World Heritage thematic study for Central Asia

Priority sites for World Heritage nomination under criteria (ix) and (x)

Hervé Lethier

INTERNATIONAL UNION FOR CONSERVATION OF NATURE

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

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FOREWORD

The 1972 World Heritage Convention aspires to protect, present and transmit our planet's most exceptional cultural and natural heritage to future generations. The Convention is one of the most important global conservation instruments and has been signed by almost all nations of the world, including the five countries of Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan). Despite the adoption of the Convention amongst all of the countries in the region, and the region's high biodiversity values, natural sites from Central Asia remain under-represented on the World Heritage List. As such, identifying areas within this region that display good potential to fulfil the requirements for inscription as natural World Heritage sites, especially those which may qualify under biodiversity criteria ((ix) and (x)), has been outlined as a priority by the World Heritage Committee.

As the world's largest environmental network and as the official Advisory Body on natural sites to the World Heritage Convention, IUCN is in a unique position to support the State Parties to the Convention in the identification of potential new World Heritage sites and therefore contribute to a more credible, balanced and representative World Heritage List. The independent desk assessments presented in this report are based on information and data mobilized through the State Parties in Central Asia, IUCN's World Heritage Programme and its network of experts, the IUCN World Commission on Protected Areas (WCPA) and the Species Survival Commission (SSC). International and national experts, specialists and NGOs who participated in this process, and reviewers, are gratefully acknowledged for their patient and committed efforts.

This study is not intended to be prescriptive or definitive and should be viewed as a first step towards identifying and selecting those sites with potential for nomination as natural World Heritage sites in Central Asia; future nominations will require more in-depth analysis than contained here. Should any of these sites be advanced to nomination, IUCN's full, rigorous and independent evaluation processes will apply. It is hoped that this study will raise awareness of the importance of natural World Heritage sites in the region and beyond. We hope that it will support ongoing efforts by the State Parties to conserve some of the world's most important terrestrial biodiversity in Central Asia, by identifying natural areas and sites that could be considered for nomination under biodiversity criteria.

IUCN looks forward to supporting the State Parties and expert community in Central Asia in realizing the potential of the World Heritage Convention and will be pleased to provide further advice and guidance concerning future nominations.

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IUCN World Heritage Programme

Boris Erg, Director
IUCN Regional Office for Eastern Europe
and Central Asia

Executive summary

The *World Heritage thematic study for Central Asia* has been produced as a contribution to supporting the implementation of the World Heritage Convention in Central Asia. It provides a response to a Decision of the World Heritage Committee (Decision WHC 39 COM 8B.4)¹ requesting IUCN to update the 2005 *World Heritage thematic study for Central Asia* (Magin, 2005)² in order to identify outstanding areas with potential for future nomination to the WH List with primary focus on criteria (ix) and (x) at the regional scale. The approach applied in this study, focusing on criteria (ix) and (x), follows that from the 2013 study on terrestrial biodiversity and the World Heritage List (Bertzky et al., 2013). Criteria (ix) and (x) are clearly the primary ones for recognition of extant biodiversity values, and they have been applied to a wide range of biodiversity features, including ecosystems, species, and ecological and/or biological processes.

The preparation process for this report followed three main phases:

- desk assessment and overview of sites having potential to meet the requirements of the World Heritage Convention for inscription on the WH List (January–June 2018);
- three regional consultations on priority sites for potential WH nomination (June, October and November 2018), involving 40–50 international and local experts and specialists;
- preparation of the WH Thematic Study in consultation with the relevant State Parties, scientists and expert organizations and individuals (October 2018–March 2019).

It is important to stress that the findings and recommendations presented in this report stem from the desk review that was to a large extent limited to the literature in English, internet sources based on available data, and consultations with national and international experts. In some cases, the data may not be fully up to date or reflect the reality on the ground. Significant efforts have been made to validate the data with national and international experts and field specialists who have contributed to the online consultation and participated in discussions in workshops and engaged in further exchanges with IUCN and the lead author during the drafting process. Therefore, the findings of the study should be interpreted as indicative and are subject to change upon further updates and consultation.

As a result, nine sites and areas have been identified as having high potential for nomination under biodiversity criteria (ix) and/or (x), in combination with other WH natural criteria (vii) and (viii).

The fact that some of these identified priority areas are currently not under any official protection regime does not mean that they cannot be included on TLs, if those areas and sites have high potential for nomination. This potential for nomination should be used by the State Parties to improve their current level of protection and management. In fact, World Heritage sites are meant to be the most outstanding examples of long-term conservation of natural and cultural values through effective protection regime and management.

Although this study is an initial assessment, most areas and sites recommended here have appeared repeatedly as being of particular interest for biodiversity conservation during the work process, whether through literature analysis or in discussions with experts and specialists. They have been identified based on an initial screening of their value, level of integrity, exposure to potential threats, existing legal protection regime and effective

1 http://whc.unesco.org/en/decisions/?id_decision=6354&.

2 <https://portals.iucn.org/library/node/12796>.

Status	Sites and areas	Country
Sites already inscribed in the WH List that could be extended	Golden Mountains of Altai	Russian Federation (potential for extension in Kazakhstan)
	Saryarka – Steppe and Lakes of Northern Kazakhstan	Kazakhstan
	Western Tien-Shan	Kazakhstan, Kyrgyzstan, Uzbekistan
Sites currently included on Tentative Lists	Tigrovaya Balka	Tajikistan
	Badkhyz and Kopetdag Mountains	Turkmenistan
	Northern Tien-Shan	Kazakhstan
	Repetek State Biosphere Reserve	Turkmenistan (potential for serial nomination in Kazakhstan and Uzbekistan)
Areas not included on Tentative Lists	Southern Ustyurt Plateau	Kazakhstan, Turkmenistan and Uzbekistan
	Cold Winter Deserts of Central Asia	Transnational

adequate management, by cross-referencing the available information and data. It should be stressed that, having identified these potential candidate WH sites, more in-depth analysis at the site level will be critical to fully understand their potential to meet the requirements of the Operational Guidelines. Several recommended areas and sites are serial and/or transnational or transboundary and will require coordination between the State Parties in order to develop a nomination.

In all cases, any areas, component parts or specific boundaries will require further detail and more precision in the process of preparation of a nomination.

Finally, it is worth noting that local communities inhabit some very remote areas prioritized here, at least seasonally and sometimes throughout the year. Unfortunately, it was beyond the scope of this survey to address the cultural aspect and indigenous matters, but it is fundamental to underline that rights issues have to be appropriately considered during every nomination process. The State Parties and all experts and organizations associated in such a process are strongly advised to address this central topic and refer to the existing “good practices” concerning human rights and World Heritage when starting their work.³

Additional recommendations

The recommendations below reflect the current level of knowledge that should be strengthened in the future, to ensure that the identified areas and sites are well supported with the necessary data and empirical evidence to address the requirements of the Operational Guidelines. In that sense, these recommendations should be interpreted as a starting point for further technical analysis. These recommendations are intended to fill the major administrative and technical gaps and difficulties observed during the development of the study and consultations with national authorities and experts.

3 Larsen (2012a,b); IUCN (2014b).

Create and/or update current Tentative Lists

State Parties are encouraged and invited to re-examine or review their Tentative Lists (TLs), with a focus on criteria (ix) and (x), without excluding other natural criteria (vii and/or viii). The findings of this Thematic Study should be taken into account by the State Parties while reviewing their TLs.

All TLs should be updated after a consultation process to ensure that the sites included in the lists are harmonized and have the highest potential for nomination at the regional level, based on a solid overall comparative analysis, which was not possible to conduct during this process. States Parties are invited to take into account the findings and recommendations presented here into these processes.

A comparative analysis specific to each site should also provide useful information on its value, main attributes and features for potential nomination under either criterion.⁴ The purpose of such an analysis is to ascertain whether there is a scope for the inclusion of the site in the list or not, and to demonstrate that there is no other natural property with similar values inscribed on a TL or with higher value that might be nominated in the future.

Improve the protection regime of areas and ecological corridors with the highest values for natural heritage

Central Asia is a global biodiversity hotspot, home to numerous iconic and threatened species and key natural habitats and ecosystems. They include significant migratory routes and flyways, and important breeding areas.

In this context, the identification of areas of sufficient size and establishment of adequate buffer zones will be of highest importance for nomination under either biodiversity criterion, to enhance and maintain the natural processes and preserve the state of conservation of those species. Thus, ecological corridors and key habitats for wildlife and migration need to be clearly identified and delimited for prioritisation. This work seeks inputs from relevant conservation processes and conventions.⁵

Efforts should be made not only to extend existing protected areas but also to set up new ones, in order to enhance ecological and habitat connectivity and improve protection of key flora and fauna areas, thereby allowing the nomination of more integrated landscape configurations.

Consider a range of international designation mechanisms to recognize areas of global importance

Areas of international importance and sites recognised under other international legal instruments or through knowledge-based tools (international/regional inventories of areas important for biodiversity conservation can help formulate Statements of Outstanding Universal Value (OUV) for existing and future WH sites.

State Parties should consider existing designations and inventories as opportunities to identify and select areas and sites having the highest potential for nomination.

⁴ IUCN (2014a)

⁵ e.g. Convention on Migratory Species, Ramsar Convention and their subsequent agreements and programs.

Foster transnational cooperation and transboundary sites to support ecological functionality that guarantees the maintenance of natural processes

There is strong potential for identifying transboundary and transnational sites. Some protected areas from the region may have difficulty in meeting the WH requirements if only areas within one country are included. Therefore, it would be helpful to foster cooperation and agree on a common regional strategic approach between State Parties for the identification and delimitation of transnational and/or transboundary sites.

Based on the recommendations of this study, the State Parties are invited to build a common vision of WH in the region that facilitates nomination of natural sites having the highest potential under natural criteria, especially in cold winter desert ecosystems that are currently poorly represented on the WH List.

Develop continuous dialogue among stakeholders

The need to develop dialogue among stakeholders at all levels, e.g. local, national, regional and international, emerged as one of the major conclusions of the consultations conducted during this study. This dialogue should be strengthened in the future, based on more frequent and regular exchanges and stronger cooperation between stakeholders (e.g. State Parties, scientists, NGOs, local communities).

International organisations should stimulate this dialogue, facilitate the exchange of good practices, and contribute to the identification of solutions to common problems and means to facilitate the nomination processes.

Improve enforcement and compatibility between local, national and international regulatory frameworks

The consultations raised awareness of the difficulties in the practical implementation of international laws and agreements at the national and local levels, related to the lack of compatibility among diverse regulations.

