deer currently listed in Appendix I and Appendix II of the Convention as *Cervus elaphus yarkandensis* (populations in Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan and Afghanistan).

4. The national reports of the Signatories are the primary source of information for this Overview report. The Secretariat invited the MoU Range States and collaborating organizations to submit their national reports to the Secretariat. As of 30 July 2024, Tajikistan and Uzbekistan had submitted their reports. This Overview report is additionally based on other information available to the consultant such as data and project reports, conference proceedings, scientific and grey literature.

5. This Overview report consists of a general overview of the conservation status of Bukhara Deer (Section 2), a review of the progress achieved towards the implementation of the Work Programme 2021-2026 (Section 3), information on additional measures, not included in the Work Programme (Section 4) and a conclusion about the achievements regarding the conservation status of the species (Section 5).

Taxonomic note

6. For many years the Red Deer complex, including European and North African Red Deer, Tarim Red Deer and Eastern Asian Maral and North American Wapiti were considered as one species *Cervus elaphus*. The CMS accordingly listed Bukhara deer as a subspecies of *Cervus elaphus*, originally as *C. e. bactrianus*, following Wilson and Reeder (2005), as local populations of *C. e. yarkandensis*.

7. Molecular data suggested that the Tarim Red Deer from Central Asia should be recognized as separate species *Cervus hanglu* Wagner, 1844, including the populations from the Yarkand-Tarim and Bukhara regions and Indian Kashmir. These populations were formerly considered as subspecies of *C. elaphus* (*C. e yarkandensis, C. e. bactrianus* and *C. e. hanglu*, respectively). Following this taxonomic concept, *Cervus hanglu* was elevated to species level for the purpose of the IUCN Red List assessment in 2016 (Brook et al., 2017). Analysis of molecular data (Lorenzini and Garofolo 2015) did not support *C. h. bactrianus* and *C. h. yarkandensis* as distinct subspecies. However,

Brook et al. (2017) refer to these populations as distinct subspecies throughout the IUCN Red List assessment for ease of recognition and as conservation units deserving separate consideration and action.

2. Conservation Status of Bukhara Deer

8. This Overview report assesses the status of the species on the basis of the information available to the consultant from national reports, through projects he has been involved in, expert information, grey literature, scientific papers and other sources.

9. The IUCN Red List assessed *Cervus hanglu* at species level as Least Concern – LC (Brook et al., 2017). This assessment had been justified as follows: "The total population size is estimated at approximately 2,500 individuals, although no recent estimates have been obtained for the populations in China. Although the population in China is small and probably declining, this is offset by the increasing trend of the species in Central Asia, which represents the majority of the species' population (approximately 75%). Numbers in India are very small, and thus are numerically not significant for determining species-level population trends. Its extent of occurrence (EOO) is >1,000,000 km² and although its area of occupancy (AOO) is not known, it is not likely to approach the threshold of <2,000 km² to qualify for Vulnerable or Near Threatened. To the best of our knowledge there is no continuing decline or extreme fluctuations in the EOO, AOO, area, extent and/or quality of habitat, number of locations or subpopulations or the number of mature individuals. This species is therefore listed as Least Concern."

2.1 Population size and trends

10. Available information suggests that after the historic severe decline, the global Bukhara Deer population has been stable since 2002, and an increasing population trend has been continuously observed for all populations since 2011 till present. According to the best available monitoring data, which covers most Bukhara Deer populations, national population numbers and trends for the period 2020-2023 are as follows:

- Afghanistan: numbers and trend unknown (transboundary with Tajikistan, Turkmenistan and Uzbekistan, covered in the numbers of these countries)
- Kazakhstan: 1,100, increasing
- Tajikistan: 520-560 – stable (partly transboundary with Uzbekistan and Afghanistan)
- Turkmenistan: 180-230 – stable (partly transboundary with Uzbekistan and Afghanistan)
- Uzbekistan: 2,500-2,700 – stable, locally increasing (partly transboundary with Tajikistan, Turkmenistan and Afghanistan)
- Total population size: 4,320-4,600

11. The transboundary populations and subpopulations have not been surveyed in a coordinated manner and no consolidated numbers are available for these populations. The total population size may therefore include some reporting of the same animals for more than one country. This is particularly the case for the upper reaches of Amu Darya between Tajikistan, Turkmenistan and Uzbekistan (as well as Afghanistan from where no numbers are reported) and the middle reaches of Amu Darya between Turkmenistan and Uzbekistan. Only, where available information allowed (upper Zarafshon, all Afghanistan), The total includes numbers of transboundary populations only once. Otherwise, country data have been summed up so that the total number might be too high by up to about 200 animals.

12. The available reports do not provide information on the age structure represented in reported figures. Using the information provided by Brooks et al. (2017), a share of 70% mature individuals in the sense of the IUCN Red List Guidelines (IUCN Standards and Petitions Committee, 2019) can be assumed. This would mean that the total population size of Bukhara Deer is about **3,000-3,200 mature individuals**.

13. Bukhara Deer occur in several subpopulations and reintroduced or introduced groups, not all of which may be fully established yet. The approximate locations of the range areas of these units are shown in the map (Figure 1). Most of the native and successfully reintroduced populations consist of subpopulations distributed in the patches of riparian forests along the river valleys of Amu Darya, Zarafshon and Syr Darya.

14. Native populations occur in the following areas along the Amu Darya:

- Upper reaches of Amu Darya: in Tajikistan (bordering Afghanistan) Beshai Palangon (Tigrovaya Balka) State Strict Nature Reserve (SSNR) – Tj1 and further upstream up to the beginning of mountainous sections of the Panj valley – Tj4; in Uzbekistan between the borders with Tajikistan and with Turkmenistan (Maimun-Tugay, Aral-Paygambar and other sites) – Uz3; in Turkmenistan (Jarguzer) – Tm2;
- Middle part of Amu Darya: Kyzylkum SSNR in Uzbekistan – Uz2, and Amu Darya SSNR and non-protected sites of riparian forest (seven in total) in Turkmenistan – Tm1.

15. In the lower reaches of Amu Darya, specifically in Baday-Tugay SSNR, in the 1970s, Bukhara Deer populations had been reintroduced. This site is now one of the core zones of the Lower Amu Darya Biosphere Reserve (LABR), which includes several additional sites of riparian forests – Uz1.

16. Outside of the Amu Darya River valley, reintroduced populations of Bukhara Deer can be found in the following areas:

- Zarafshon river valley in Tajikistan Zarafshon Special Reserve (SR) (reintroduced in 1990s) – Tj5, and Uzbekistan, Zarafshon National Natural Park (NNP) (reintroduction 2005/2007) – Uz4;
- Middle reaches of the Syr Darya river valley in the Turkestan region (reintroduction started before 2010, continued during the reporting period) – Kz2.

17. Bukhara Deer were introduced outside of the known native range in the following areas:

- Ile-Balkhash area (introduction initiated in the frame of WWF project in 2018; ongoing) – Kz3;
- Lower reaches of the Ile River (private game management area, introduced in 2019 but 2023 only group in enclosure) – Kz4;
- Middle Ile river valley, Karachingil (introduced in 1970s, originally semi-captive population, currently partly free-ranging) – Kz1;
- Dashtijum SR (mountainous region, not native habitat; introduced in 1970s; in 2023 5-7 animals reported[1]);
- Romit SSNR (mountainous region, not native habitat; introduced in 1970s; eliminated in 1990s); introduction re-started in 2017, so far only enclosure – Tj2;
- Sarikhosor NNP (introduction started in 2022, so far only enclosure);
- Khutalon Game Management Area (introduced after 2010, semi-captive in fenced area).

[1] In CMS 2020 in the map indicated in wrong location.

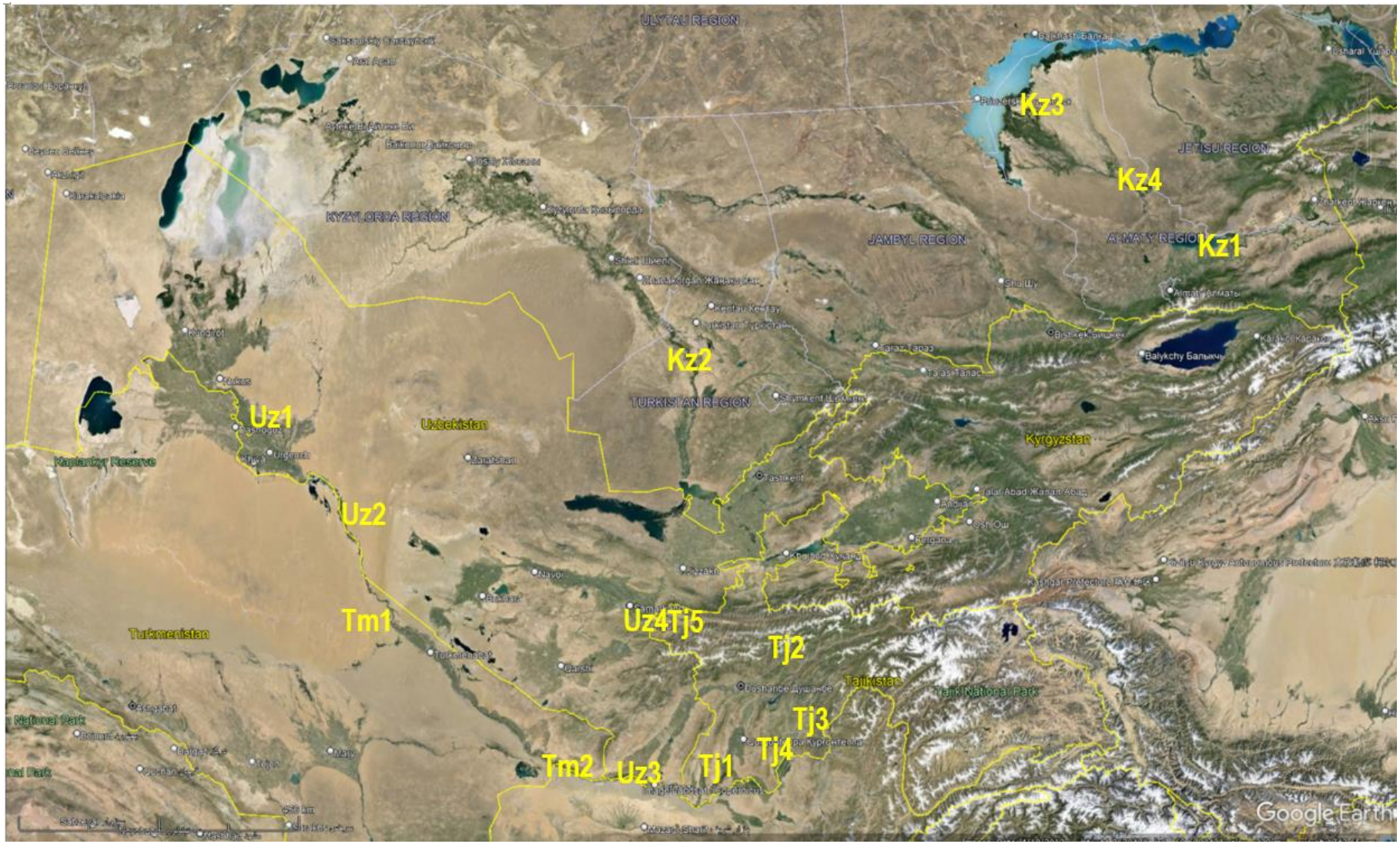

Figure 1. Approximate locations of major Bukhara Deer (sub)populations (based on CMS, 2020, modified)