Efforts should be made by State Parties to improve this compatibility in the future and to adapt their national legal and regulatory frameworks ensuing from international commitments on biodiversity conventions.

Conduct training sessions and activities on nomination preparation

Consultation workshops confirmed that difficulties observed during the IUCN evaluation process could be associated with a lack of capacity for WH nomination. In order to overcome these shortcomings, operational guidance should be developed that focuses on specific phases of the nomination process, such as preparation of the comparative analysis, nomination under criteria (ix), and serial and/or transnational or transboundary sites.

Based on existing good practices and guidance documentation, specific training and tutoring activities should be organised during the upstream process of site nomination for public service officers and local specialists, with support from IUCN and other relevant international organizations.

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We are very grateful for the invaluable contribution of the State Parties of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, National Commissions for UNESCO, and all organisations, national and international experts in the development of this thematic study. Its development would not be possible without input received from participants in three workshops held in: Bishkek, Kyrgyzstan (19–20 June 2018), Asghabat, Turkmenistan (11–12 October 2018), and Tashkent, Uzbekistan (28–29 November 2018) (Annex 1).

Maps were prepared by the Michael Succow Foundation (MSF) in the frame of the Central Asian Desert Initiative (CADI) as part of the International Climate Initiative (IKI). The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety supports this initiative on the basis of a decision adopted by the German Bundestag.

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The content of this report is solely the responsibility of the author and should not be interpreted as reflecting the views of any of the individuals and organisations that contributed to the report or any of its elements.

ACRONYMS AND ABBREVIATIONS

AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
AZE	Alliance for Zero Extinction
BR	Biosphere Reserve
BZ	Buffer Zone
CADI	Central Asian Desert Initiative
CEPF	Critical Ecosystem Partnership Fund
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CR	Critically Endangered
EBA	Endemic Bird Area
EN	Endangered
EX	Extinct
EW	Extinct in the wild
GEF	Global Environmental Facility
IBA	Important Bird Area
ICC	International Coordinating Council
IICAS	International Institute for Central-Asian Studies
IKI	International Climate Initiative
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IUCN	International Union for Conservation of Nature
JRC	Joint Research Centre
KZ	Kazakhstan
KBA	Key Biodiversity Area
KG	Kyrgyzstan
MAB	Man and Biosphere
MSF	Michael Succow Foundation
NGO	Non-Governmental Organisation
NABU	Nature and Biodiversity Conservation Union
NINA	Norwegian Institute for Nature Research
NP	National Park
NT	Near Threatened
OG	Operational Guidelines
OUV	Outstanding Universal Value
PA	Protected Area
RRI-CA	Ramsar Regional Initiative for Central Asia
SA	Secondary Area
SNNP	State National Nature Park
SNR	Strict Nature Reserve
SSC	Species Survival Commission
TEOW	Terrestrial Ecoregions of the World
TJ	Tajikistan
TM	Turkmenistan
TL	Tentative List
UN	United Nations
UNEP	UN Environment Programme
UNEP-WCMC	UN Environment Programme World Conservation Monitoring Centre
UNESCO	United Nations Educational, Scientific and Cultural Organization
UZ	Uzbekistan
VU	Vulnerable
WCPA	World Commission on Protected Areas
WDPA	World Database on Protected Areas
WH	World Heritage
WHC	World Heritage Committee
WHP	World Heritage Programme
WWF	World Wide Fund for Nature

Introduction

Background and rationale

Based on a global strategy for a balanced and representative WH List adopted by the WHC in 1994 (Decision WHC 28 COM 13.1),⁶ IUCN, in collaboration with the WH Centre, UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)⁷ and the Ramsar Convention, have produced a series of thematic studies providing overview assessments of major themes relating to natural sites. Thematic studies are aimed at providing guidance for the implementation of the World Heritage Convention, identifying gaps in the WH List and advising State Parties and interested parties on World Heritage nomination and management.

The first WH thematic study for Central Asia was published in 2005, identifying a series of sites with high potential for nomination under criteria (viii), (ix) and (x) (Magin, 2005). This new study builds on the 2005 study, with a specific focus on the terrestrial realm and on criteria (ix) and (x) in the five countries of the region, i.e. Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Focus on criteria (ix) and (x) follows the approach taken in the study *Terrestrial Biodiversity and the World Heritage List: Identifying broad gaps and potential candidate sites for inclusion in the natural World Heritage network* (IUCN and UNEP-WCMC, 2013).

This study is based on a desk review and extensive consultation with national and international organisations and experts, and has been finalized in close consultation with key stakeholders during the latter half of 2018 and first quarter of 2019. Consultations were organised to ensure full transparency and validate information collated during the assessment. The participants included national experts from the five Central Asian countries, encompassing both governmental and nongovernmental organisations, as well as international experts.

The World Heritage Convention

The World Heritage Convention identifies, protects and promotes cultural and natural heritage of OUV around the world (UNESCO, 1972). Sites with OUV are defined in the Convention's Operational Guidelines (OG) as areas “*so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity*” (UNESCO, 2017).⁸

The OG identifies ten criteria for defining OUV, four of which address natural sites; these criteria include “*ecological and biological processes*” (ix) and “*biodiversity*” (x) that, in the present state of scientific and technical knowledge, seem to offer significant potential for nomination of sites in Central Asia.

6 <http://whc.unesco.org/en/decisions/33/>.

7 Previously UNEP.

8 <https://whc.unesco.org/en/guidelines/>.

The OG also requires that natural WH sites demonstrate a high level of “*integrity*”. Nominated sites are often partially degraded and their integrity may no longer meet the convention’s provisions and OG requirements. Therefore, the integrity of a site having potential for nomination should be assessed to know to what extent it:

- includes all elements necessary to express its OUV;
- is of adequate size to ensure the complete representation of the features and processes that convey the site’s significance;
- suffers from adverse effects of development and/or neglect.

Sites must also meet the protection and management requirements, meaning they must benefit from a protection regime adequate to preserve the values for which they are nominated.

Criteria selected for nominating new natural sites

This review aims to identify a list of sites that may have OUV with respect to selected biodiversity criteria (ix) and/or (x). The 2017 *Operational Guidelines for the Implementation of the WH Convention* provide the following explanation of criteria for the assessment of OUV:⁹

- criterion (ix): be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;
- criterion (x): contain the most important and significant natural habitats for *in situ* conservation of biological diversity, including those containing threatened species of OUV from the point of view of science or conservation.

Furthermore, any site nominated under criterion (ix) should have sufficient size and contain the necessary elements to demonstrate the key aspects of processes that are essential for the long-term conservation of the ecosystems and the biological diversity they contain. Any site nominated under criterion (x) should be the most important areas for the conservation of biological diversity. Only those areas that are the most biologically diverse and/or representative are likely to meet this criterion. The areas should contain habitats for maintaining the most diverse fauna and flora characteristics of the biogeographic province and ecosystems under consideration. A site containing wide-ranging species should be large enough to include the most critical habitats essential to ensure the survival of viable populations of those species. For an area containing migratory species, seasonal breeding and nesting sites and migratory routes, wherever they are located, should also be adequately protected and managed.

Integrity requirements¹⁰

Integrity measures the wholeness and intactness of natural heritage; those key words can be understood as follows:

- *wholeness*: all necessary attributes are within the site;
- *intactness*: all necessary attributes are still present – none are lost or have been significantly damaged or have decayed.

⁹ <http://whc.unesco.org/en/guidelines/>.

¹⁰ OG, sections 82-95.

Biophysical processes and landform features of each selected site should be relatively intact, though it might not be totally pristine and might involve contact with people to some extent. Human activities, including those of traditional societies and local communities, may occur in natural areas, but these activities may be consistent with the site's OUV only where they are ecologically sustainable. This should be presented in the statement of integrity.

Protection and management requirements¹¹

The selected sites should also benefit from an adequate protection regime that maintains and enhances the site's OUV and a management plan or system organizing properly all the site's uses and activities to ensure this value is not compromised.

Priority should be given to areas that benefit from a strong legal regime and have an effective management plan or documented system in operation, as this will greatly improve the chances of a successful nomination.

However, this should not lead to excluding sites with strong biodiversity values that may not currently be protected and/or managed adequately. In such cases, the establishment of a new protected area with an appropriate regime of protection and an effective management plan/system should be the first phase of the process. In fact, the nomination of new WH sites could be a strong driver for establishing new protected areas or expanding existing ones in areas with exceptional biodiversity values.

Protection and management of the selected sites should ensure that their OUV, including the conditions of integrity at the time of inscription, are sustained or enhanced over time:

- each site should have adequate long-term legislative, regulatory, institutional and/or traditional protection and management to ensure its safeguarding. This protection should include clearly delineated boundaries; legislative and regulatory measures at national and local levels should assure the protection of the site from social, economic and other pressures, or changes that might negatively impact the site's OUV;
- site boundaries should be drawn to incorporate all the attributes that convey the site's OUV and ensure its integrity. These boundaries should reflect the spatial requirements of habitats, species, processes or phenomena that provide the basis for the inscription of the site on the WH List; they should include sufficient areas immediately adjacent to OUV area to protect the site's heritage values from direct/indirect effects of human pressure outside the site, and may coincide with one or more existing or proposed PAs;
- wherever necessary for the proper protection of the site, an adequate buffer zone (BZ) surrounding the nominated site should be established; this zone must have complementary legal and/or customary restrictions placed on its use and development to give an added layer of protection to the site. This should include the immediate establishment of the site, important views and other areas or attributes that are functionally important as a support to the site's OUV and its protection. The BZ should be determined in each case through appropriate mechanisms and details on the size, characteristics and authorized uses. A map indicating the precise boundaries of the site and its BZ, and a clear explanation of how the BZ protects the site, should also be provided in the nomination dossier.

¹¹ OG, sections 96-98.

1. Central Asia and biodiversity

This chapter aims to provide an overview of the emblematic values of Central Asia for biodiversity, with reference to major global biogeographic classifications, and ecosystem and species datasets. This information has been compiled within the limitations of a desk study, without an in-depth analysis of Russian and native literature, or dedicated field research.

1.1 Biogeography

The eight biogeographic realms and 14 biomes of the world reflect the broad-scale distribution of biodiversity on Earth (Olson, 2001).

Situated in the Palearctic realm, Central Asia overlaps with three biomes:

- desert and xeric shrublands;
- flooded grasslands and savannahs;
- montane grasslands and shrublands.

According to the Udvardy classification,¹² which aims to provide a satisfactory classification of the world's biotic areas for conservation purposes and which is currently used in the WH List and by IUCN to compare existing properties and nominated sites,¹³ Central Asia belongs to the Palearctic realm and covers part of four of the 193 terrestrial biogeographical provinces:

- Pontian steppe;
- Altaï highlands (which extends beyond Central Asia as defined in this report);
- Pamir/Tian-Shan highlands;
- Turanian plateau.