Table 1. Bukhara Deer population trends

	Area	Map code	1999	2010	2019	2023
KAZ	Karachingil/ surrounding areas	Kz1	80	350	715[2]	720[3]
	Turkistan (Syr Darya)	Kz2	0	18 (+22 captive)	75 (+83 captive)[2]	171 (+56 captive)[3]
	Ile-Balkhash	Kz3	0		5 (+15 captive)[2]	200[3]- 220[4]
	Lower Ile (private, fenced)	Kz4	0		40[2]	(25 captive)[4]
	Subtotal		***80***	***368 (+22 captive)***	***835 (+98 captive)***	***1091-1111 (+81 captive)***
TAJ	Beshai Palangon (Tigrovaya Balka, transboundary with AFG and UZB)	Tj1		>150	386[5]	382[6]
	Romit	Tj2			(25 captive)[5]	(12 captive)[67]
	Sarikhosor					7-10 (+7 captive)[6] (Forestry Enterprise and Natural Park)
	Khutalon Game mgt. area (fenced)					64[4]
	Dashtijum special reserve (zakaznik)	Tj3			8-10[5]?	5-7[6]
	Other territories (Hamadoni, Farkhor Districts, transboundary with AFG)	Tj4			50[5]?	33-38[6]
	Zarafshon (upper reaches, partly transboundary with UZB)	Tj5		60-65	60-160[8]	30[6]-60[9]
	Subtotal			***210-215***	***504-606 (+25 captive)***	***521-561 (+19 captive)***

[2] Data of survey completed in 2019 by the specialists of the Institute of Zoology, Kazakhstan, and by the staff of the Karachingil game management enterprise
[3] Baydavletov and Baydavletov 2023
[4] Pereladova pers. com. 2024
[5] Data from the State body "Specially protected natural territories" under the Committee for Environmental Protection, Tajikistan
[6] National Report, Tajikistan, 2024; State body "Specially protected natural territories" under the Committee for Environmental Protection, Tajikistan
[7] 8 animals from Romit previously translocated to Sarikhosor (Pereladova pers. com., 2024)
[8] Experts' educated guess, observations by border guards
[9] R. Braitsch (pers. com. 2024); The number of 200 was reported by N. Marmazinskaya (pers. com. 2024; National Report Uzbekistan, 2024; Pereladova pers. com., 2024) but information from Tajikistan where this subpopulation is located suggests much smaller numbers in the range of 30 up to 60 animals.

	Area	Map code	1999	2010	2019	2023
TKM	Middle reaches of Amudarya (7 sites, transboundary with UZB)	Tm1	30	60-70	120[10]	127[11]
	Jarguzer (Amu Darya upper reaches, transboundary with AFG and UZB)	Tm2	~20	~50	130[11]	>50-100 or more[12]
	Subtotal		***50***	***110-120***	***~250***	***~180-230***
UZB	Baday-Tuagay SSNR / Lower Amu Darya BR	Uz1	~100	517 (+30 captive)	1,233 (or 2,112[13]) (+18 captive)[14]	1,566 (+17 captive)
	Kyzylkum SSNR (Transboundary with TKM)	Uz2	76	~130	140-150[14]	210[15]
	Other territories Upper Amu Darya (Transboundary with AFG, TKM, TJK)	Uz3	~50	~140-180	~200[14]	600-800[15]
	Zarafshon (partly transboundary with TJK)	Uz4	(9 captive)	~30-32 (+22 captive)	100 (+24 captive)[14] **+**60-160[16]	155 (+ 31 captive)[17] + 200[16]
	Khorezm National Natural Park					(10 captive)
	Subtotal		***~230***	***817-859 (+52 captive)***	***1,673-2,562 (+42 captive)***	***2,531-2,731 (+58 captive)***
TOTAL			***~360 +?***	**1,505-1,562 (+74 captive)**	**3,262-4,253 (+162 captive)**	**4,323-4,633 (+158 captive)**

60-150 (in terracotta) – most probably the same animals on the border of Uzbekistan with Tajikistan, included in subtotal of Tajikistan only

[10] National Report, Turkmenistan, 2020; surveys of the staff of the Amu Darya SSNR
[11] National Report, Turkmenistan, 2020; experts' educated guess
[12] no exact data, only data from interviews of border guards; part of upper Amu Darya transboundary population (Pereladova pers. com. 2024)
[13] Population estimate October 2019 (Cornelis et al. 2020)
[14] National Report, Uzbekistan 2020; surveys completed by national specialists and the staff of the protected areas
[15] Surveys February 2023 (National Report, Uzbekistan, 2024)
[16] Experts' educated guess, observations by border guards. Latest information suggests that new border installations currently prevent these animals to enter Uzbekistan. Their number is therefore not included in the subtotal of this country.
[17] National Report, Uzbekistan 2024; surveys completed by national specialists and the staff of the protected areas

Subpopulations of the upper Amu Darya (Afghanistan, Tajikistan, Turkmenistan, Uzbekistan)

18. The largest natural population of Bukhara Deer inhabits the Beshai Palangon (Tigrovaya Balka) State Strict Nature Reserve (SSNR; Zapovednik) in Tajikistan and adjacent patches of riparian forests on the right bank of the Panj River. In the 1960-1970s the population had reached its optimum with 350-400 animals, which was in accordance with the estimated carrying capacity of the habitat. This population was the main source population for reintroductions in various other sites of the historical range of the species, as well as for introductions in other riparian areas and in mountain areas.

19. All populations in Tajikistan, including those in Beshai Palangon and adjacent riparian forests of the Panj seriously suffered during the period of civil conflicts in the 1990s. Tajikistan reported that there were 130-140 deer in Beshai Palangon SSNR in 2010-2011. More recently (CMS 2020) the population has again reached its optimum size. For 2023 protected area agency of Tajikistan reported 382 Bukhara deer and a stable population size. In addition to its habitats in the protected area, few Bukhara Deer also inhabit the riparian forests of the right bank of the Panj outside the reserve and occur upstream up to Farkhor district, occasionally up to Dashtijum SSNR.

20. In Afghanistan presence of Bukhara Deer was confirmed in 2013 by Moheb et al. (2016) without indicating a likely population size. The locations of confirmed Bukhara Deer presence in the riparian areas of the left bank of the Amu Darya in Darqad District of Takhar Province borders the major habitat of Bukhara Deer in Tajikistan. The location and occasional observations suggest that any population is most likely transboundary with Tajikistan and potentially also with Uzbekistan and Turkmenistan. Also, further upstream along the Panj, the riparian areas on both sides of the border are potential habitat of Bukhara Deer and regular transboundary movements of deer are likely. Therefore, Bukhara Deer numbers of range areas in Afghanistan are accounted for in the population sizes of neighboring countries.

21. An exact survey of the sub-populations in the areas of Uzbekistan bordering Afghanistan between Tajikistan and Turkmenistan has never been conducted as the populations inhabit territories between border fence systems of state borders and access to these territories is difficult. Some periodic expert estimates suggested a stable population or even slight growth (CMS, 2020). In the upper reaches of the Amu Darya, on the border with Afghanistan and Turkmenistan surveys from the Uzbekistan riverbank in February 2023 yielded an educated guess of 600-800 individuals, based on observations, tracks and other presence signs and reports by local persons. This reported number appears rather optimistic given that the potentially suitable habitat inside Uzbekistan is at best 375 km² including the river itself and together with adjacent areas in Afghanistan it may be up to 600 km², meaning an average density of 1-2 Bukhara Deer per km². Trends are unknown and previously reported lower numbers are not comparable with recently reported numbers because this border zone could previously not be accessed by researchers. The area is not a protected area and is protected by border guards. (National Report Uzbekistan, 2024, N. Marmazinskaya, lead expert of the survey, pers. com. 2024) This area may potentially qualify as other effective area-based conservation measures (OECM).

22. The subpopulation reported from Turkmenistan[18] is likely along the Amu Darya connected with the animals in Uzbekistan as a part of the transboundary upper Amu Darya population. A special research project in this area did not yield exact data due to problems with border permissions for the researchers and only border guards could be interviewed (O. Pereladova, pers. com. 2024). Given the length of >80 km of this riparian

[18] The location called “Jarguzer” in CMS reports cannot be identified in maps accessible on the internet.

area along the Turkmenistan-Afghanistan border, it is assumed here that the reported 50-100 or more animals are in addition to those reported from Uzbekistan, although it would also be plausible that most of them are already included in that figure.

Subpopulations of middle Amu Darya (Turkmenistan, Uzbekistan)

23. Populations in Turkmenistan (Amu Darya SSNR) and Uzbekistan (Kyzylkum SSNR) are especially valuable from a genetic point of view, as they are native, while all other subpopulations except those form the upper Amu Darya had been reintroduced by translocation of few founder animals, thus having been affected by genetic bottlenecks.

24. There are indirect signs that some animals migrate from one riparian forest area to another, also crossing the river between Uzbekistan and Turkmenistan depending on, inter alia, water level fluctuations. Bukhara Deer from Kyzylkum SSNR also use desert habitats for grazing during periods with good forage availability and in times of floods in their riparian habitat.

25. According to the latest data there are 127 deer in total in riparian forest spots of Amu Darya SNR (Pereladova, pers. com. 2024) and 210 deer in Kyzylkum SSNR. The number of Bukhara Deer in Kyzylkum SSNR has increased from 2019 to 2023 as indicated by an index survey of tracks (N. Marmazinskaya, lead expert of survey, pers. com. 2024). It is likely that the deer cross the river which forms the border between Turkmenistan and Uzbekistan and due to their presence in both countries have been accounted for twice. As no figures for this possible double account are available, the numbers are reported separately, and both are accounted for in the overall number.

Lower reaches of Amu Darya

26. Bukhara Deer occur in Uzbekistan in several sections of Lower Amu Darya Biosphere Reserve (LABR). Originally the species had been reintroduced in the Baday-Tugay SSNR (at present one of the core zones of LABR) in the 1970s with 3 animals from Romit (originating from Beshai Palangon) and 16 animals from Aral-Paygambar (upper Amu Darya). During the 1980s the population developed very slowly, fluctuating around 25-30 animals (Sokolov et al., 1990) but later increased rapidly (CMS, 2020). Bukhara Deer have dispersed naturally into the Tallyk and Jumurtau forest massifs.

27. The Bukhara Deer population at the territory of the LABR at least until recently increased continuously due to the lack of natural predators and the absence of an effective wildlife management. Cornelis et al. (2020) estimated the population based on transect counts in October 2019 and analysis with Distance as 2,112 deer [1,320-3,344, 95% CI]. This point estimate was above the reported number of LABR administration of 1,233 in 2019 (CMS, 2020). The official number, however, was just little below the calculated 95% confidence interval of Cornelis et al. (2020).

28. The most recent official number of Bukhara Deer in LABR is 1,566 in 2023, meaning that between 2019 and 2023 the population reportedly stabilized or even declined slightly. A possible driver of decline might be that the population size exceeded massively the carrying capacity of the inhabited sections of LABR. Reportedly, observed Bukhara Deer appear to be in suboptimal physical condition (N. Marmazinskaya, based on anecdotal information from the site, pers. com. 2024). A potential decline could thus be driven by reduced fecundity and recruitment of young and by increased mortality of adults. However, no unusual mortality was observed so far, and some experts guess that the actual population size might currently be about 2,300 animals (M. Gritsyna, pers. com. 2024).

29. In any case, the carrying capacity of the territory is exceeded, perhaps several times (Cornelis et al. 2020). This is the main reason for the degradation of riparian forests due to the negative impact of the high deer numbers on the rejuvenation of the riparian forest ecosystem. Bukhara Deer move beyond the protected area's boundaries and cause human-wildlife conflict. The animals affect adjacent farm fields by eating and or trampling cultivated cotton, rice, wheat, corn and other agricultural crops (Gritsyna et al., 2019). Although the motivation of poachers detained, e.g. in 2022 and 2023 (National Report Uzbekistan, 2024), has not been reported, it is possible that human-wildlife conflict is one driver of poaching.

30. The government agencies in charge have considered translocation of surplus Bukhara Deer to suitable locations inside LABR (e.g. Nazarkhan section) and beyond (e.g. tugay areas of Khorezm NNP) as solution for resolving the problem of local overpopulation. By the time of this report, no deer have been captured and translocated. Given the need of reducing the local numbers by several hundred animals to approach a level close or below carrying capacity and of continuous removal of the annual increment for keeping afterwards the deer numbers around this size, the approach of using live capture and translocation appears not realistic for managing the population size. Furthermore, in any suitable reintroduction site after some period the population size would also approach and exceed local carrying capacity. Alternative approaches, including sustainable hunting and harvest of surplus animals (e.g. in capture corrals) need to be considered, discussed, adapted and implemented.

Zarafshon river valley (Tajikistan, Uzbekistan)

31. This (potentially) transboundary population is divided into two sup-populations, one in the Zarafshon Special Reserve (SR, zakaznik) in Tajikistan, where deer were reintroduced in the 1990s, and the other one in Zarafshon National Natural Park (NNP; until 2018 SSNR) in Uzbekistan, where deer had been released in 2005 and 2007. The founder animals in Zarafshon SR have been captured in the 1970s in Beshai Palangon (Tigrovaya Balka), those in Zarafshon NNP are from Kyzylkum and Baday-Tugay SSNR.

32. The population size in the upper area is in the range of 30-32 (National Report Tajikistan 2024) to 60 (reported by Zarafshon SR). The educated guess of 200 animals (N. Marmazinskaya, pers. com. 2024; National Report Uzbekistan 2024) is likely too optimistic. This subpopulation appears now restricted to Zarafshon SR and due to reinforced border fences cannot use habitats in Uzbekistan anymore. Therefore, only the numbers reported by Tajikistan are included in the overall account.

33. The population in the lower section, in Zarafshon NNP, is currently assessed as 155 (combination of direct drive count, roar count and sign survey; N. Marmazinskaya, pers. com. 2024). The population shows a positive trend since its establishment from 14 founders 2005/2007. The small number of founder animals may affect the population's long-term viability, but no genetic study has been conducted yet. This threat was potentially mitigated to some extent by occasional migrating stags from the Zarafshon SR in the upper river section.

Syr Darya River Valley (Kazakhstan)

34. Bukhara Deer had been numerous in the riparian forests of Syr Darya but disappeared from the region in 1962. Bukhara Deer reintroduction was initiated in the South Kazakhstan Region (now Turkistan Region), in the middle reaches of Syr Darya, in 2002, i.e. before the reporting period. The first group was released in 2009 in the frame of a project by WWF Russia. An additional group was translocated directly from Karachingil and released in 2010.

35. The development of the reintroduced population in the riparian forests of middle Syr Darya is ongoing. According to the administration of Syr Darya-Turkistan Nature Park, in September 2023 there were 171 deer in in the free-ranging population in the protected area and its surrounding areas, and 56 (including 4 fawns) in a system of enclosures, for future releases. (Baydavletov and Baydavletov, 2023)

Ile River Valley (Kazakhstan; conservation introduction outside native range, natural habitat)

36. Deer disappeared from the riparian forests of the Ile River in the middle of last century. The historic presence of Bukhara Deer there appears not to be confirmed. Heptner et al. (1961) describes this area as part of the historic range of Maral Deer. Therefore, there are two introduced subpopulations of Bukhara Deer, one of 200-220 animals in free-ranging the Ile-Balkhash area and another at the southern (left) bank of Kapchagay Reservoir of about 600 in a partly fenced hunting area and about 100 free-ranging near the latter area.

37. In 1981, a group of 22 deer was brought from Romit (Tajikistan) to Karachingil to a special game management area (previously state-owned, now private). The area of 5,700 ha was previously fully fenced and includes the riparian forests of the left bank of the Kapchagay water reservoir in the middle reaches of the Ile. After some years of adaptation, the population developed well and reached more than 700 animals in 2019. The area is very limited, but the deer receive winter feeding. The very high population density (12 per km^2) was reported as causing low reproductive success (CMS, 2020) and during the reporting period 200 deer were translocated to the Ile-Balkhash area. The population in the game management area, in 2023 was assessed with 610 deer (Baydavletov and Baydavletov, 2023).

38. In the past decades, reportedly, some deer jumped over the fence and expanded their range to the surrounding riparian forests of the left bank of Kapchagay water reservoir. According to oral information a significant number of the free ranging animals have been poached. More recently, the fence became partly dysfunctional. The entire left (southern) bank of the Kapchagay Reservoir and of the Ile River upstream over 100 km straight line, almost until road R-21, is range area of free-ranging Bukhara Deer. In 2023 about 110 free-ranging Bukhara Deer were reported there (Baydavletov and Baydavletov. 2023).

39. By private efforts, a group of Bukhara Deer was established in 2013 in the game management area Tasmuryn, located in the middle reaches of Ile River. In 2023 about 40 deer were reported from this area. Currently (2024) because of a declining population, all 25 deer are kept in a big enclosure (Pereladova pers. com. 2024).

40. Bukhara Deer conservation introduction in the Ile-Balkhash region (Ile delta and southern banks of Balkhash Lake) began in 2018. In the frame of the Tiger reintroduction Programme in Ile-Balkhash region (Memorandum between WWF and the Government of Kazakhstan, signed in 2017), WWF Russia[19] had prepared enclosures for deer adaptation, and in December 2018 the first five deer (2,3) were translocated from the Syr Darya pens to Ile-Balkhash reserve and released into the wild in 2019. At the beginning of 2020, 12 more females and three males from the Karachingil were translocated for adaptation to the enclosures of the Ile-Balkhash reserve and released in fall of the same year. Also, the first births of fawns were registered in the release enclosure and in the free-ranging group. In 2023 there had been 100 free-ranging Bukhara Deer in this area. An additional 178 animals have been translocated to the release enclosure in the Ile-Balkhash region from 2020 until 2022.

[19] This organization was closed by the authorities of the Russian Federation in 2023.

41. Baydavletov and Baydavletov (2023) reported 163 Bukhara Deer inside the Pribalkhash section of Ile-Balkhash reserve and more deer in other areas of the Ile delta and adjacent areas. The overall number was assessed with about 200 animals. Pereladova (pers. com. 2024) reported the presence of 220 Bukhara Deer, distributed between the South Balkhash area 75% and the Delta of Ile River (25%). Despite winter feeding, the impact of wolves appears to slow down the growth of the population size.

Sites of the species introduction outside the species' native habitats

42. Outside the native range and habitats of the species, Bukhara Deer groups were established in the mountain valleys of Tajikistan in the 1960s. The most successfully developing group in the Romit State SSNR reached a population size of 200-250 animals and was used as a source for further reintroductions in the 1970s (Karachingil in Kazakhstan; Baday-Tugay in Uzbekistan). The group in Romit was eliminated during the period of civil conflict in the 1990s. In 2017, a new enclosure was built in Romit and 10 animals were translocated from Beshai Palangon (Tigrovaya Balka). The group grew to 24 deer in 2020 and a part of the deer was translocated to Sarikhosor.

43. Other sites of introduction in Tajikistan outside the native habitat are in Sarikhosor Natural Park and Sarikhosor Forestry Enterprise with 7-10 deer reported in 2023 and in Khutalon game management area with 64 animals in 2023. The latter area is fenced but has a size of several thousand hectares. From Dashtijum SR with 8 to 10 deer was reported in CMS (2020), but only 5-7 in 2023. Dashtijum SR is outside of the current native range of Bukhara Deer while nearby located Dashtijum SSNR borders suitable riparian areas with occasional observations of Bukhara Deer dispersing in the Panj river valley.

2.2 Habitat conditions and availability

44. Loss and degradation of habitat have been considered as important drivers of past population decline of Bukhara Deer. Both factors have likely contributed to local extinction of the species. In small and degraded habitat patches populations are more affected by other threats, especially poaching, and fragmentation of previously continuous habitats hampered and still prevents recolonization.

45. Habitat degradation and loss are caused by various factors. These include transformation of riparian areas into agricultural lands, industrial and urban areas, modifications of the morphological and hydrological dynamics, livestock grazing, illegal logging, local overpopulation of Bukhara Deer itself and others. Climate change directly and indirectly impacts Bukhara Deer. Higher climatic aridity in the Bukhara Deer habitats contributes to changes in the vegetation but may also have direct impact on the deer, especially heat waves. The riparian habitats of Bukhara Deer are naturally much more dependent on the basin-wide riparian dynamics and climate, especially on the conditions in the upstream sections, than on the local climate. The impact of climate change on the entire river basins causes massive changes in the timing and amount of water flow and in the water demand for human needs, in particular, for agriculture.

46. The extent of habitat loss and degradation for certain time periods is not exactly known. In ***Uzbekistan***, 50 per cent of Bukhara deer habitat in the country has been lost and additional 30 per cent are considered degraded. The general condition and preservation of the remaining Bukhara deer habitat is satisfactory, but additional measures are required to preserve and improve the habitat (National Report Uzbekistan, 2024).

47. In the Ile delta and southern Balkhash region in ***Kazakhstan***, artificial regulation of the flood regime caused by water management in upstream sections is the main reason for the reduction of tugay forest. There, frequent forest fires contribute to the degradation of

tugay vegetation. The number of fires has increased significantly in the last fifteen years, with peak values occurring in the periods 2008-2010, 2013-2016, 2020-2022, with the highest number of fires during this period occurring in 2021. Native poplar species rely for generative rejuvenation on bare and moist soil after floods. Absence of floods disrupts this process and rejuvenation is restricted to vegetative regeneration via root shots. This contributes to genetic impoverishment of remnants of the poplar stands and hinders recovery of tugay forest over longer distances. (WWF Central Asia 2023, unpubl. report)

48. Transformation of riparian ecosystems into agricultural lands, especially for irrigated farming has been a major factor in the past. Recently, since 2017 conversion of riparian areas for the expansion of irrigated crop fields in the Zarafshon valley in ***Tajikistan***, near Panjakent, has directly and indirectly caused the loss of habitat of Bukhara Deer (GoogleEarth imagery). In that case, deliberate changes in the riparian dynamics were a major driver of habitat loss. The construction of a dyke for land reclamation on the right riverbank caused a redirection of the river course and intensified erosion of the left riverbank, leading to the almost total destruction of the tugay forest there.

49. In ***Uzbekistan***, intensive extraction of sand and gravel materials from the Zarafshon riverbed intensified since 2020 and lowered the water level in the river and by this the groundwater table resulting in drying of the riparian vegetation inside the Zarafshon NNP. Also, a dyke, built on the right bank since 2017, locally disrupts the essential connection between the river and the riparian areas.