The Aral Sea is also a province in the region, but it is not considered a part of the terrestrial realm that is the focus of the present review.¹⁴

The first three biogeographical provinces host six WH properties, whereas the Turanian province currently hosts no sites (Table 1).

However, the Udvardy classification may not be the most relevant and accurate classification for identifying values for nomination under criteria (ix) or (x) of the WH Convention, especially in Central Asia. This classification was used in the 2005 Central Asia Thematic Study, as it is one of the usual references used by IUCN and UNEP-WCMC to assess the comparative value of sites nominated during the IUCN internal evaluation process.

¹² Udvardy, 1975.

¹³ See below on the limits of the reference to the Udvardy classification long used by IUCN, especially in Central Asia and under criterion (ix).

¹⁴ Furthermore, the Aral Sea has almost disappeared, and over the years the term Aralkum Desert has become common in its place.

Udvardy Biogeographical Province		WH sites		
Code	Name	Number	Names	Countries
2.21.8	Turanian plateau	0	-	-
2.29.11	Pontian steppe	1	Saryarka – Steppe and Lakes of Northern Kazakhstan	Kazakhstan
2.35.12	Altai Highlands	2	Golden Mountains of Altai*	Russian Federation
			Uvs Nuur Basin	Russian Federation and Mongolia
2.36.12	Pamir/Tian-Shan Highlands	2	Western Tien-Shan	Kazakhstan Kyrgyzstan Uzbekistan
			Tajik National Park (Mountains of the Pamirs)	Tajikistan
TOTAL		5		

* The Altai Mountains span China, Kazakhstan, Mongolia and the Russian Federation

Table 1.

Udvardy Biogeographical Provinces in Central Asia and WH sites (Source: UNEP-WCMC's World Heritage database, 03/04/2018).

As such, in due time, it may be appropriate to extend this analysis with additional reference systems that may provide more insight into the ecosystems of the region, e.g. marine ecosystems, and to facilitate with the prioritisation of sites having the highest potential for nomination.¹⁵

1.2 Major ecosystems

The Central Asian region is a vast area of some 4,000,000 km² stretching 3,000 km from the trans-Volga steppes in the west to the Altai Mountains in the east, and 2,000 km from the forest-steppe of the West Siberian plain in the north to the edge of the Iranian Plateau and the Parapamiz and Hindu Kush Mountains in the south. The largely arid ecosystems – steppes, deserts and mountains – host an exceptionally rich variety of native and endemic species. Central Asia is without question a globally important region for biodiversity. It is also characterised by ecosystems providing important environmental services for humanity (IPBES, 2018), with the following ecosystems listed in the literature as having particular value (Map 1) (GEF, 2002; WWF, 2006):

- *forest-steppe*: mostly located in the very northern part of the region, in Kazakhstan; these areas alternate forests – mostly deciduous – with steppe flora and host the highest species diversity of any steppe ecosystem in the world. They host many species of birds, from passerines to raptors, many of which are threatened, as well as several large ungulate, bat and rodent species;
- *freshwater wetland ecosystems*: both natural and artificial, these wetlands are widespread in the region and host more than 150 species of migratory birds, of which about 30 species are currently threatened according to the IUCN Red List, especially in Kazakhstan, which lies along the most significant flyway for Eurasian migratory birds. Fish and invertebrate species in Central Asia are representative of

¹⁵ See also and among others, Olson's more recent classification, which may be better adapted to the ecosystems of Central Asia.

common and widespread palearctic assemblages with a few exceptions.¹⁶ The large lakes of the region, such as the Aral Sea, Balkhash, Issyk-Kul, Sasykkol, Alakol, Zaisan, Tengiz, and Karakul, are also known to host unique communities of plants, including many endemics. Several wetlands, such as the partly artificial lakes Sarykamysh (Turkmenistan and Uzbekistan) (Ten et al., 2012) and Aydar-Arnasay (Uzbekistan and Kazakhstan) are also of significant importance for wildlife, overlapping in many instances with many Important Bird Areas (IBA);

- *steppe ecosystems*: found on the plains and in the foothills of the region's mountains; steppe wildlife is characterised by the presence of numerous herbivorous mammals, including large ungulates, such as the saiga antelope (*Saiga tatarica*), and migratory birds, such as the sociable lapwing (*Vanellus gregarius*), demoiselle crane (*Anthropoides virgo*) and various species of raptors, eagles and the osprey (*Pandion haliaetus*), white-headed duck (*Oxyura leucocephala*), two species of pelicans (*Pelecanus onocrotalus*, *Pelecanus crispus*), greater flamingo (*Phoenicopterus roseus*), and although not common to steppe ecosystems, Eurasian curlew (*Numenius arquata*);
- *desert ecosystems*: constituting semi-deserts, winter cold deserts and sandy deserts, Central Asia's desert ecosystems are remarkable for plant communities typical for this region; they include relict species and other taxa such as *Spireanthus*, endemic *Ferula* species, *Astragalus* sp., and psammophytic shrub species. The fauna is characterised by a rather high degree of endemism, especially among invertebrates, mammals and reptiles. They contain the world's sole natural population of kulan (*Equus hemionus*),¹⁷ and significant populations of goitered gazelle (*Gazella subgutturosa*) and urial (*Ovis orientalis*), the latter occurring mostly in mountain ecosystems (see below). Local endemics such as the desert dormouse (*Selevinia betpakdalaensis*), saxaul sparrow (*Passer ammodendri*), Turkestan ground jay (*Podoces panderi*), Asian houbara bustard (*Chlamydotis macqueenii*), Sandgrouse species (*Pteroptes* sp. and *Syrrhaptes paradoxus*), Saker falcon (*Falco cherrug*) and Egyptian vulture (*Neophron percnopterus*) are also found there;
- *mountain ecosystems*: mountainous nival ecosystems covering elevations from 4,000 up to 7,000 m in the Pamir and Inner Tien-Shan Mountains, submontane plains and lower altitude mountain belts constitute Central Asia's montane ecosystems. The isolated nature of these high-altitude areas has resulted in original communities with many invertebrates, while tree species include walnut (*Juglans* sp.), juniper (*Juniperus* sp.), and spruce and wild fruit forests, many of which are thought to include the wild ancestors of widely cultivated fruits such as the apple. Mountainous steppes and meadows can be found in the higher mountain belt, inhabited by various species and sub-species, such as mouflon, argali (*Ovis ammon*), Siberian ibex (*Capra sibirica*) and markhor (*Capra falconeri*), snow leopard (*Panthera uncia*), Persian leopard (*Panthera pardus saxicolor*), Menzbier's marmot (*Marmota menzbieri*), Tien-Shan brown bear (*Ursus arctos isabellinus*), Himalyan snowcock (*Tetraogallus himalayensis*) and numerous rare raptor species;
- *tugai forest ecosystems*: found throughout the region in low elevation river valleys and on the shores of wetlands, tugai forests are characterised by communities of poplars (*Populus* sp.), willows (*Salix* sp.) and tamarix (*Tamarix* sp.), alternating with wet meadows and marshes. These forests are particularly suitable for Bukhara deer (*Cervus elaphus yarkandensis*) and, until the 1950s was the only remaining habitat for the now extinct Caspian tiger (*Panthera tigris virgata*)¹⁸.

16 The Syr Darya shovelnose sturgeon (*Pseudoscaphirhynchus fedtschenkoi*) is potentially extinct but the Amu Darya sturgeon (*Pseudoscaphirhynchus kaufmanni*) is still present in the rivers.

17 Asiatic wild ass.

18 Introduction of the Amur Tiger (*Panthera tigris altaica*) was assessed in the Amu Darya Delta (Uzbekistan) and the South-Balkhash-Ily-Delta (Kazakhstan) regions, overlapping with existing protected areas (Jungius, 2010; also Driscoll et al., 2011, 2012; Chestin et al., 2017).

Figure 1.
Key ecosystem
communities in Central
Asia © Michael Succow
Foundation (figure
modified from Zoi, 2011).

1.3 Species and communities

Central Asia hosts 126 threatened species, including 87 fauna species and 39 flora species,¹⁹ of which 30 species are endangered and 38 species are critically endangered (Table 2; Annexes 3 and 4).²⁰

Flora of the region reflects the diverse biogeographical elements represented in mountain ecosystems. In total, there are 64 genera and many species of endemic flora, often with very narrow ranges, which include various species of birch, almond and juniper (Eastwood et al., 2009), as well as flowers and grasses, including 16 species of wild tulips threatened at the regional level (CEPF, 2017). Around one-third of all plant species from the whole region are endemic.²¹

In addition to the mountain ecosystems that are recognized as a global biodiversity hotspot (CEPF, 2017) and already well represented on the WH List, the deserts of the region host flora characteristic of various types of desert ecosystems. About 1,600 plants have been identified in the Turanian cold winter deserts, and of the roughly 350 vascular plants found in the sand deserts or cold winter deserts, some 56% are endemic to the region (Schroeder, 1998). The diversity of flora may certainly be a strong asset for nomination of sites under criterion (x) and contribute strongly to building their values.

¹⁹ Coverage of the IUCN Red List for plants is notoriously low in many geographical regions. Thus, those figures are likely minimum estimates.

²⁰ IUCN Red List of Threatened Species website (15 April 2018) (<https://www.iucnredlist.org/>).

²¹ Floral endemism is however a controversial issue between Central Asia botanists; it will need further discussions with those experts in due time.

Although fauna is relatively scarce because of the extreme environment, the deserts of Central Asia are home to several desert-adapted faunal species of special interest, such as the honey badger (*Mellivora capensis*), caracal (*Caracal caracal*), sand cat (*Felis margarita*) and marbled polecat (*Vormela peregusna*).

Threatened species	Total	NT	VU	EN	CR	EW	EX
Fauna	87	0	52	15	20	0	0 ¹⁷
Flora	39	0	6	15	18	0	0
TOTAL	126	0	58	30	38	0	0

These values form an important attribute for the biodiversity of the region. They may contribute to the representativeness of natural landscapes having high potential for future nomination under either biodiversity criterion (Schmidt, 2017), and in some cases combined with criteria (vii) and/or (viii).

Central Asia also comprises three major bird migratory flyways; 29 globally threatened and near-threatened species are considered to breed, migrate and winter in the region.²³ A number of threatened migratory mammal species are listed in Appendix 1 of the Convention on Migratory Species (CMS), assessed as being in danger of extinction throughout a significant portion of their range and facing a high risk of extinction in the wild, such as Bukhara deer (*Cervus elaphus yarkandensis*) (Kreuer et al. 1998), kulan (*Equus hemionus*), goitered gazelle (*Gazella subgutturosa*) and Pallas cat (*Otocolobus manul*).