50. The major factor affecting the functioning and dynamics of riparian habitats, in particular the regeneration of tugay forest, is the anthropogenically changed hydrology with regulation of water flow by reservoirs located upstream and managed for supplying irrigation and/or electricity generation and causing a reduction in inter-seasonal and inter-annual flow dynamics and the withdrawal of large quantities of river water for irrigation purposes.

51. The water regime of the Beshai Palangon SSNR (***Tajikistan***) is affected by large water reservoirs upstream along the Vakhsh River resulting in an altered flow regime and an increased vertical erosion of the riverbed due to sediment retention. The low ground water level and the lack of floods and other elements of riparian dynamics caused a degradation of the tugay vegetation of the reserve. The adverse impact on the hydrological situation was partly mitigated by measures under a WWF/MFA Norway project since 2007 which improved water supply through a system of channels and the connection of oxbow lakes (CMS, 2020).

52. Changed riparian dynamics and water withdrawal for agriculture affect all Bukhara Deer habitats to variable extents. Intensification of irrigated agriculture in the upper reaches of the Ile in China and from the Amu Darya in Afghanistan as well as planned hydropower development in the upper Zarafshon valley in Tajikistan bear a high risk of resulting in degradation of significant Bukhara Deer habitat downstream. In some parts of the distribution area, especially in the middle Amu Darya river valley, long and high-level floods have forced the animals to migrate temporarily out of their natural habitat. Such floods are generally part of the natural ecosystem dynamics of Bukhara Deer habitat, but their timing and intensity may change due to flow management and climate change impact.

53. Vegetation and rejuvenation of tugay forests are in many areas hampered by livestock grazing. Illegal grazing affects, for instance, the protected areas in the Zarafshon valley. In Zarafshon SR (***Tajikistan***) livestock grazing heavily affects the vegetation ground layer. Previously Bukhara Deer would graze at night time in Uzbekistan, but since the reinforcement of the border fence, this alternative feeding ground is no longer accessible.

In the Baday-Tugay and Tallyk-Tugay sections of LABR (***Uzbekistan***), overpopulation of Bukhara Deer causes habitat degradation and gradual loss of the tugay forest.

54. The LABR is furthermore affected by dust emission from nearby located cement factories and from numerous gravel processing plants in the immediate vicinity of the protected area.

55. Fragmentation of habitat patches and subpopulation is a key problem for the conservation of Bukhara Deer. The fragmentation is caused by large stretches of unsuitable habitat, largely due to anthropogenic transformation of riparian areas, densely settled, urban and industrialized areas, infrastructural objects and border fences. Poaching reduces the ability of Bukhara Deer to move between habitat patches and to use cultivated areas such as poplar plantations as habitat. Isolation of subpopulations prevents the improvement of genetically impoverished reintroduced groups. The high level of habitat fragmentation also prevents the deer from naturally expanding their range into suitable habitat patches.

56. In Uzbekistan's LABR, the population of the Baday-Tugay section is separated from the foothills of the Sultanuizdag (Sultanuvais) mountain range, where Bukhara Deer come out to graze on semi-desert vegetation in spring, by the Bukhara-Nukus motorway and the Uchkuduk-Nukus railway. Despite the presence of roads, Bukhara Deer nevertheless visit this habitat and are exposed to the possibility of collisions with cars and trains.

57. Along the Zarafshon River, the (previously) transboundary subpopulation in the upper section is separated from the subpopulation in the National Natural Park by a three-tiered system of engineering border structures, the Ravatkhoja dam and the large concrete Mirzoaryk canal. According to the dam staff, Bukhara Deer migration has stopped due to the fact that the existing passages in the engineering border barriers are blocked.

2.3 Overall assessment of threats

58. The major threat for the long-term survival of Bukhara Deer is the **limited availability of its natural habitats and their past and ongoing transformation and degradation**. This threat severely limits the potential total population size of the species.

59. **Fragmentation of habitats, range areas and subpopulations** cause a number of related issues such as limited genetic exchange, difficulties to recolonize suitable areas and local overpopulation.

60. **Livestock**, especially cattle, but also horses and small ruminants, is present in all Bukhara Deer habitats, even inside protected areas of all categories. Livestock grazing not only contributes to degradation of vegetation but also causes direct forage competition and risk of disease transmission. Tajikistan in its National Report (2024) mentions livestock competition as a threat of "weak impact" but does not mention other threat factors except climate change ("strong impact").

61. **High population density** causing habitat degradation and other problems is reported from the Baday-Tugay section of LABR. With the lack of natural predators and limited dispersal opportunities, two important natural mechanisms for density regulation are absent due to anthropogenic reasons. Potentially, in any area with sufficient protection and suitable habitat, the larger subpopulations already have surpassed or may in the near future surpass the carrying capacity of the protected areas they inhabit. As a result, habitat degradation processes are intensified. As some deer disperse outside protected areas, they may cause crop damage, which triggers deterrence attempts, harassment of deer and likely motivates poaching of the animals. Further growth of the populations and deer occurrence beyond protected areas and especially on agriculturally used lands may

trigger more poaching and/or force decision-makers to reduce numbers by culling. Also, disease outbreaks with effects exacerbated by high concentration of deer are a risk. Other natural density-related regulation (reduced fecundity and recruitment, increased mortality), live translocations to new sites and even improved habitat connectivity might not be fully sufficient for resolving these problems.

62. **Poaching** by local people **and predation** by stray dogs and by feral dogs present additional threats. In their current extent, they are unlikely to threaten directly the survival of well-established subpopulations but can affect small reintroduced or naturally dispersing groups. Both poaching and predation by dogs, cause disturbance and thus reduce available habitat, and hamper dispersal and connectivity of populations. The impact of dogs has been particularly reported from Zarafshon NNP, LABR, middle Ile River and Syr Darya Valley. The National Report of Tajikistan (2024) states predation as main detected reason of mortality (22%) compared to disease (8%) and poaching (5%), but no specific research is presented.

63. The actual level of past or ongoing poaching is difficult to assess. Even low levels of poaching or poaching in the past can cause shy behavior. The effect of poaching on population numbers is hard to distinguish from the possible effects of habitat quality, locally high population size and genetic issues. Poaching is a limiting factor for population growth in the middle reaches of Amu Darya in ***Uzbekistan*** and ***Turkmenistan*** (CMS, 2020). During the reporting period, in ***Uzbekistan***, poaching cases have been detected, leading to legal prosecution in Zarafshon NNP (2021) and in LABR/Karakalpakstan (2022, 2023). Local interviewees in 2024 confirmed poaching in the Zarafshon valley in both, ***Tajikistan*** and ***Uzbekistan*** (pers. com. R. Braitsch, 2024). Baydavletov and Baydavletov (2023) state that in ***Kazakhstan*** poaching is a main reason of mortality in the middle Ile outside of Karachingil and in the Syr Darya Valley. In ***Afghanistan*** (S. Ostrowski, WCS, pers. com., 2024), there is no doubt that poaching of Bukhara Deer for food continues wherever it occurs (mainly Takhar Province likely spilled over from Tajikistan), despite the national hunting ban issued by Taliban authorities. A survey of illegal wildlife trade carried out in early 2021 did not flag that the species is being traded significantly although this could be a result of its rarity.

64. **Limited genetic diversity** might be an issue in some subpopulations. The captive groups and reintroduced subpopulations all originate from a limited number of founder animals, often taken from earlier established captive stock or other areas with reintroduced animals. Long-term captive breeding with limited addition of new founders may have caused genetic drift and maybe some genetic adaptation to captive conditions (domestication effects). Therefore, repeated genetic bottlenecks are possible and reduced genetic diversity in some reintroduced populations are likely. Also, the native populations in the upper and middle Amu Darya went through a period of low population sizes and potential genetic bottlenecks. So far, neither genetic studies of the free ranging populations and captive groups have been conducted nor is a systematic herd management of captive groups in place. While no obvious effects of inbreeding or genetic impoverishment have been reported so far, there is certainly a risk that needs to be studied and addressed.

2.4 Legal Status

2.4.1 International Status

Convention for the Conservation of Migratory Species of Wild Animals (CMS) – listed in Appendix I and Appendix II as *Cervus elaphus yarkandensis* (populations in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Afghanistan).

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) – listed in Appendix II as *Cervus elaphus bactrianus*.

European Union (EU): Annex B of the EC Wildlife Trade Regulations.

The United States of America Endangered Species Act (ESA): "Endangered" as Bactrian Deer *Cervus elaphus bactrianus*

2.4.2 National Status

Afghanistan: Since 2006 all hunting of wild animals has been prohibited by Presidential Decree. The Taliban authorities have continued the hunting ban but enforcement appears to be weak (Ostrowski pers. com. 2024).

Kazakhstan: Listed in the national Red Book (2008) as Bukhara Red Deer *Cervus elaphus bactrianus*– endangered (Category I). Hunting permits can be issued only by particular governmental decree following a special procedure, but there have been no legal hunts.

Tajikistan: Listed in the Red Book, take from nature is possible only for scientific purposes; the government has not issued any permits for hunting but only for live capture for captive breeding and introductions.

Turkmenistan: Listed in the Red Book as Red Deer *Cervus elaphus* in category I (CR). Hunting is prohibited.

Uzbekistan: Listed in the Red Book (2019) as Bukhara Deer *Cervus elaphus bactrianus* in category 1 (EN), very limited trophy hunting has been permitted in recent years.

3. Implementation of the Work Programme 2021-2026 for the Bukhara Deer

65. This section provides a brief summary on the progress towards the implementation of the MOU and its Work Programme 2021-2026 adopted in 2020. Due to the date of the next meeting of the signatories of the MoU in September 2024, this Overview Report covers a shorter than initially planned implementation period. The majority of information concerns the years since the last Overview report (2020) until end 2023 with limited information available for 2024.

66. The information provided is based on the National Reports of the Signatories, as well as from data of special surveys, compiled in the frame of projects done by GIZ, Michael Succow Foundation and UNEP's IKI-funded Central Asian Mammals and Climate Adaptation (CAMCA) project, and also includes data from other sources, stakeholders and activities.

67. This section is structured according to the main objectives of the Work Programme[20]. "Urgency"[21] of each measure as indicated in the Work Programme is shown in bold script in brackets after the wording of the measure. The column "Responsibility" was not filled during the elaboration and adoption of the Work Programme.

[20] The translation of terms and spelling of geographic names is not consistent between the Russian and English versions of the Work Programme and within each version. In this Overview report corrections have been made without changing the content of the elements of the Work Programme.

[21] Urgency: 1 - Urgent (crucial for preventing population extirpation, immediate within 1-2 years). 2 - Important (necessary for stabilization of numbers, medium term within 3-5 years). 3 - Useful (will contribute to population restoration, medium term within 5 years)

68. The Work Programme 2021-2026 and the format for National Reports are not consistent in structure and content. The available National Reports therefore do not provide a straightforward assessment of the achievement of the Work Programme's results and implementation of planned measures.

Overall goal: To restore and maintain Bukhara Deer populations at a favourable conservation status throughout their range.

Achievement: Partly – During the reporting period the Overall goal was approached to some extent. The overall population of Bukhara Deer grew, including in sites where the species had been reintroduced or introduced in the recent past such as Syr Darya and Ile-Balkhash. Issues of local overpopulation, restoration of populations in previous range areas, connectivity between populations, habitat conservation and restoration and others remain not addressed and unresolved.