Among these species is the iconic saiga antelope (*Saiga tatarica*),²⁴ whose conservation has been subject to significant international interest and effort. The catastrophic decline of the species over the past century has been attributed to poaching for the horn trade and infectious diseases triggered by environmental changes, while major threats for this species also include different types of linear infrastructure such as fences, railways and roads that fragment their functional habitat and impede migratory movements. Thanks to efficient conservation efforts, the Central Asian population has recovered from 30,000 in the mid-1990s to 300,000 individuals in early 2015. Unfortunately, a mass mortality event in May 2015, caused by the bacteria *Pasteurella multocida*, affected the main population of Betpak Dala, Kazakhstan, reducing the total Central Asian population to 100,000 animals. Since then, the population has shown encouraging signs of recovery.

The large mammal migrations of Central Asia are certainly one of the key environmental processes that could be used to foster a transboundary site nomination under criterion (ix). Based on past experience, however, it is important to ensure that any site nominated on this basis is designed with ecologically appropriate boundaries that better support the critical habitats associated to those migratory species. Such a site should be large enough to cover most of the migration routes and encompass the key habitats and areas critical to the maintenance of this migration process over time.

The presence of all of these species, combined with other vertebrates and invertebrates and floral communities that characterise Central Asia ecosystems, may also be considered a strong asset for potential nomination under criterion (x).

Table 2.

Threatened species in Central Asia (Source: IUCN Red List of threatened species database, 15/04/2018).

22 The database is not up to date and at least three species of large vertebrates are extinct in Central Asia: Caspian tiger (*Panthera tigris virgata*), Bactrian camel (*Camelus bactrianus*), and Wild horse (*Equus ferus ferus*).

23 CMS website.

24 The species is listed under the CMS Appendix II; a Memorandum of Understanding for Conservation on Restoration and Sustainable Use of the Saiga Antelope was signed in 2006 under the auspices of the CMS and a medium-term International Work Programme has been adopted for the 2015-2020 period to support the implementation of the MOU (<https://www.cms.int/saiga/en/document/mou-concerning-conservation-restoration-and-sustainable-use-saiga-antelope>).

2. Designated areas in Central Asia

According to the WH Convention, a nominated site should benefit from an adequate protection regime and be managed properly.

Chapter 2 provides overall information on the current status of PAs in the region, based on the data provided by the State Parties and available on the World Database on Protected Areas (WDPA).²⁵ This includes areas recognized internationally for their biodiversity importance, i.e. World Heritage sites, Ramsar sites, and Biosphere Reserves.

2.1 Protected Areas network

The following data have been extracted from the WDPA. It should be noted that given the difficulty of obtaining accurate spatial data for protected areas in Central Asia, the data presented herein do not reflect the full reality, as many protected areas in the region are not registered with the WDPA, or existing boundaries may have changed since their original inclusion in the dataset and required updating.

Central Asia currently has at least 290 PAs, covering a total surface over 330,888 km². Almost half the PAs in the region are in Kazakhstan, accounting for nearly 55% of the surface area of PAs in Central Asia (Table 3, Map 2).

Country	Protected areas*			International designations **		
	Total	Surface (km ²)	Coverage (%)	Natural World Heritage	Biosphere Reserve	Ramsar site
Kazakhstan	117	243,696.49	8.96	2	10	10
Kyrgyzstan	85	14,632.00	7.37	1	2	3
Tajikistan	20	31,029.00	21.81	1	-	5
Turkmenistan	42	20,679.60	4.38	-	1	1
Uzbekistan	26	20,851.76	4.63***	1	1	2
TOTAL	290	330,888.85	8.30	3	14	21

* Modified from CBD, 2019

** International designations may overlap with PAs set up under national designations

*** Includes IUCN categories I-IV and Biosphere Reserves as per the 6th National Report to CBD

Overall, these areas are based on the legal, national status. Whether they meet the requirements for WH nomination is a separate question, and case-by-case verification is required to determine whether the areas for nomination can also meet the OG's integrity, protection and management requirements.²⁶

Table 3.
Protected Areas
network in Central
Asia (various sources).

²⁵ <https://www.protectedplanet.net/>

²⁶ On this subject: (Sdykova, 2006) for Kazakhstan.

Figure 2.

Protected Areas in Central Asia © Michael Succow Foundation.

2.2 Internationally Recognised Areas

Areas harbouring particularly high levels of biodiversity, or that are indicative of particularly significant biological processes such that they are significant at an international scale, and areas holding existing designations such as RAMSAR sites, can be good indicators of potentially suitable areas for nomination into the WH List. Existing international designations relevant for criteria (ix) and (x) are outlined and discussed in this section in this context.

In total, 30 PAs from the region currently enjoy international recognition.²⁷

2.2.1 UNESCO Biosphere Reserves

UNESCO Biosphere Reserves (BR) aim to ensure environmental, economic and social sustainability;²⁸ each BR is intended to fulfil three interconnected functions:

- *conservation*: protecting ecological and cultural diversity, including genetic variation, species, ecosystems, and landscapes, and securing services provided by such diversity;

²⁷ The following figures are slightly different from those published in the 2005 IUCN review; they have been compiled from UNEP-WCMC's online WDPA on 3 April 2018 (<https://www.protectedplanet.net/>).

²⁸ Through: (1) the development and coordination of demonstration areas and learning sites with the aim of maintaining and developing ecological and cultural diversity and securing ecosystem services for human well-being; (2) the development and integration of knowledge, including science, to advance understanding of interactions between people and the rest of nature; (3) building global capacity for the management of complex socio-ecological systems, particularly through encouraging greater dialogue at the science-policy interface; environmental education; and multi-media outreach to the wider community (<http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/main-characteristics/functions/>).

- *development*: fostering economic and human development that is environmentally and socially sustainable, and culturally appropriate;
- *logistic support*: facilitating demonstration projects, environmental education, and sustainable development education and training, research, and monitoring. While education, research, monitoring and capacity enhancement are seen as components of the logistic or knowledge-generation function of BR, they are also integral to the conservation and development functions.

Countries	Biosphere Reserve	Year of designation
Kazakhstan (10)	Korgalzhyn Alakol Ak-Zhayik Aksu-Zhabagly Barsakelmes Great Altai Altyn Emel Karatau Charyn Zhongar	2012 2013 2014 2015 2016 (former Katon-Karagay 2014) 2017 2017 2017 2018 2018
Kyrgyzstan (2)	Sary-Chelek Issyk Kul	1978 (reviewed in 2013) 2001 (reviewed in 2013)
Tajikistan (0)	-	-
Turkmenistan (1)	Repetek	1978 (reviewed in 2005 and 2017)
Uzbekistan (1)	Mount Chatkal	1978 (reviewed in 1999 and 2015)

There are currently 14 UNESCO BRs in Central Asia located in four countries (Table 4, Figure 3). Only Tajikistan does not currently have any UNESCO BRs, while UNESCO BR is a transboundary site between Kazakhstan and the Russian Federation (Great Altai).

Table 4.

UNESCO BR network in Central Asia (Source: UNESCO/MAB website, 02/04/2019).

Figure 3.

International designations of areas in Central Asia
© Michael Succow Foundation.

2.2.2 Ramsar Sites

Based on the nine criteria for identifying Wetlands of International Importance (Box 1), to date 21 Ramsar Sites have been designated in the region and cover 47,880 km² (Table 5 and Map 8).

Country	Site name	Year of designation	Area (km ²)	Management plan implemented
Kazakhstan (10)	Kourgaldzhin and Tengiz Lakes	1976	2605	No
	Lakes of the lower Turgay and Irgiz		3480	No
	Koibagar-Tyntyugur Lake System	2009	580	No
	Ural River Delta and adjacent Caspian Sea coast		1115	No
	Alakol-Sasykkol Lakes System		9147	No
	Naurzum Lake System		1397	Yes
	Zharsor-Urkash Lake System		412	No
	Kulykol-Taldykol Lake System		83	No
	Lesser Aral Sea and Delta of the Syrdarya River	2012	3300	Yes
	Ili River Delta and South Lake Balkhash		9766	Yes
Kyrgyzstan (3)	Issyk-kul State Nature Reserve with Issyk-kul Lake	2002	6264	No
	Chatyr Kul	2005	161	Partially covered by the Karatal Japalyk Management Plan
	Son-Kol Lake	2011	368	Idem supra
Tajikistan (5)	Karakul Lake	2001	364	No
	Shorkul and Rangkul Lakes		24	No
	Zorkul Lake		38	No
	Kayrakum Reservoir		520	No
	Lower part of Pyandj River		-	No
Turkmenistan (1)	Turkmenbashy Bay	2008	2671	No
Uzbekistan (2)	Aydar-Arnasay Lakes system	2008	5271	No
	Lake Dengizkul	2001	313	No

Table 5.

Ramsar Sites in Central Asia (Source: Ramsar website, 13/02/2019).

THE RAMSAR SITES CRITERIA

The nine criteria for identifying Wetlands of International Importance

GROUP A - SITES CONTAINING REPRESENTATIVE, RARE OR UNIQUE WETLAND TYPES

Criterion 1: a wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.

GROUP B - SITES OF INTERNATIONAL IMPORTANCE FOR CONSERVING BIOLOGICAL DIVERSITY CRITERIA BASED ON SPECIES AND ECOLOGICAL COMMUNITIES

Criterion 2: a wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

Criterion 3: a wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.

Criterion 4: a wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles or provides refuge during adverse conditions.

Specific criteria based on water birds

Criterion 5: a wetland should be considered internationally important if it regularly supports 20,000 or more water birds.

Criterion 6: a wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of water birds.

Specific criteria based on fish

Criterion 7: a wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.

Criterion 8: a wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.

Specific criteria based on other taxa

Criterion 9: a wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of wetland-dependent non-avian animal species.

The international protected area designations discussed within this section should not be seen as implying a specific legal status of protection for any given area, or fulfilment of the conservation and management requirements of the WH Convention. However, in some cases, they may facilitate the identification and prioritisation of areas having high biodiversity value to increase their chances of nomination.

Box 1.

The Ramsar Sites criteria. (Source: Ramsar website).

3. Natural World Heritage sites in Central Asia

Chapter 3 provides an overview of the current situation of the WH sites in the region. A preliminary review is presented of the potential of sites included in the TLs for nomination under natural criteria, as appraised by the experts and specialists consulted during the study.

3.1 The World Heritage List

Three natural sites are currently inscribed on the WH List (Saryarka – Steppe and Lakes of Northern Kazakhstan, Western Tien-Shan and Tajik National Park (Mountains of the Pamirs). Of these sites, one (Western Tien Shan) is a serial transnational site, occurring within three of the five countries (Table 6).²⁹

Another site, *Mountain Ecosystems of Koyentag*, was nominated by Turkmenistan in 2015 under criteria (vii), (ix) and (x). The WHC deferred the examination of this nomination to allow the State Party to prepare a revised nomination, as follows (Decision WHC 40 COM 8B.10):³⁰

- the State Party was recommended: (1) to monitor grazing pressures in the designated wildlife sanctuaries to regulate stock numbers and reduce pressure on native vegetation and natural systems; (2) to more effectively plan for increasing tourism demand, including the development of appropriately scaled and low impact tourism-related infrastructure; (3) to ensure that proposals to establish cable car access are subject to careful consideration and rigorous environmental impact assessment and to ensure that no mining prospecting licenses and/or operations will be permitted within protected areas comprising the Mountain Ecosystems of Koyentag and its BZ, and (4) that any mining activity that might impact this site is subject to rigorous environmental and social impact assessment;
- the States Parties of Turkmenistan and Uzbekistan were also encouraged to enhance collaboration to improve coordination between Koyentag State Nature Reserve (Turkmenistan) and the adjoining Surkhan Strict Nature Reserve (SNR) (Uzbekistan), to support improved transboundary management of wildlife populations.

Furthermore, Tajik National Park (Mountains of the Pamirs) was inscribed on the WH list in 2013 under criteria (vii) and (viii). The WHC took this opportunity to encourage the State Party to assess the possibility of developing opportunities for future transboundary and potentially serial nominations with neighbour countries in the inner Asian high mountains and deserts (Decision WHC 37 COM 8B.14).³¹

29 A serial site includes several components that may occur on the territory of a single State Party (serial national property) or within the territory of different States Parties, which need not be contiguous (serial transboundary property).

30 http://whc.unesco.org/en/decisions/?id_decision=6789&

31 http://whc.unesco.org/en/decisions/?id_decision=5130&

In summary, a transboundary or transnational nomination encompassing several areas could thus be considered as a possible line of approach for new nominations in the future (see Chapter 5).

Country	Name	Category	Year of inscription	Criteria		Additional information
				IX	X	
Kazakhstan	Saryarka - Steppe and Lakes of Northern Kazakhstan	Natural	2008	✓	✓	1 Biosphere Reserve (Korgalzhyn) 2 Ramsar Sites (Naurzum Lake System and Tengiz-Korgalzhyn Lake System)
	Western Tien-Shan	Natural	2016		✓	Serial Transnational Site
Kyrgyzstan	Western Tien-Shan	Natural	2016		✓	Serial Transnational Site
Tajikistan	Tajik NP	Natural	2013			Criteria (vii) and (viii)
Uzbekistan	Western Tien-Shan	Natural	2016		✓	Serial Transnational Site

Table 6.

Sites inscribed on the World Heritage List (Source: UNESCO WH web site, 13/02/2019).

3.2 Tentative Lists

A Tentative List (TL) is an inventory of those properties which each State Party intends to consider for nomination. The first step a country should take is to conduct an inventory listing of natural or mixed heritage of potential OUVs suitable for inscription on the WH List (IUCN, 2011).³²

TLs are mandatory for State Parties towards the nomination of new WH sites,³³ and they should include the names of properties that State Parties intend to nominate in coming years.

Currently, 17 natural and six mixed sites are included on the TLs of four of the five countries (Table 7); Kyrgyzstan has no natural or mixed site on its TL.³⁴

All current TLs have been in place for a long time and have remained more or less unchanged over the years, with no updates in the past decade. As such, it would be worth reviewing the TLs to better understand the site OUV and their potential for meeting WH Convention requirements as the basis for future nominations.

Based on analysis of the literature and numerous exchanges with national stakeholders during and between the workshops, this lack of recent updates to the TLs may, among other reasons, be attributed to:

- difficult access to available data on biodiversity in the region, which is often only available in Russian and in no other working languages;
- poor international recognition on the importance of the region for biodiversity, even though this region is one of the least represented on the current WH list;

³² Chapter II.C.

³³ OG, Section 62-76.

³⁴ On that subject see: UNESCO, 2002/2004.

- weak analysis of the potential OUV of sites on current TLs due to insufficient knowledge of the criteria, conservation and management, WH requirements and lack of regional/local expertise on WH;
- absence of a comparative analysis showing how sites included in the TLs compare to other sites globally;
- presence of natural and/or mixed sites in TLs that may not be the most appropriate for nomination under criteria (ix) and (x);
- insufficient consideration of sites at the ecosystem level, such as mountain ranges or deserts, with outstanding ecological functionalities and representing processes in the evolution and development of ecosystems and communities, in line with criterion (ix);
- insufficient skills and institutional capacities dedicated to the WH in the countries.

New PAs have been set up since the inscription of the sites on the TLs. Moreover, land use under evolving socio-economic development contexts in the region, together with other drivers of change across multiple scales may have altered the values under which the sites were originally included within the TLs.

Each site inscribed on the TLs, and each new site considered to have potential for nomination, should be properly assessed to summarise the current status of the site's values, pressure and potential threats to those values, and the protection and management contexts of the site (Annexes 7 and 8). This cannot be based on a simple desk review and requires further in-depth field study.

Table 7.

Sites included on the Central Asian countries' TLs (Source: UNESCO WH web site, 13/02/2019).

Country	Name	Category	Date of submission	Biodiversity criteria				Other criteria
				IX	X	VII	VIII	
Kazakhstan	Aksu-Zhabagly State Natural Reserve	natural	06/02/2002	✓	✓	✓		
	Northern Tyan-Shan (Ile-Alatau State National Nature Park)				✓			
	Altyn-Emel State National Nature Park				✓	✓	✓	
	Petroglyphs of Eshkiolmes	mixed	24/09/1998	Not yet determined				
	Turkic sanctuary of Merke							
	Barrows with stone ranges of the Tasmola culture			Not yet determined				
	Palaeolithic sites and geomorphology of Karatau Mountain range			Not yet determined				
	Cultural landscape of Ulytau			Not yet determined				

Kyrgyzstan	No natural sites on the Tentative List							
Tajikistan	Fann Mountains	natural	04/04/2006		✓	✓		
	Tigrovaya Balka			✓				
	Zakaznik Kusavlisay				✓	✓		
	Dashti Djum State Reserve				✓	✓		
	Zorkul State Reserve				✓	✓		
Turkmenistan	Badkhyz State Nature Reserve		16/03/2009	✓	✓	✓		
	Syunt Hasardag State Nature Reserve				✓			
	Dinosaurs and Caves of Koytendag				✓		✓	
	Repetek State Biosphere Reserve				✓			
	Amudarya State Nature Reserve				✓			
	Hazar State Nature Reserve				✓			
Uzbekistan	Zaamin Mountains	natural	18/01/2008	✓	✓		✓	
	Shokhimardon			✓	✓			
	Gissar Mountains				✓	✓	✓	
	Boysun	mixed		✓		✓		IV and V
	Sarmishsay			✓				VI

The Aksu-Zhabagly State Natural Reserve was inscribed on the WH List in 2016, as a component of the Western Tien-Shan serial transnational property, and accordingly, should be removed from the TL of Kazakhstan.

A brief review of the sites currently listed on the TLs was performed by the workshop participants during the project. Accordingly, the following sites are among those included on TLs that may still have potential for nomination under at least one natural criterion (Table 8):³⁵

- Northern Tien-Shan;
- Altyn Emel;
- Palaeolithic sites of Kazakhstan;
- High mountain deserts of Central Tien-Shan;
- Tigrovaya Balka;
- Fann Mountains;
- Zorkul Zapovednik;
- Shokhimardon (Shakhimardan);
- Zaamin Mountains and Gissar Mountains.

³⁵ This analysis should however be confirmed and checked further in the field before one site is nominated.

Kazakhstan	
Petroglyphs of Eshkiolmes, Merke, Tasmola	
Relevance	<i>no information</i>
Criteria	<i>no information</i>
Values	to be specified under biodiversity criteria
Threats	<i>no information</i>
Protection	no protection
Management	<i>no information</i>
Northern Tien-Shan (Ile-Alatau)	
Relevance	good integrity
Criteria	ix and x (+ vii)
Values	good
Threats	medium (tourism; proximity to Almaty)
Protection	seems to meet OG requirements
Management	seems to meet OG requirements
Altyn-Emel	
Relevance	good
Criteria	ix and x (+ vii and viii)
Values	Good (1 IBA) ³⁵
Threats	medium (pasture and tourism)
Protection	seems to meet OG requirements and is enforced properly
Management	seems to meet OG requirements and is implemented properly
Palaeolithic sites of Kazakhstan	
Relevance	not relevant (further studies); could be potentially added to Western Tien-Shan. Included within the Karatau Reserve.
Criteria	x (+ vii and viii)
Values	good
Threats	low
Protection	seems to meet OG requirements and is enforced properly
Management	some concern in case of enlarged Western Tien-Shan
High mountain deserts of Central Tien-Shan ³⁶	
Relevance	glaciers; zone of flow formation of Syrdarya basin rivers; endangered and endemic species (requires additional detail).
Criteria	x (+ viii)
Values	good
Threats	medium (degradation of grazing areas; mining; climate change)
Protection	seems to meet OG requirements (state nature reserve)
Management	seems to meet OG requirements
Kyrgyzstan	
Issyk-Kul – natural and cultural landscape (Southern shore) ³⁷	
Relevance	spruce forests, riparian forests, endemic and endangered plant and animal species

Table 8.

Preliminary review of the sites included in Tentative Lists.