3.1 Implementation of range-wide measures

1.0 Maintain and restore habitat

69. In various sites measures for improving habitat conservation and restoration are ongoing or planned, but results are not yet obvious.

70. In ***Kazakhstan***, tugay forest restoration by planting patches of native poplar and willow species started in the Ile-Balkhash area via a project of former WWF Russia.

71. During the reporting period, additional Bukhara Deer habitat has been lost or degraded, in particular in the Zarafshon Valley in ***Tajikistan*** and ***Uzbekistan***. The extraction of gravel, being the main driver of habitat degradation in Uzbekistan, has been legally stopped since 1 May 2024 and planning of rehabilitation measures began. Also, in LABR the habitat degradation caused by local overpopulation of Bukhara Deer continued.

72. In ***Tajikistan***, in Beshai Palangon SSNR, under a CEPF small grant, water supply of the lakes of the protected area and riparian forests ecosystem as a whole was improved by cleaning of canals. Reforestation of 50 ha of saxaul contributes to habitat improvement.

73. New threats to habitats are emerging from increasing water withdrawal for irrigation (Amu Darya, Ile) and planned hydro power projects (Zarafshon).

1.1 Examine and evaluate the management of existing nature reserves, nature parks and other types of protected areas of different status with Bukhara Deer populations to identify and address problems and improve management effectiveness and conservation, and to optimize relations with local communities. (**1**)

74. In ***Kazakhstan*** and ***Tajikistan***, under the IKI-funded UNEP's CAMCA project the vulnerability of Bukhara Deer towards the impact of climate change has been assessed and situation models have been elaborated for Ile-Balkhash Nature Reserve and Beshai Palangon (Tigrovaya Balka) SSNR.

75. In ***Uzbekistan,*** staff of the Zarafshon NNP and the national agencies in charge work on identifying key issues and improve the situation in particular with regard to the removal of illegally constructed tourism objects and mitigation of the impact of only recently ceased gravel extraction from the riverbed of Zarafshon.

1.2 Provide financial and technical support for the management of Bukhara Deer nature reserves. (**2**)

76. In ***Uzbekistan***, in Zarafshon NNP within the framework of the Project "Strengthening transboundary integrated approaches to nature conservation and sustainable land use among Central Asian countries" under the GIZ Regional Programme "Integrated land use in response to climate change in Central Asia" Michael Succow Foundation and the Ministry of Ecology of Uzbekistan supported the development of monitoring techniques. The activities were in parallel and in a coordinated manner implemented in Zarafshon SR in ***Tajikistan***.

1.3 Consider establishing additional protected areas as well as ecological networks and corridors between protected areas, which enable deer to migrate and expand their range (*see also 7.1, 7.7, 8.2, 9.1, 9.2,9,6,10.2,10.3,10.4*). (**2**)

77. In ***Afghanistan***, during the previous reporting period around 2020, the National Environment Protection Agency (NEPA) has declared Darqad a protected area (CMS, 2020). The declaration of Darqad Wildlife Sanctuary (IUCN Category IV) was done without a consultation process, without supporting justification and without demarcation of boundaries as required by the Environmental Law before doing the declaration. So, the legality of this declaration is questionable. There is currently no management implemented on the ground for the protected area. (S. Ostrowski, pers. com., 2024)

78. In general, the Taliban regime recognizes protected areas declared by the previous government. The National Parks Band-e-Amir, Wakhan and Kol-e-Hashmat Khan (all outside the Bukhara Deer range areas) are still functional and benefit from a certain level of supervision, staff, and management, but the resources are limited, and the capacity of the staff is very weak and must be rebuilt. (S. Ostrowski, pers. com., 2024)

79. In ***Uzbekistan*** the expansion of the Zarafshon NNP including the whole Zarafshon riverbed as well as left-bank areas of riparian thickets is in process. The expansion will increase the size of the protected area by 2,908 ha, more than doubling its current size. Zoning of the NNP will be necessary.

80. There are still important range areas of Bukhara Deer, which are not covered by protected areas. These are: the riparian areas along the entire Amu Darya floodplain in southern ***Uzbekistan,*** Surkhandarya oblast, on the border with Afghanistan from the border with Tajikistan in the east to the border with Turkmenistan in the west (along 120 km).

1.4 Improve conditions for Bukhara Deer to move outside of protected areas through integrative land use planning, reforestation and conflict prevention measures to increase acceptance of deer in local communities. (**2**)

81. No specific measures have been reported. The issue is of importance in most Bukhara Deer range areas due to the close proximity of natural riparian habitats and cultivated lands. In ***Uzbekistan***, it is especially relevant in LABR[22] where local overpopulation in some sections increasingly causes conflict with land users. In Zarafshon NNP the construction of fences in certain sections of the park's perimeter is considered to prevent intrusions by livestock.

[22] https://www.cms.int/en/news/worlds-largest-bukhara-deer-population-needs-human-help

1.5 Consider providing deer in protected areas with winter feeding during harsh weather conditions as well as access to water in order to avoid habitat degradation and overgrazing of the areas. (2)

82. No activities have been reported under this measure. The approach can be questioned on the basis of global wildlife management experience. Providing additional feeding during times of forage shortage removes an important factor limiting population density and can contribute to overpopulation and result in intensified vegetation degradation thus achieving the opposite of the intended result.

2.0 Improving the system of prevention of poaching/protection

83. The prevention of poaching and protection of Bukhara Deer and its habitat have locally improved due to strengthening of some protected areas, but continues to require attention.

2.1 Strengthen anti-poaching measures inside and outside of protected areas, including in transboundary areas through improved cooperation with and between border guards of relevant countries. (1)

84. In ***Uzbekistan***, anti-poaching measures inside protected areas continue and are strengthened, as indicated by detention and prosecution of poachers in Zarafshon (2021) and LABR (2022 and 2023). Outside of protected areas, presence of conservation law enforcement is still weak.

85. In ***Afghanistan***, NEPA, has officially included the Bukhara Deer 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. The Taliban authorities issued a national hunting ban, thus continuing the hunting ban in place before their take of power. However, enforcement is ineffective and as confirmed for other species, such as Argali, Taliban troops are likely themselves involved in poaching. (S. Ostrowski, pers. com., 2024)

2.2 Provide training and capacity-building for rangers and the staff of protected areas. (3)

86. No activities reported.

2.3 Provide technical support to improve anti-poaching activities and monitoring, including installation of phototraps in Bukhara Deer habitat to detect poachers. (**1-2**)

87. No activities reported yet.

2.4 Study and prevent the negative impact of feral dogs on Bukhara Deer populations. (**3**)

88. Impact of stray and/or feral dogs is reported to be an issue in ***Uzbekistan***, in Zarafshon NNP and possibly in LABR as well as in the Syr Darya and middle Ile River range areas in ***Kazakhstan***. No new targeted activities have been implemented during the reporting period.

2.5 Introduce and implement the SMART technology in the system of patrolling and monitoring in Bukhara Deer protected areas. (**3**)

89. In ***Uzbekistan***, the implementation of SMART had been trialled by Michael Succow Foundation. The trial had not been successful. No new attempts have been made yet, but the PA unit of the Ministry of Ecology of Uzbekistan has the policy of implementing SMART gradually in all protected areas.

3.0 Participation of local communities in conservation activities

90. Participation of people from local communities is still very limited across all range areas. Most activities focus on awareness raising and information, some activities try to develop sustainable livelihoods. The latter, e.g. ecotourism, is not easy to link to conservation and the involvement of, or support by, people from local communities. The issues of human-wildlife conflict and the need for coexistence of Bukhara Deer and local land users are relevant in several range areas but are not being systematically addressed.

3.1 Develop socio-economic and community-based activities, including ecological education, alternative forms of income generation for local communities and enhance sustainable natural resource use and prevent illegal logging, illegal cattle grazing inside of protected areas, overgrazing and poaching. (2)

91. In the Ile-Balkhash region of ***Kazakhstan*** and in villages close to Beshai Palangon SSNR in ***Tajikistan***, in the frame of the IKI-funded UNEP project CAMCA participatory assessment and planning have started to develop climate-smart on-the-ground activities which support conservation of Bukhara Deer and its habitat and sustainable livelihoods of the local people. The identification of suitable activities is currently ongoing.

92. In ***Uzbekistan***, in Zarafshon NNP, and in ***Tajikistan*** in Zarafshon SR, within the framework of the GIZ Regional Programme "Integrated land use in response to climate change in Central Asia", the Michael Succow Foundation in collaboration with the University for Sustainable Development Eberswalde (Germany) conducted socio-economic studies to investigate the attitudes of local communities towards tugay forests and Bukhara deer.

93. Awareness raising among local people, including classes in schools and pre-schools on the topic of biodiversity and conservation of rare Red Book wild animals and plants have been reported in the National Report of Uzbekistan, 2024. The staff of protected areas where Bukhara Deer live, conduct environmental education work with the local population living near these protected areas. Zarafshon NPP is particularly active in such work in schools and mahalla (neighbourhood) meetings of citizens (interactive lectures, lessons, contests, environmental festivals, celebrations of the Deer Day on 2 August).

3.2 Work with the media (at the regional, state and local level) to raise awareness about the problems of Bukhara Deer conservation and restoration. (3)

94. In ***Uzbekistan***, more than 50 environmental education articles and notes were published in the local media (National Report, Uzbekistan, 2024).

3.3 Develop ecotourism in the protected areas with involvement of local communities, using reintroduction sites and captive facilities as well as guided tours. (3)

95. In ***Uzbekistan***, within the framework of the GIZ Regional Programme "Integrated land use in response to climate change in Central Asia" the Michael Succow Foundation supports an ongoing study in Zarafshon NNP on ecotourism. The study also builds on recent experience with ecotourism development in LABR. In LABR, ecotourism so far mainly attracts domestic tourists, while international tourists visit the area in small numbers only.

3.4 Work with local communities to raise awareness on the impact of feral dogs. (1)

96. No activities reported yet.

3.5 Research on the need for, and elaboration of a compensation scheme for farmers from damage by Bukhara Deer and measures for minimizing damage. (1)

97. No activities reported yet.

3.6 Consider exploring the feasibility of deer antler farming taking into account technical requirements, types of territories, business plans, legal conditions and in close consultation with and with the participation of local communities. (3)

98. This measure was specifically considered in ***Uzbekistan***. So far, no activities have been implemented.

4.0 Scientific research

99. During the reporting period scientific research and monitoring activities continued. Actual targeted field research is still rather limited, and many topics remain still understudied. This concerns topics of high conservation relevance listed below as planned measures under the ongoing Work Programme.

4.1 Conduct scientific studies and population monitoring (including use of camera traps) throughout the species' range within and outside of protected areas. The studies should include the following topics: habitat quality, genetics, diseases, migrations, competition with livestock, causes of mortality, population structure and others. (**2**)

100. In ***Kazakhstan***, population monitoring is carried out by the protected area administrations of areas where Bukhara Deer occur, by game management enterprises with presence of the species and based on a contract with the state-owned enterprise Okhotzooprom by the experts E.R. and R. Zh. Baydavletov of the Institute of Zoology. The monitoring follows the methodology prescribed in the official instructions established by order of the Committee for Forestry and Hunting in 2005. Recent monitoring results and trends are presented in the report by Baydavletov and Baydavletov (2023).