36 KZ 101 (<http://datazone.birdlife.org/site/factsheet/altyn-emel-national-park-iba-kazakhstan>).

37 Listed as part of the “Silk road sites” in Kazakhstan, and only under cultural criteria.

38 Listed as part of the “Silk road sites” in Kyrgyzstan, and only under cultural criteria.

Criteria	ix and x (+ iii, vi and vii)
Values	2 IBAs ³⁹
Threats	high (fragmentation of ecosystems; degradation of grazing areas; mining; poorly planned tourism infrastructure; unsustainable use)
Protection	seems to meet OG requirements (state nature reserve + 5 wildlife reserves and Karakol Nature Park)
Management	<i>no information</i>
Tajikistan	
Kusavlisay	
Relevance	only 1 criterion, low integrity
Criteria	vii
Values	declining populations
Threats	low
Protection	low level (Zakaznik)
Management	no management system, ecotourism
Tigrovaya Balka	
Relevance	high integrity
Criteria	ix
Values	Ecosystems (+ 1 IBA) ⁴⁰
Threats	medium (artificial regulation of the flow of the Vakhsh River)
Protection	seems to meeting OG requirements (state nature reserve + BZ)
Management	seems to meet OG requirements and is properly implemented; ecotourism
Fann Mountains	
Relevance	important biodiversity (mountain wetlands and other types of ecosystems)
Criteria	x (+ vii)
Values	ecosystems; intact habitats
Threats	very low
Protection	<i>no information</i> (very remote part of the country)
Management	no BZ yet
Zorkul	
Relevance	important landscapes and biodiversity
Criteria	x
Values	ecosystems
Threats	widespread livestock grazing (Karimov et al., 2018)
Protection	seems to meet OG requirements (state nature reserve) but there is a lack of enforcement; BZ (+ 1 IBA)
Management	promotion of ecotourism
Dashti Djum	
Relevance	low integrity
Criteria	vii
Values	<i>no information</i>

39 <http://datazone.birdlife.org/site/results?thrlev1=&thrlev2=&kw=Issyk+Kul®=0&cty=0&snm=&fam=0&gen=0&spc=&cmn=>.

40 TJ 009 (<http://datazone.birdlife.org/site/factsheet/tigrovaya-balka-nature-reserve-iba-tajikistan>).

Threats	widespread livestock grazing and very significant poaching
Protection	seems to meet OG requirements (state nature reserve) but there is a lack of enforcement; no BZ
Management	promotion of ecotourism
Turkmenistan	
Amudarya	
Relevance	important landscapes (tugaï forest + desert ecosystems) but low integrity
Criteria	x
Values	ecosystems (tugaï forests + desert ecosystems) (+ 1 IBA) ⁴¹
Threats	high (poaching, low integrity)
Protection	seems to meet OG requirements but there is a lack of enforcement; no BZ
Management	<i>no information</i>
Badkhyz	
Relevance	critical corridor
Criteria	ix and x (+ vii)
Values	<i>no information</i> (1 IBA) ⁴²
Threats	medium (livestock and settlements)
Protection	seems to meet OG requirements (state nature reserve) but there is a lack of enforcement
Management	weak
Dinosaurs and caves of Koytendag	
Relevance	nomination deferred
Criteria	x (+ viii)
Values	(1 IBA) ⁴³ but does not meet criterion (x) (Decision WHC 40COM 8B.10); ⁴⁴ low integrity
Threats	grazing, mining, tourism
Protection	seems to meet OG requirements (state nature reserve)
Management	weak
Syunt Hasardag	
Relevance	important biodiversity (mixed arid and subtropical climate)
Criteria	x
Values	similar areas to other mountainous reserves in Central Asia, such as Chatkal in Uzbekistan, Aksu-Dzhabagly in Kazakhstan and Sary-Chelek in Kyrgyzstan, but located much further west and marked by Caucasian influences
Threats	farming and grazing
Protection	seems to meet OG requirements (state nature reserve)
Management	<i>no information</i>
Hazar	
Relevance	important wetland area (partly designated as Ramsar site/ Turkmenbashi Bay)

41 UZ 047 (<http://datazone.birdlife.org/site/factsheet/amudarya-floodlands-near-termez-iba-uzbekistan>).

42 TM 038 (<http://datazone.birdlife.org/site/factsheet/badkhyz-iba-turkmenistan>).

43 TM 050 (<http://datazone.birdlife.org/site/factsheet/koytendag-iba-turkmenistan>).

44 http://whc.unesco.org/en/decisions/?id_decision=6789&.

Criteria	x
Values	important site for migratory and wintering birds, qualified as an IBA; contains several endemic and rare species of marine mammals (Caspian seal <i>Pusa caspica</i> (EN)) and serves as feeding ground for fish during their migration, fattening and spawning periods (Caspian lamprey <i>Caspiomyzon wagneri</i> (NT), Fringebarbel sturgeon <i>Acipenser nudiiventris</i> (EN), Stellate sturgeon <i>Acipenser stellatus</i> (EN), Russian sturgeon <i>Acipenser gueldenstaedtii</i> (EN), and European sturgeon <i>Huso huso</i> (EN). Beloribitsa <i>Stenodus leucichthys</i> (EX in the wild) (+ 1 IBA) ⁴⁵
Threats	high (oil pollution, habitat disturbance, and illegal hunting of migratory waterbirds ⁴⁶)
Protection	seems to meet OG requirements (state nature reserve + BZ)
Management	no information
Repetek State Biosphere Reserve	
Relevance	important biodiversity
Criteria	x
Values	key plant species and important for migratory birds (nesting)
Threats	low, remote area (few settlements and potential overgrazing)
Protection	seems to meet OG requirements (state nature reserve + biosphere reserve) (+ 1 IBA ⁴⁷)
Management	seems to meet OG requirements
Uzbekistan	
Shokhimardon (Shakhimardan)	
Relevance	large glaciers, mountain rivers, alpine lakes, relict Juglans forests
Criteria	ix and x
Values	good state; enclave on the territory of Kyrgyzstan
Threats	Low
Protection	low level of concern
Management	low level of concern
Zaamin Mountains	
Relevance	juniper forests (3 species)
Criteria	ix and x (+ vii)
Values	good state
Threats	low
Protection	seems to meet OG requirements
Management	seems to meet OG requirements
Gissar Mountains	
Relevance	important biodiversity and threatened species (+ geological values)
Criteria	x (+ vii and viii)
Values	excellent (+ 1 IBA ⁴⁸)
Threats	very low (good integrity)

45 TM 006 (<http://datazone.birdlife.org/site/factsheet/turkmenbashy-bay-iba-turkmenistan>).

46 <https://rsis Ramsar.org/ris/1855>.

47 TM 045 (<http://datazone.birdlife.org/site/factsheet/repetek-iba-turkmenistan>).

48 UZ 042 (<http://datazone.birdlife.org/site/factsheet/gissar-state-nature-reserve-iba-uzbekistan>).

Protection	seems to meet OG requirements and is enforced properly
Management	seems to meet OG requirements and is implemented properly
Boysun region (mixed site)	
Relevance	historic and archaeological site; important landscapes
Criteria	ix (+ iv, v and vii)
Values	low concern
Threats	Low
Protection	some concern – no protected area
Management	some concern
Sarmishsay (mixed site)	
Relevance	petroglyphs, landscapes, rare animal and plant species
Criteria	ix (+ vi)
Values	low
Threats	high (no protected area)
Protection	some concern
Management	some concern

The information presented in Table 8 stem from various sources, including the results of the three consultation workshops, internet and literature sources.

4. Potential for nomination of World Heritage Sites

Chapter 4 seeks to evaluate the existing potential of areas and sites for nomination, identified in the literature, studies and inventories, of particular interest and/or importance for biodiversity.

4.1 IUCN World Heritage thematic studies

4.1.1 Regional overview for Central Asia

As mentioned above, the only detailed study on the subject was carried out in 2005, and it highlighted the under-representation of WH sites in the region and identified six potential priority natural sites for nomination (Table 9).

Table 9.

Sites suggested as priority natural sites in Central Asia (Source: Magin, 2005).

Country	Site name	Criteria		Observations
		ix	x	
Kazakhstan	Saryarka – Steppes and Lakes of Northern Kazakhstan	✓	✓	Inscribed in 2008 under criteria (ix) and (x)
	Extension of Golden Mountains of Altai		✓	Site originally inscribed in 1994 (Russian Federation) under criterion (x)
	Western Tien-Shan	To be verified by the State Party	✓	Inscribed in 2016 under criterion (x)
	Northern Tyan-Shan		✓	Inscribed in 2002 under (x) as “Northern Tyan-Shan – Ile Alatau State National Park”
Kyrgyzstan	Western Tien-Shan	To be verified by the State Party	✓	Inscribed in 2016 under criterion (x)
Tajikistan	Tigrovaya Balka	✓	✓	Included on TL under criteria (ix) and (x)
Turkmenistan	Badhyz	✓	✓	Included as “Badhyz” on TL under criteria (vii), (ix) and (x)
Uzbekistan	Western Tien-Shan	To be verified by the State Party	✓	Inscribed in 2016 under criterion (x)

Since the publication of the 2005 WH Thematic Study for Central Asia, the following developments have taken place:

- two sites identified in that study have been inscribed on the WH List:⁴⁹ Saryarka – Steppe and Lakes of Northern Kazakhstan (2008) and Western Tien-Shan, as a serial transnational site between Kazakhstan, Kyrgyzstan, and Uzbekistan (2016);
- one was already included on TL: Northern Tyan-Shan/Kazakhstan (2002);
- two more have been included more recently on TLs of the relevant countries: Tigrovaya Balka/Tajikistan (2006) and Badhyz/Turkmenistan (2009).

The extension of the Golden Mountains of Altai (Russian Federation) to key areas in Mongolia, China and Kazakhstan, also identified in the study, has also been supported several times by the WHC (Decision WHC CONF203 VIII.A.1; Decision WHC 36COM 7B.25).⁵⁰

A series of sites potentially meeting either criterion (ix) or (x) (Table 10) in addition to other criteria falling under ‘cultural’ classification, were also proposed in the 2005 study, as potential mixed sites. To date, none have been nominated, and only two are currently listed on TLs, though only under cultural criteria (Barrow and Issyk Kul), while one is under no specific criterion (Turkic Sanctuary of Merke).

Country	Site name	Criteria		Observations
		ix	x	
Kazakhstan	Barrow with stone ranges of the Tasmola culture		✓	Included on the TL in 2012 as part of the “Silk Road”, under criteria (ii), (iii), (iv), (v) and (vi)
	Cultural landscape of Ulytau		✓	
	Palaeolithic sites and geomorphology of Karatau mountain range	✓	✓	
	Turkic Sanctuary of Merke		✓	Included on the TL in 1998 (no specified criterion)
Kyrgyzstan	Burana minaret	✓		
	SuleymanToo	✓		
	Issyk Kul as a cultural and natural landscape	✓	✓	Submitted in 2004 and withdrawn, then included on the TL in 2010, as part of the “Silk Road sites”, Kyrgyzstan, under criteria (ii), (iii), (iv), (v) and (vi)

Table 10.

Sites suggested as mixed sites in Central Asia (Source: Magin 2005).

Several other sites were identified by various authors in the early 2000s for nomination under criteria (ix) and (x) (Table 11). Since then, two of these sites have been inscribed on the WH List (Saryarka – Steppes and Lakes of North Kazakhstan; Western Tien-Shan) and one is not currently included on the TLs (Ural and Volga River deltas).