101. In ***Tajikistan***, in the SSNR Beshai Palangon, the State body "Specially Protected Areas" undertakes monitoring of the status and population size of Bukhara Deer by applying camera traps, roar counts, transect line surveys, registration of observed individually recognizable deer and recording of presence signs.

102. In ***Uzbekistan***, monitoring is carried out using ground route surveys (including roar counts, counts with active pushing of deer out of shelter, track counts), camera traps, and interviews. The monitoring covers about 90% of the country's Bukhara Deer population. Monitoring is carried out regularly in the territories of protected areas, and occasionally in border areas where transboundary populations occur. Monitoring is carried out by the staff of protected areas, the Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan together with border services. The Bukhara deer monitoring database is stored in the databases of protected areas in the territories where the deer live, as well as in the database of the Department of Protected Areas of the Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan.

103. Publications in Uzbekistan include:

- Reports (2020-2023) on habitat and population monitoring of Bukhara deer (behaviour, timing of rutting and calving, shedding and growth of antlers, mortality, parasitofauna studies) in Zarafshon NPP.

- Marmazinskaya N.V. The largest population of Bukhara deer in the world needs human help. CMS Publication. 22 February 2023.[23]
- Seitvelieva S.S., Daminov A.S. Current status of Bukhara deer parasites on the territory of Zarafshon National Natural Park. *Journal of Veterinary Medicine*. 4, 82-83.

4.2 Monitor the development of native and reintroduced groups of animals, including the use of camera traps, satellite telemetry and GIS technology. (**1**)

104. ***In Kazakhstan***, reintroduced groups in the Syr Darya Valley and in the Ile-Balkhash region are subject to systematic population monitoring. The Bukhara Dee, released in 2018 in the Ile-Balkhash region had been equipped with GPS collars.

4.3 Organize consultations, expeditions, study tours and monitoring among Bukhara Deer experts and practitioners to facilitate information and knowledge exchange. (**3**)

105. No activities reported yet.

4.4 Study the impact of predators on the population of Bukhara Deer. (**2**)

106. No activities reported yet.

4.5 Study the carrying capacity of sites and develop population models on potential prospects for the development of Bukhara Deer populations. (**2**)

107. No activities reported yet.

4.6 Study conflicts between local populations and Bukhara Deer and explore the potential for Bukhara Deer populations occurring on agricultural land. (**1**)

108. No activities reported yet.

4.7 Analyse the impact of climate change and land use regime on the populations of the Bukhara Deer. (**3**)

109. In ***Kazakhstan*** and ***Tajikistan***, under the IKI-funded UNEP project CAMCA the vulnerability of Bukhara Deer towards the impact of climate change has been assessed in 2023. These assessments built on previously available information and stakeholder perceptions but did not include field research.

110. The GIZ regional project “Ecosystem-based adaptation to climate change in high mountainous regions of Central Asia” in 2020 elaborated a brief for decision makers “The Role of Protected Areas, their Biodiversity and Ecosystem Services for Climate Resilience in Tajikistan” based on a case study on Climate-smart Conservation (CsC) on Beshai Palangon (Tigrovaya Balka) SSNR as pilot site for a case study.

4.8 Identify and apply a standardized monitoring methodology for Bukhara Deer populations in all Range States. (**2**)

111. In the Zarafshon Valley of ***Tajikistan and Uzbekistan*** within the framework of the GIZ Regional Programme "Integrated Land Management in response to climate change in Central Asia" in cooperation between Michael Succow Foundation and national agencies in charge refined methods of monitoring of flora and fauna (including methods of Bukhara Deer surveys) were developed for two protected areas. In late April/early May 2024,

[23] https://www.cms.int/en/news/worlds-largest-bukhara-deer-population-needs-human-help

training sessions on monitoring were conducted for staff and guards of these protected areas.

4.9 Provide training for the staff of protected areas on monitoring methods in cooperation with leading scientific institutions and implement the SMART technology. (**2**)

112. In ***Uzbekistan***, SMART is used for improving the effectiveness of rangers' work on law enforcement and documentation of violations in several protected areas. So far, the technology is not applied in the context of research and monitoring.

5.0 Enhance international cooperation

113. International cooperation remains limited and largely on the level during the previous reporting period. The take of power by the Taliban has caused the suspension of all cooperation efforts with Afghanistan.

5.1 Improve and harmonize legal mechanisms to protect transboundary migrations of Bukhara Deer (*see – 8.2, 9.1*). (**2**)

114. A "Regional Workshop on Conservation of Migratory Species in Central Asia: effects on transboundary cooperation in protected areas, held in Ashgabat on 21-22 November 2023, including representatives of agencies responsible for nature protection and border security of Governments of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, experts, was supported by the Secretariats of CMS and OSCE, as well as the GIZ Regional Programme "Integrative and Climate-sensitive Land Use in Central Asia". The resulting Ashgabat Communiqué on Transboundary Cooperation made several policy recommendations to decision makers.

115. So far, no specific efforts to improve and harmonize legal mechanisms to protect transboundary migrations of Bukhara Deer have been started. During the reporting period the transboundary connectivity of habitats and migration opportunities for Bukhara Deer have worsened in the Zarafshon Valley, where border fences have been strengthened from the Uzbekistan side.

5.2 Agree on measures for the exchange of Bukhara Deer between the Range States, including the preparation and approval of relevant international agreements. (1)

116. No activities reported yet.

5.3 Provide centralized coordination and information exchange among Signatories and all stakeholders. (1)

117. No activities reported yet.

5.4 Strengthen international cooperation and information exchange, inter alia, by implementing special conservation measures for the following transboundary populations: in the middle Amu Darya in Uzbekistan and Turkmenistan; the upper Amu Darya of Afghanistan and Tajikistan; Afghanistan and Uzbekistan, Zarafshon in Uzbekistan and Tajikistan; Syrdarya in Kazakhstan and Uzbekistan. (1)

118. Within the framework of the project "Strengthening transboundary integrated approaches to nature conservation and sustainable land use among the countries of Central Asia" implemented by Michael Succow foundation under the GIZ Regional Programme "Integrated land use in response to climate change in Central Asia" with national agencies in charge, transboundary cooperation is being established in terms of conservation and monitoring of the Zarafshon river ecosystems and their tugay forest in

the territories of Zarafshon NPP (***Uzbekistan***) and Zarafshon reserve (***Tajikistan***). In the future the establishment of transboundary protected areas is envisaged. However, during the last years the enforcement of border fences has reduced migration opportunities of Bukhara Deer and cross-border collaboration on practical conservation issues has not yet been achieved.

119. Furthermore, Tajikistan reported (National Report, 2024) that within the framework of the Sustainable Landscape Restoration Project in Tajikistan funded by the World Bank, RESILAND CA+ Program: (P171524) it is planned to establish a Transboundary Park between Tajikistan, Zarafshon SR and Uzbekistan, Zarafshon NNP.

120. Still, no cooperation is in place between neighbouring countries in the upper Amu Darya concerning the transboundary population in the more than 120 km section of the floodplain of the four countries Afghanistan, Tajikistan, Turkmenistan and Uzbekistan.

5.5 Publish the list of CMS National Focal Points and leading national Bukhara Deer experts for each Signatory/Range State on the CMS website. (**1**)

121. No activities reported yet.

5.6 Organize regular meetings of the Bukhara Deer Range States in line with and in the frame of meetings of the Central Asian Mammals Initiative (CAMI). (**3**)

122. Given the short reporting period and the indicated low urgency of the measure, no additional meetings have been organized since the Technical Workshop (online 19-22 October 2020).

5.7 Complete joint surveys and Bukhara Deer census in transboundary areas, between Uzbekistan, Tajikistan, Afghanistan; as well as between Uzbekistan and Turkmenistan. (**2**)

123. So far, no joint or coordinated surveys were conducted.

5.8 Improve legal mechanisms to ensure safe transboundary migrations of Bukhara Deer as well as training and cooperation with border guards and customs. (1)

124. See information under 5.1.

5.9 Raise funds for conservation programmes and develop comprehensive project proposals, both at country level and for transboundary populations, for submission to appropriate funding schemes and donors. (1)

125. No activities reported yet.

5.10 Develop and agree on bilateral agreements and transboundary protected areas management plans. (2)

126. No activities reported yet.

6.0 Captive Breeding and Reintroduction

127. Captive breeding and release of captive bred animals have played a key role in saving the species from extinction and in the restoration of range areas and numbers of Bukhara Deer. With the recovery of free-ranging subpopulations, locally beyond the ecological and socio-economic carrying capacity of their range areas, and the increase in semi-captive, large, fenced areas, the role of captive breeding has declined. Currently captive breeding and release appear insufficiently managed. Many captive herds have been bred

in captivity over several generations, appear heavily inbred and all originate almost exclusively from captive stock, often only from one source herd. Therefore, risks of domestication effects and genetic impoverishment are high.

128. A systematic analysis of the herd composition, origin and history of captive stocks, genetic diversity, veterinary status and cost-benefit ratios of captive breeding facilities would be useful to assess their current and potential future functions for Bukhara Deer conservation. Such an assessment is needed for identifying options and decision-making about abolishment or continuation of captive breeding operations. In the case of continuation, the entire management of these facilities would need to be optimized to achieve their established goals while minimizing potential risks in e.g. genetic, veterinary, ecological, human safety and public perception terms. Such measures had been integrated into the Work Programme 2021-2026 but so far, no progress has been reported by Range States and other partners.

129. Currently some of the captive facilities are rather a tourist attraction than an element of a conservation strategy. The facilities in Zarafshon NNP, LABR and Khorezm NNP (all in Uzbekistan) are used for showing the deer to visitors and in Zarafshon SR (Tajikistan) establishment of a captive facility for this purpose is considered by the administration. Using captive facilities as attraction for visitors has several problematic implications: the message sent to the public is problematic as the Bukhara Deer is presented like a pet or domesticated livestock, not as wildlife, it diverts attention from observation of wildlife in its natural habitat and generates the impression that keeping wild animals in enclosures is priority or even sufficient for their conservation. Furthermore, captive facilities require a lot of resources which could more effectively be used in protected areas for the conservation of the species. It also distracts from potential weaknesses in effective protection and management of the free-ranging populations and their habitats.

130. In ***Kazakhstan***, currently two enclosures operate in Turkistan Region, in the Syr Darya valley, one enclosure in the Ile-Balkhash reserve and one enclosure in a private game management area in the lower Ile River valley. The enclosures are used for reintroductions, the enclosure in the Turkestan Region also for breeding. Baydavletov and Baydavletov (2023) noticed the low natural increase of the number in the enclosure of 10.1% annually compared to the normal natural increase of 30% per annum. The Karachingil Game Management Area is also partly fenced, but by its size and incomplete fence it can rather be characterized as semi-captive facility than as a captive breeding facility.

131. In ***Tajikistan***, currently enclosures operate in Romit SSNR and in Sarikhosor Natural Park. The enclosure in Romit was established in 2015 and reportedly since then several dozens of deer have been translocated for release (National Report Tajikistan, 2024) but without indication of location. According to Pereladova (pers. com., 2024), during the reporting period, eight Bukhara Deer were moved from Romit to Sarikhosor. The National Report of Tajikistan (2024) states that the enclosure was established in 2022 and that in 2022/2023 (contradicting the information from Pereladova) wild-caught Bukhara deer had been brought there. This introduction, if successful, might be problematic as it is outside of the native range area and habitat. It can have adverse impact on the ecosystems in the introduction area while not effectively contributing to the conservation of Bukhara Deer in its native range.