49 In addition, Tajik National Park (Mountains of the Pamirs) was inscribed in 2013 under criteria (vii) and (viii).

50 http://whc.unesco.org/en/decisions/?id_decision=2740&; <https://whc.unesco.org/en/decisions/4674>.

According to Table 10 and in addition to the extension of the Golden Mountains of Altai into Kazakhstan (Katon-Karagai National Park), three sites may have the highest potential for nomination under the biodiversity criteria: Northern Tyan-Shan, Tigrovaya Balka and Badhyz.

Country	Site Name	Category		Biodiversity Criteria		Source							Comments
		N	M	ix	x	A	B	C	D	E	F	G	
Kazakhstan	Aksu-Zhabagly State Natural Reserve (Aksu-Djabagli)	✓		✓	✓	✓	✓		✓				Inscribed in 2016
	Northern Tyan-Shan (Ile-Alatau State National Nature Park)	✓		✓	✓				✓	✓		✓	
	Altyn-Emel State National Nature Park	✓		✓					✓				
	Saryarka – Steppes and Lakes of North Kazakhstan	✓		✓	✓	✓			✓			✓	Inscribed in 2008
	Extension of the Golden Mountains of Altai into Kazakhstan (Katon-Karagai NP)	✓						✓				✓	Site originally inscribed in 1994 under criterion (x)
	Central Tien-Shan	✓							✓				
	Ural and Volga River deltas	✓							✓				
	Barrows with stone ranges of the Tasmola culture		✓	✓	✓		✓						
	Cultural landscape of Ulytau			✓	✓		✓						
	Palaeolithic sites and geomorphology of Karatau Mountain range		✓	✓	✓		✓						
	Turkic Sanctuary of Merke		✓	✓	✓		✓						
	Western Tien Shan											✓	Serial transnational site inscribed in 2016 (Kazakhstan, Kyrgyzstan, Uzbekistan)
Kyrgyzstan	Sary Tchelek					✓			✓				
	Burana-Minarets		✓		✓		✓						
	Suleyman-Too		✓		✓		✓						
	Issyk-Kul		✓	✓	✓	✓		✓					Submitted in 2004 but subsequently withdrawn

Country	Site Name	Category		Biodiversity Criteria		Source							Comments
		N	M	ix	x	A	B	C	D	E	F	G	
Tajikistan	Tigrovaya Balka State Reserve					✓		✓	✓			✓	
	Tajik National Park (includes Pamir Alay region)	✓				✓		✓	✓	✓			Inscribed in 2013
Turkmenistan	Sunt-Khasardinsky Reserve (Sunt-Hasardag (Western Kopetdag)	✓				✓		✓	✓				
	Badkhyz	✓		✓	✓	✓		✓	✓		✓	✓	
	Kugitang ⁵⁰	✓				✓		✓	✓		✓		
	Kara-bojaz Gol	✓		✓				✓	✓		✓		
Uzbekistan	Chatkals Reserve (Tchatkalsky) (Tien-Shan)	✓				✓		✓	✓				Inscribed in 2016 as component of Western Tien-Shan
	Mountainous Gissar (Gissar X Zaravshan reserves)	✓				✓		✓	✓				
	Kitab	✓						✓					

Table 11.

Sites selected as potential natural and mixed sites in Central Asia (Source: adapted from Magin, 2005). Categories: N – natural; M – mixed; Sources: A – WWF 2005, B – UNESCO 2002; C – UNESCO 2004, D – Karpowicz and Reap, 2002; E – Thorsell and Hamilton, 2002; F – CNPPA, 1982; G – Magin, 2005.

4.1.2 Potential Priorities for recognition of desert landscapes and geomorphological sites on the World Heritage List

A study was conducted on this subject in 2011 (Goudie and Seely, 2011). Despite the significant presence of desert and xeric shrubland ecosystems in Central Asia, the overall analysis and the resulting priorities outlined in this report do not involve any of the five Central Asian countries.

As such, this report is only cited by way of reminder.

4.1.3 World Heritage, wilderness and large landscapes

According to the IUCN criteria on PAs,⁵² wilderness areas are PAs “that are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition”. The primary management objective of wilderness protected areas is to protect the long-term ecological integrity of natural areas that are undisturbed by significant human activity, free of modern infrastructure and where natural forces and processes predominate; thus, a wilderness may have potential for nomination under criteria (ix) and (x).

⁵¹ Also spelled *Köýtendag*.

⁵² <https://www.iucn.org/theme/protected-areas/about/protected-areas-categories/category-ib-wilderness-area>.

Large areas that retain high biodiversity and/or important natural processes, and which have a high degree of integrity and are properly protected and managed are becoming scarcer, given that natural habitats are increasingly fragmented and degraded globally. Identifying these areas may therefore facilitate identification and prioritisation of sites for nomination under either criterion (ix) or (x).

Initial analyses indicate that many areas of biodiversity interest, including PAs, suffer from a lack of integrity, with the possible exception of strict PAs (SNR) benefiting from a strong protection regime with proper law enforcement and management. However, preliminary scientific studies in Central Asia have identified large landscapes of interest for biodiversity, such as intact forest landscapes (Potapov, 2017), especially in Kazakhstan, being *a priori* unfragmented and with good integrity (Haddad, 2015), and not subjected to significant human pressure (Ibisch et al., 2016). Such observations could facilitate further work in the future⁵³ at national levels to identify new wilderness protected areas having potential for nomination under natural criteria, or expansion of existing sites, for example in the case of the Golden Mountains of Altai.

Figure 4.

Percentage of global-scale wilderness currently protected in natural and mixed World Heritage sites (NWHS), for each of the 14 biomes (Source: IUCN, 2017).⁵⁵

4.2 Other studies

Recent literature on the potential for nomination of new WH sites under biodiversity criteria in Central Asia is very scarce. Since the 2005 IUCN thematic study, only a few studies have addressed the subject.

The following paragraphs seek to summarise these findings, supplemented by various sources such as the grey literature, online documents and other publications from various sources.

4.2.1 Unique nature complexes of Central Asia

A list of natural complexes selected by experts of the region, in close cooperation with the relevant State Parties' administrations, was recommended in 2005 (WWF Russia, 2005;

⁵³ See also the work in progress under the CADJ project that in the near future may lead to the identification of sites having potential in desert ecosystems of Turkmenistan and possibly on the Ustyrt Plateau; both areas look to have good integrity and qualify as "wilderness" (Source: MSF).

⁵⁴ Desert and xeric shrublands, montane grasslands and savannas and temperate coniferous forests stand out as gaps.

⁵⁵ Desert and xeric shrublands, montane grasslands and savannas and temperate coniferous forests stand out as gaps.

Lysenko, 2007). Several of these complexes are currently represented on the WH List and all others are inscribed on TLs.

From this initial list, six natural complexes (Table 12) seem to offer possibilities for nomination of serial sites, many of which are transnational and/or transboundary. However, the Kugitang and Issyk-Kul sites might no longer be strong cases for nomination under biodiversity criteria, due to their low level of integrity (see below).

Country	Name of the complex	Total surface area (km ²)	Name of the protected areas included	Surface of protected areas (km ²)
Kyrgyzstan	Issyk-Kul basin	17,422	Issyk-Kul Lake (BZ of the Issyk-Kul Biosphere Reserve)	14,571
			Issyk-Kul State Strict Nature Reserve	198
			Sarychat-Ertashsky State Strict Nature Reserve	721
			Karakol Nature Park	383
			Malaya Ak-Suu State Forest Reserve	0,95
			Teploklyuchen State Nature Monument	321
			Tyup State Nature Monument	191
			Djeti-Oguz State Nature Monument	313
			Ken-Suu State Nature Monument	87
			Djargylchak State Nature Monument	231
			Barskoon Waterfall Geological State Nature Monument	
			Djetu-Oguz Cliff Geological State Nature Monument	
			Terskei Ala-Too, alpine and subalpine areas (Core zone of the Issyk-Kul Biosphere Reserve)	405
Tajikistan	Tigrovaya Balka	498	Tigrovaya Balka State Strict Nature Reserve	

Turkmenistan	Syunt-Hasardag	64	Syunt-Hasardag State Strict Nature Reserve	26
			Syunt-Hasardag State Nature Monument	38
	Badhyz	1,447	Badhyz State Strict Nature Reserve	877
			Pulikhatum State Nature Monument	150
			Kyzyl dzhar State Nature Monument	300
			Chemenabit State Nature Monument	120
	Kugitang	1,164	Kugitang State Strict Nature Reserve	271
			Karlyuk State Nature Monument	400
			Khodzhapil State Nature Monument	316
			Khodhaburdzhibelend State Nature Monument	617
Uzbekistan	Gorny Gissar	864	Gissar State Strict Nature Reserve	810
			Kitab State Strict Nature Reserve	54

Four complexes are already inscribed in TLs under biodiversity criteria, fully or partially:⁵⁶ Tigrovaya Balka, Syunt-Hasardag, Badhyz,⁵⁷ and Gissar.

All four complexes have been identified several times in the past as sites with potential for nomination under biodiversity criteria, three have also been identified as potential KBAs (Tigrovaya Balka, Badhyz and Gissar).⁵⁸ According to the consultations conducted during the development of this thematic study, all seem to have maintained significant value:

- Kugitang was previously identified as having potential for nomination (UNESCO, 2002; Karpowicz and Reap, 2002), but the area has not been prioritised by other authors more recently (Magin, 2005 among others) and human pressure on the area has been reported as high;⁵⁹ its level of integrity seems to be highly questionable as concluded by the WHC in 2016, when the site was nominated (Decision WHC 40 COM 8B.10);⁶⁰
- Issyk-Kul basin is also a controversial area; the basin contains a series of PAs and two potential KBAs; it is also partly covered by a BR and a Ramsar Site. However, the lake and its watershed are under substantial human pressure (Section 4.2.4) and they may very likely not meet the level of integrity required by the WH Convention. Furthermore, this site is currently inscribed on the TL of Kyrgyzstan under cultural criteria only (see Table 10).

Table 12.

Natural complexes prioritised as having potential for nomination under biodiversity criteria (Source: WWF Russia, 2005).

⁵⁶ Issyk-Kul is inscribed under cultural criteria (Silk Roads: Routes Network of the Chang'an-Tianshan Corridor).

⁵⁷ Also spelled "Badhkyz".

⁵⁸ <http://www.keybiodiversityareas.org/home>.

⁵⁹ <http://datazone.birdlife.org/site/factsheet/20586>.