132. In Karatag, in the past Bukhara Deer and Spotted Deer *Cervus nippon* had been kept, but no information was provided if this facility is still active. Furthermore, in the large, fenced game reserve of the company Khutalon in Dangara District Bukhara Deer had been kept in an enclosure and broadcasts in Tajik media had suggested that both Bukhara Deer as well as Spotted Deer had been released into the semi-captive hunting facility.

133. In ***Uzbekistan***, currently four state-owned enclosures operate:
    - Bukhara Deer encosure in Zarafshon NNP (31, including 3 fawns born in 2024);
    - Bukhara Deer breeding centre "Baday-Tugay" in LABR in Beruni. (17, including 6 fawns born in 2024);
    - Khorezm NNP Urgench. (10, successful breeding in previous years);
    - Enclosure in the specialized semi-captive facility "Jeyran". Bukhara oblast. Kagan. (1, no breeding).

134. During the reporting period, no captive-bred animals have been transferred from Uzbekistan to other range countries and no animals have been released into nature. Currently there are no plans for transfer or release of captive-bred animals. (National Report Uzbekistan, 2024) The ratio between overall numbers kept and number of fawns suggests not optimal herd composition and or low fecundity/recruitment. There is no systematic herd management. Activities concerning animals of the F2 generation and higher are not subject to mandatory consultations with the Academy of Sciences.

6.1 Conduct an inventory of suitable Bukhara Deer habitat with the view to facilitate the expansion of Bukhara Deer range. (1)

135. In ***Uzbekistan***, the suitability and potential carrying capacities of several sites were assessed. Translocation of deer from the over-abundant population of the Baday-Tugay section of LABR to the Nazarkhan Section with potential natural dispersal to other suitable areas (incl. transboundary) had been proposed.[24]

6.2 Further enhance existing reintroduction programmes, especially outside the main Amu Darya River valley to ensure the survival of deer in case of local ecological disasters and population declines (*see 7.3, 7.4, 7.5, 7.6, 8.4, 8.5, 9.3, 9.4, 10.6*). (1)

136. No activities reported yet.

6.3 Use best practices available and methodological guidelines for planning practical reintroduction activities.[25] (**1-3**)

137. No activities reported yet.

6.4 Evaluate the previous experience in the development of reserve groups of the species in isolated areas outside the historical range in ecosystems atypical for the species (in particular, the experience of Tajikistan in mountain-valley territories), and determine the relevance and prospects of resuming work in this direction, taking into consideration associated risks for both deer and for ecosystems in general. (**3**)

138. No activities reported yet.

6.5 Undertake a critical assessment of the captive breeding and (re)introduction programmes, evaluate these with respect to the husbandry conditions, the quality of the genetic stock and the purpose of these facilities for tourism or captive breeding. (1)

139. No full assessment has been undertaken. In ***Uzbekistan*** parasitological research of captive Bukhara Deer in Zarafshon NNP revealed a high endoparasite (helminth) load. Measures are currently elaborated.

[24] https://www.cms.int/en/news/worlds-largest-bukhara-deer-population-needs-human-help
[25] E.g. Technical guidelines for restoration and reintroduction of the Bukhara deer in its natural environment (Marmazinskaya, 2012 and IUCN/SSC, 2013)

3.2 Implementation of country-specific measures

7.0 Kazakhstan

7.1 Develop the protected area system in the riparian forests of Syr Darya in accordance with the officially approved government plans. (**1**)

140. No activities reported yet.

7.2 Increase the area of the Ile-Balkhash Reserve by adding additional habitats of the Bukhara Deer to the territories of the existing sanctuaries. (**1**)

141. No activities reported yet.

7.3 Implement reforestation programmes in natural habitats (in Ile-Balkhash, Syr Darya). (**1**)

142. WWF has implemented tugay restoration in the Ile-Balkhash area for more than four years (2019-2023). Saplings of *Populus diversifolia* and *Populus pruinosa* (turanga = Asiatic poplar species), *Elaeagnus oxycarpa* (silverberry or oleaster), as well as several species of shrubby willow (*Salix spec*.) have been planted in groups of 10 to 2,000 plants. Local planting stock was purchased from various nurseries. Willows are planted by planting cuttings, which are harvested in winter in the Balkhash region. Planted trees are protected from wild and domestic herbivores by mesh or chain-link fencing. An important aspect is fire prevention. Therefore, mineralized strips are made around the planting areas, a voluntary fire team was created and provided with special equipment.

7.4 Develop and implement a programme for Bukhara Deer reintroduction in the Ile-Balkhash Reserve including translocation, adaptation and release of about 200 animals from Karachingil to Ile-Balkhash in five years. (**1**)

143. Achieved: Between 2018 and 2022 in total 198 Bukhara Deer have been relocated and together with fawns born in the release enclosure about 200 deer have been released.

7.5 Consider reintroducing Bukhara Deer in a number of potential sites, which have already been evaluated as suitable habitat, namely in the game management entity “Manul”, National Nature Park Altyn-Emel, Ile River, “Kyzyltau” Baijurkum forestry (Syr Darya, Turkistan Region), Arysskii district of Southern-Kazakhstan oblast. (**2**)

144. No activities reported yet.

7.6 Conduct a feasibility study to assess options for reintroduction of Bukhara Deer in the lower Syrdarya (Delta) and the Zhanadarya estuary as well as for safe transboundary migration between Kazakhstan and Uzbekistan. (**3**)

145. No activities reported yet.

7.7 Conduct a feasibility study to initiate reintroduction of Bukhara Deer in the upper reaches of the Ile river. (**3**)

146. No activities reported yet.

7.8 Elaborate options for creating ecological corridors along Ili river from Kapchagai to the foothills, and along Syr Darya from Turkistan to the Aral Sea - without land alienation, but with the provision of a favourable regime for occurrence and migration of BD. (**2**)

147. No activities reported yet.

7.9 Develop ecotourism in Ile-Balkhash, Syr Darya. (3)

148. No activities reported yet.

8.0 Tajikistan

8.1 Implement measures to prevent the degradation of Bukhara Deer habitat by building dams to prevent extreme floods, establish fire-prevention measures, facilitate regular water supply of the ecosystem in an optimal mode by building a pumping station and clearing canals, if necessary (Zeravshan, Tigrovaja Balka). (**1**)

149. In Beshai Palangon SSNR, funded through a small grant from CEPF, cleaning of canals for artificial water supply improves the hydrological situation of lakes and supports the riparian forest ecosystems.

8.2 Establish a system of ecological corridors and buffer zones along the border with Afghanistan. (**2**)

150. No activities reported yet.

8.3 Identify in the Parkhar region and adjacent territories disturbance factors and the level of forage resources competition with livestock, which affect the population growth. (2)

151. No activities reported yet.

8.4 Undertake an assessment of the captive breeding and reintroduction activities in Romit, including exploring the possibility of creating a new enclosure for breeding the animals, and develop a plan for future Bukhara Deer conservation activities in the area. (1)

152. No activities reported yet.

8.5 Assess the feasibility of captive breeding, reintroduction and monitoring programmes in Sarikhosor and Dashtijum. (3)

153. During the reporting period eight animals were translocated from the enclosure in Romit to Sarikhosor. The animals have either been released into nature (Pereladova pers. com. 2024) or are kept in an enclosure. From available information it is not clear if releases into the nature took place. Such releases in Sarikhosor would be outside of the native habitat and range area and are to be considered as introduction.

8.6 Develop, coordinate and implement a system of measures to prevent the injury and death of Bukhara Deer on transboundary migrations between Tajikistan and Uzbekistan in the upper Zarafshon river basin. (**1**)

154. The border fence has been further enforced during the reporting period by the border authorities of Uzbekistan. In the result, it has become an almost or entirely unsurmountable barrier for movements of Bukhara Deer. Deer might still cross the border by using the concrete canal, but such migration is unlikely and certainly not done by a sufficient number of animals to maintain the transboundary connectivity of the population.

8.7 Strengthening cooperation with neighbouring states on captive breeding of Bukhara deer (including consideration of the feasibility of creating a transboundary enclosure) (**3**)

155. The planned activity probably referred to a coordinated and collaborative management of captive herds. So far, no activities were undertaken and the importance appears not

at all levels understood as interviews with the management of Zarafshon SR suggest (R. Braitsch, pers. com. 2024).

9.0 Turkmenistan

9.1 Develop a system of ecological corridors and buffer zones (without land allotment, land used for various economic purposes included) in the upper and middle reaches of Amu Darya to ensure safe transboundary migration of Bukhara Deer. (**1**)

156. No activities reported yet.

9.2 Develop and propose the reorganization of the system of protected areas in the Turkmen part of the Amu Darya basin, taking into account the territory of the Jarguzer site (4,200 hectares, as a source for the resettlement of deer), the Karakumdarya floodplain between the Dzharguzer and the Kelif lakes, and the Kelif reserve (103,000 hectares), revise its boundaries (**2**)

157. No activities reported yet.

9.3 On the Karakumdarya (Kelif reserve), as well as 30-35 km below the Nichke settlement), conduct a survey of tugai and saxaul associations to organize reproductive sites for deer from Jarguzer. (**2**)

158. No activities reported yet.

9.4 In the Ulyshor, Rakhmankel and Yeraji wetlands, along the Altyn Asyr Main Turkmen Collector, select a site for organizing a reserve for deer introduction. (2-3)

159. No activities reported yet.

9.5. Revise the boundaries of the Yeraj nature reserve (30,000 hectares) and highlight the need to transfer its territory under the responsibility of the Amu Darya state reserve. (2-3)

160. No activities reported yet.

9.6 Develop, coordinate and implement a system of measures to prevent the injury and death of deer on transboundary migration between Turkmenistan and Uzbekistan in the middle reaches of the Amu Darya River. (2)

161. No activities reported yet.

9.7 Explore the feasibility of creating an ecological corridor between the Amu Darya (Turkmenistan) and Kyzylkum (Uzbekistan) Zapovedniks, as well as between Nazarkhan (LABR cluster, Uzbekistan) and tugay forests in the lower reaches of the Amu Darya in Turkmenistan to ensure occurrence and safe transboundary migration of Bukhara Deer. (**3**)

162. No activities reported yet.

9.8 Restore the riparian forests in natural habitats (lower Amu Darya and other areas). 2

163. No activities reported yet.

9.9 Develop ecological tourism in the middle and lower reaches of the Amu Darya River as an alternative for the local population to generate additional income and reduce the pressure on the forest's ecosystems. (2)

164. No activities reported yet.

10.0 Uzbekistan

10.1 Implement urgent special measures for resettling a part of the Baday-Tugay population to avoid further ecosystem degradation and serious risks of increased mortality. (**1**)

165. Potential areas have been assessed for their suitability for translocations and carrying capacity. Two tranquilizer guns were purchased. So far, no capture from the free-ranging populations and no translocations and release have been reported. Only a small group was brought to an enclosure in Khorezm NNP.

10.2 Establish a new reserve: Sudochye-Akpetki with an area of 280.507 ha (with the prospect of organizing a transboundary protected area, migration Uzbekistan-Kazakhstan); Increase the territory of Kyzylkum Reserve in the middle reaches of the Amu Darya River through the inclusion of additional sections of tugay forests. Consider organizing protected areas in the Upper Amu Darya – an area near Termez, which is home to a native transboundary subpopulation. Strengthen protection in Zarafshan National Nature Park. (**2**)

166. The Sudochye-Akpetki SR of 280.507 ha has been established (with the prospect of transboundary conservation, facilitating migration between Uzbekistan-Kazakhstan). The area is established as legal entity with staff, facilities and equipment. So far, no Bukhara Deer are present, but reintroduction is considered. The area has currently high potential, but water scarcity might become a threat due to increasing withdrawal for Afghanistan's irrigation needs and its impact needs to be assessed and addressed.

167. The planned increase of the territory of Kyzylkum SSNR in the middle reaches of the Amu Darya River through the inclusion of additional sections of tugay forests, so far has not progressed.

168. No further considerations were made of organizing protected areas in the Upper Amu Darya (Aral-Paygambar, Maimun-Tugay) which is home to a native transboundary subpopulation. The area is a fenced border zone and could be considered as potential OECM.

169. Protection in Zarafshon NNP was improved but needs to be further strengthened. Fences towards villages are considered necessary for protection from livestock intrusions.

10.3 Consider the possibility of expanding the Zarafshon National Natural Park by including the border area with Tajikistan (upper Zarafshon) and riparian massifs on the left bank of the Zeravshan River. (**2**)

170. The expansion is in process for both sections but not yet formally finalized.

10.4 Elaborate the possibility of creating an ecological corridor between the Amu Darya (Turkmenistan) and Kyzylkum (Uzbekistan) reserves, as well as between Nazarkhan (LABR cluster, Uzbekistan) and tugai lower Amu Darya in Turkmenistan, to ensure occurrence and safe transboundary migration of Bukhara Deer. (**2**)

171. Reconnaissance work was undertaken in some areas with promising results confirming their suitability. Currently no opportunities exist for implementation because the acting legislation lacks the determination of "Ecological corridor", criteria of its definition and the applicable regime.

10.5 Restore natural habitats (middle course of the Amu Darya, lower Amu Darya and Zarafshon) and develop restoration proposals. (**2**)

172. Since 1 May 2024 an indefinite moratorium[26] on extraction of gravel from the Zarafshon River is enacted by the Uzbek Government. In the new sections of Zarafshon NNP construction of some dams for raising the water level and restoration of vegetation (mainly through natural regeneration) are planned. As a result, the habitat of Bukhara deer in the Zarafshon National Nature Park is expected to be improved in the near future.

173. In other areas no activities ongoing or planned.

10.6 Reintroduce Bukhara Deer in the tugay sections Yangibozor and the Urgench of the recently established Khorezm National Natural Park. (**3**)

174. Bukhara Deer have been translocated into an enclosure but none have been released during the reporting period. The establishment of a natural population is mentioned in the management plan but no specifics are provided. Currently no plans for release of Bukhara Deer into their natural habitat are known. The enclosure is located outside of potential release areas, close to crop fields and villages and therefore not suitable for a soft release.

10.7 Develop, coordinate and implement a system of measures to prevent injury and death of deer during transboundary migration between Tajikistan and Uzbekistan in the upper Zarafshon River. (1)

175. The border fence has been further enforced during the reporting period by the border authorities of Uzbekistan. Deer might still cross the border by using the concrete canal, but such migration is unlikely and certainly not done by a sufficient number of animals to maintain the transboundary connectivity of the population.

10.8 Analyze the negative impact of industrial enterprises on the largest population of Bukhara Deer in LABR/Badai-Tugai, and develop, coordinate and implement measures to reduce this negative impact. (**2**)

176. No new activities on analysing and mitigating the impact of the cement factory are known. Reportedly, new filters had been installed, but air pollution continues. There is also continuing intense dust pollution in LABR caused by already previously existing limestone carries and stone braking factories.

10.9 Develop ecotourism in the Lower Amu Darya Biosphere Reserve, Zarafshon. (**3**)

177. In Zarafshon NNP, under the GIZ regional project, Michael Succow Foundation also supports some activities on ecotourism. Currently a study for assessing tourism development options is under preparation in collaboration between the NGO “KRASS” and the administration of the NNP. There are considerations to make the Bukhara Deer enclosure more accessible for tourists, possibly by relocation outside of the formally inaccessible core zone. However, presenting wild animals as attraction in an enclosure sends a doubtful message and distracts from the conservation of the free-ranging populations and the experience of wild nature (see above).

178. Inside Zarafshon NNP the removal of most illegally erected buildings (restaurants, resorts, guesthouses, sport facilities) was achieved with at the moment of reporting only three objects remaining due to pending court decisions. Full removal of structures is

[26] Decree of the President of the Republic of Uzbekistan, from 17.01.2024 № UP-14

expected and by this the natural character of the area as main asset for ecotourism will be restored.

179. In LABR project activities (e.g. establishment of trails and signboards) took place prior to the current reporting period. Visual and audio guides for the areas with travel routes have been developed for the "Easy Travel" app. After the end of the project and due to changes in administration activities on tourism development ceased. The area has rather low potential for foreign tourism but is frequented by domestic visitors. In 2023 visitation by 109 foreign tourists, 17 domestic tourists and 541 school children had been registered by the administration, but registration is reportedly very incomplete. Domestic visitors access the area on their own, foreign tourists mainly with assistance by local tourism operators, e.g. from Khorezm. The LABR does not have any contractual relations with tourism companies and these companies neither pay for the use of trails nor for using the natural assets. The ecotourism potential is affected by dust pollution which depends in wind direction and therefore difficult to predict. The current relevance of tourism for the actual conservation of Bukhara Deer is not fully assessed. Measures to ensure conservation benefits of touristic use should be developed and implemented.

180. Linking tourism and conservation is challenging. The entrance fees for protected areas are identical for international and for domestic visitors and at rather symbolic level. Many visitors enter the areas unregistered. Linkages with the economy of local people are lacking. A further challenge is that domestic tourists typically have little interest in hiking in the nature or observing biodiversity but are more inclined to use the protected areas as scenic environment for picnics, associated with driving of vehicles into natural areas, making fire and noise and leaving garbage behind.

10.10 Consider the possibility of signing a Memorandum of Understanding between Afghanistan and Uzbekistan in order to conduct joint research on the status of the transboundary population in the Termez area (Maimun tugai). (**3**)

181. So far, no MoU has been developed and signed due to takeover of power by the Taliban in Afghanistan. In the near future such process could start as there are improving relations between the countries including agreements. Informal exchange between experts might be possible without such agreement but currently no direct contacts exist.

11.0 Afghanistan

11.1 Conduct biophysical (habitat modelling, population estimate, etc.) and socio-economic studies, to develop Sustainable Land Management and Integrated Land Management plans, if security permits, for Darqad protected area. (1)

182. No activities reported yet.

11.2 Participate in and consider signing the CMS Bukhara Deer MOU. (1)

183. No activities reported yet.

11.3 In accordance with the Memorandum of Understanding signed in 2020 between Afghanistan and Tajikistan, establish a system of ecological corridors and buffer zones along the border with Tajikistan. (2)

184. No activities reported yet.

4. Additional measures, not covered by the Work Programme

185. Sustainable extractive use of Bukhara Deer was not included in the Work Programme, neither actual use nor the assessment of options and risks, with the exception of considered farming for velvet antlers. Currently, the species is listed in Appendix I of the CMS, which does not allow taking, with very few exceptions limited in time and space (CMS Convention text, Article III). Accordingly, Bukhara Deer is legally protected in all Range States and no hunting permits are regularly issued.

186. During the last years, the government of Uzbekistan has issued a small hunting quota and during the hunting season 2023/2024 an outfitter posted a photograph depicting a US hunter with a Bukhara Deer stag shot in Uzbekistan. While such hunting tourism targeting trophy stags does not directly impact population size and cannot contribute to the resolution of local overpopulation problems, it could create incentives for conservation of Bukhara Deer and its habitats. Hunting for removal of larger numbers of Bukhara deer to manage local population size, reduce human-wildlife conflicts and as sustainable use option, is not yet considered in any Range State.

187. Community-based wildlife management (CBWM) are no explicit elements of the Work Programme. In 2022 the CMS Secretariat commissioned a study on the “Potential for Community-based Wildlife Management of CAMI Species”. The study, elaborated by Frankfurt Zoological Society and currently in the stage of final review and editing, included the Bukhara Deer as one of the species for which the potential of the approach was assessed. The study explores different options of non-extractive and extractive sustainable use.

5. Conclusion

188. During the reporting period the stabilization and growth of Bukhara Deer range area and population size as well as numbers of subpopulations continued. Total numbers of Bukhara Deer increased from a low of 350 in 1999 to 3,700-3,900 in 2019 and were assessed as 4,320-4,600 at end 2023.

189. Native populations in the upper and middle Amu Darya as well as previously reintroduced subpopulations in the lower Amu Darya valley and in the Zarafshan Valley show positive trends or are stable. Reintroductions in the Ile-Balkhash region and Syr Darya Valley have led to successful establishment of new subpopulations.

190. Nevertheless, various threats continue to present major challenges to the survival of the species. The range area remains very fragmented and most subpopulations are isolated from each other with some barriers becoming more effective during the reporting period. In some range areas habitat loss and degradation continue. In the Zarafshon Valley in Uzbekistan the major driver of habitat loss and degradation was only recently (May 2024) effectively addressed thanks to a Presidential decree. Increasing needs for irrigation water and energy from hydropower affect the flow dynamics of the rivers in all Bukhara Deer habitats, exacerbated by the impact of ongoing climate change.

191. As reported in Section 2, the status of Bukhara Deer as subspecies of *Cervus hanglu* is the determining element of the species’ Red List category Least Concern (LC). Brook et al. (2017) assumed that 75% of *Cervus hanglu* belonged to the subspecies Bukhara Deer, leaving 900 individuals for the populations in China and India. With currently about 4,500 Bukhara Deer the total population size of the species might be 5,400 if no further declines occurred in the other populations. The IUCN Red List refers to mature individuals. Although Brook et al. (2017) do not explicitly indicate the assumed percentage of mature individuals, from the figures they present a share of 70% can be concluded, which appears biologically reasonable.

192. Concluding, the population size of Bukhara Deer as subspecies is currently about 3,100 mature individuals. The number of mature individuals of *Cervus hanglu* at species level would be about 3,800, if other populations remained stable at the level reported in the IUCN Red List assessment by Brook et al. (2017). It needs to be considered that a substantial share of the mature animals is concentrated in the subpopulation of LABR which is much above the carrying capacity of the habitat and thus particularly vulnerable.

193. The overall actual area of occupancy (AOO) of the species is indeed not known but given the species' reliance on small and patchy relics of riparian ecosystems, it is likely that the AOO is not much above or even below the threshold of <2,000 km².

194. The population size, the concentration of a large part of the total in one population (LABR), the severely fragmented AOO and the continuing observed and projected decline in extent and quality of habitat may warrant assigning the Red List category Near Threatened (NT) or even Vulnerable (VU).

195. For the long-term survival of the species, it will be important to focus attention on the connectivity of habitat and on facilitating the safe movements of deer outside and between key habitats and protected areas. Genetic diversity of isolated subpopulations and establishment of new subpopulations in suitable but not accessible habitat patches may require translocation of deer from other areas with sufficiently large local numbers. Solutions of co-existence with infrastructure development, local communities and overall land use need to be developed and implemented. Such solutions may need to include active management of populations and various forms of sustainable use of Bukhara Deer and involvement of local communities in wildlife management to create incentives for the support of the conservation of the species and its habitats.

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