⁶⁰ (http://whc.unesco.org/en/decisions/?id_decision=6789&).

4.2.2 Mountains of Central Asia biodiversity hotspot⁶¹

The mountains of Central Asia consist of two major ranges, the Pamir and the Tien-Shan ranges, which spread over 860,000 km², rising from sea level to over 7,700 m in altitude, and overlapping the five countries of the region, as well as northeastern Afghanistan and western China. The predominant vegetation types in this region are a mix of deserts and semi-deserts, arid and high steppes, mountain meadows, spruce, fruit and juniper forests, and freshwater wetlands.

A global overview of mountain PAs on the WH List was conducted by IUCN in 2002 (Thorsell and Hamilton, 2002).⁶² In that study, three areas emerged as having strong potential “*for consideration for nomination*” by the relevant State Parties in the region: Pamir National Park, Tajikistan, which was inscribed on the WH List in 2013; and Aksu-Djabagly SNR⁶³ and Ile-Alatau Nature Park,⁶⁴ Northern Tien-Shan, both included on the Kazakhstan TL in 2002.

A more recent survey outlined the KBAs in the biodiversity hotspot, focused on the priorities for strategic conservation investment potential (CEPF, 2017).

A series of 21 priority sites were selected: four priority sites already inscribed on the WH List as components of the Western Tien-Shan WH property (Bayanbulak and Kaidu River valleys, Tianshan Tien Chi Lake, Aksu Zhabagly, Aflatun Padyshata and Akbulak River basin), and one was deferred by the WHC (Koytendag) (Decision WHC 40 COM 8B10).⁶⁵

An additional 17 sites may, in principal, have potential for nomination under either criterion, alone or in sets of components that may make up one or several comprehensive serial sites, transboundary or not (Table 13).

According to this survey, the sites prioritised include 129 potential Key Biodiversity Areas (KBA) that are still under assessment (Section 4.3.4), of which 62 areas only overlap with PAs. Most KBAs are outside PAs and thus do not currently meet the WH requirements for nomination. State Parties are encouraged to consider designating more KBAs as PAs, thus making the national OA networks more representative and future WH sites eligible for nomination.

This finding leads to the conclusion that in some cases, it may be necessary to set up new PAs to enable successful nominations for high value areas that are not yet protected, and conversely, that potential for WH nomination should encourage the State Parties to set up new PAs.

Those potential KBAs host a number of species listed as threatened, with 32 priority species considered in the study (Table 14). However, they are relatively small compared to other KBAs in the mountain ecosystem and they are also not among the areas having the highest potential for trigger species (Annexes 6 and 7).

61 https://arquivo.pt/wayback/20091012194139/http://www.biodiversityhotspots.org/xp/Hotspots/central_asia/Pages/default.aspx.

62 <https://portals.iucn.org/library/node/8108>.

63 Described in the report as containing “14 of 16 habitats found in the Tien Shan mountains, an exceptional biodiversity (72 wild relatives of cultivated plants) and extensive forests, and paleontological values with more than 2000 petroglyphs”.

64 Described in the report as containing “dramatic vegetation gradients within 4,000 m of relief, blend of vegetation types from 2 floristic regions and extensive ice age relic forests”.

65 http://whc.unesco.org/en/decisions/?id_decision=6789&.

Country	KBA* Code and Name
Kazakhstan	12 – Aksay 13 – Almaty Nature Reserve 16 – Kolsai 18 – Narynkol
Kyrgyzstan	4 – Kassan-Sai 10 – Chychkan 20 – Isfairam Shakhimardan 23 – Alai-Kuu
Tajikistan	21 – Baljuvan 23 – Dashtijum 24 – Darvaz 29 – Shakh dara 31 – Ishkashim
Turkmenistan	2 – Tallymerjen
Uzbekistan	6 – Karabau and Dukentsay River Basins 24 – Nuratau Ridge 30 – Talimarjan Reservoir

* still under assessment.

Given the focus on investment priority, the identified sites may not reflect all areas having the highest values for biodiversity in the mountain ecosystem, though, according to the authors, they have been selected “*in view to favour existing WH and candidate sites*”.⁶⁶ Therefore, although not directly identifying sites with potential for nomination, this prioritisation work may facilitate the selection of sites for future nomination, especially under criterion (x),⁶⁷ having in mind that several prioritised areas are either artificial and used for irrigation (e.g. Talimarjan Reservoir), or not yet protected.

Furthermore, other larger mountainous areas not selected in this survey may also be potentially eligible for WH nomination. They should be identified in the future, though this will require intensive additional field work, far beyond the scope and mandate of this desk study.

Country	Number of KBAs	Number of KBAs overlapping with PAs
Kazakhstan	23	17
Kyrgyzstan	32	18
Tajikistan	35	13
Turkmenistan	3	2
Uzbekistan	36	12
TOTAL	129	62

The study also outlines five priority landscapes, covering 25 ecological corridors of biodiversity value, of which 21 are located within the region and two overlap with existing WH properties (Western Tien-Shan and Pamir Alai and Wakhan Mountains). The three other landscapes (Turkestan and Alai Mountains; Khan-Tengri and Tomur Mountains; Dzungaria), include five, four and four potential KBAs, respectively (Table 15).

Several of these very large areas connect with high value areas for biodiversity in Afghanistan and China, but seem to be under significant pressure from agriculture,

Table 13.

Priority sites for CEPF investment not inscribed in the WH List (Source: CEPF, 2017).

Table 14.

Potential KBAs in the Mountains of Central Asia Hotspot (Source: adapted from CEPF, 2017).

⁶⁶ Although it is not specified on the basis of which criteria and assets they have been selected (op. cit., p. 118).

⁶⁷ For further details, refer directly to CEPF (2017).

forestry, mining and energy activities. As such, their integrity may be questionable and those areas may not fulfil the OG requirements. It was unfortunately not feasible to assess those contexts in greater detail, and this should be done in the future, on a case by case basis at a smaller scale. It is important to note that although some of these areas may lack the integrity to be listed independently on the WH List, they could likely form part of connectivity corridors and buffer zones in the case of future nomination.

Countries	Name	Area (km ²)	No. of potential KBAs
Kyrgyzstan, Tajikistan, Uzbekistan	Turkestan and Alai Mountains	24,300	5
Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan	Western Tien-Shan*	35,300	22
Kyrgyzstan, Tajikistan (+ Afghanistan and China)	Pamir-Alai and Wakhan Mountains*	123,500	10
Kazakhstan, Kyrgyzstan (+ China)	Khan-Tengri and Tomur Mountains	24,900	4
Kazakhstan (+ China)	Dzungaria	29,500	4

* The eco-corridors and selected landscapes overlapping with WH properties.

Table 15.

Eco-corridor and selected landscapes characteristics for CEPF investments in the Mountains of Central Asia Hotspot (Source: CEPF, 2017).

To summarize, the priorities defined in this study can only indirectly contribute to identifying new sites for nomination, whereas the landscapes and ecological corridors selected may mostly facilitate the delimitation of site BZs, especially when nominated under criterion (ix).

4.2.3 Conservation potential in cold winter deserts

The results from an IUCN/SSC database review carried out by IUCN in 2004 recommended Central Asian deserts as having potential for WH nomination (IUCN, 2004). However, little work was done on the subject to confirm the potential OUV of these types of ecosystems in Central Asia, until the additional assessment in 2017 (Schmidt, 2017). The results from these studies are considered below.

The majority of deserts in Central Asia spread over the lowlands of Kazakhstan, Turkmenistan and Uzbekistan. Those deserts are part of the Turanian biogeographic province of the Palearctic realm and belong to the global ecoregion “*Central Asian deserts*”, which is one of the Global 200 priority Ecoregions (Olson and Dinerstein, 2002; Olson et al., 2004; Dinerstein, 2017).

The following desert landscapes can be distinguished in Central Asia:⁶⁸

- Karakum desert (Turkmenistan);
- Kyzylkum and Sundukli deserts (Uzbekistan);
- Betpak-Dala and Muyunkum deserts, Balhaskash region and Ustyurt Plateau (Kazakhstan, Turkmenistan and Uzbekistan).

These “*cold winter deserts*”⁶⁹ are among the most characteristic deserts in the region. They extend from the Caspian Sea to southern Mongolia, and from the foot of the

⁶⁸ See also the desert typology set up by the CADI (<http://cadi.uni-greifswald.de/en/temperate-deserts/desert-types/>).

⁶⁹ Cold winter deserts (also referred to as temperate/nemoral deserts) are geographically defined in different ways. The most prominent definition is likely the climate classification after Köppen & Geiger, 1961; Udvardy, 1975 gives a broader definition, including more physiographic features, which is the reference for the classification of UNESCO WH Sites (see also Rachkovskaya, 2003; Schröder, 1998; Schultz, 2005; Shmida et al., 1985; Walter, 1968).

Tibetan highlands to the steppes of Kazakhstan. They host a large diversity of species and are characterised by high endemism, though their vegetation is significantly sparser than other forms of temperate deserts.⁷⁰ Despite their importance, cold winter deserts are under-represented in the regional and global network of PAs and on the WH List. When benefiting from a relevant protection status, the few existing PAs may be either too small, too fragmented, or not be managed properly, which may hinder site nomination. In addition, several areas may be under significant pressure from extractive industries, among other human disturbances, which may make site integrity questionable.

The 2017 assessment mentioned above characterised eight “*priority regions*” in terms of habitat diversity (Map 4; Table 16), overlapping at least three different desert types. These also partly overlap with PAs and other areas of biodiversity values, including IBAs and important routes for migratory birds listed under the CMS and AEWA, as well as for other important mammal species, like saiga and kulan.

These priority regions can facilitate further identification of sites having potential for nomination; according to the assessment, “*no desert patch alone would fulfil either criterion (ix) and/or (x)*” (Finc, 2017).⁷¹ This suggests therefore that serial and/or transnational or transboundary sites, combining PAs containing mixed ecosystems, as well as wetlands and oases from two or more countries, might best qualify for nomination under either criterion.

On this basis, at least three PAs may contribute to creating sites having such high potential. If large enough, they may meet the conditions of integrity and have proper management: Ustyurt SNR (Kazakhstan), Altyn Emel NP (Kazakhstan) and Kaplankyr SNR (Turkmenistan).

N° on the Map	Name of the region	Country				
		Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
1	Western Ustyurt/Mangyshlak	✓				
2	Northern Ustyurt	✓				✓
3	Southern Ustyurt	✓			✓	✓
4	Little Lake Aral/Aralkum Desert/Akpekti	✓				
5	Central Kyzylkum					✓
6	Central Karakum				✓	
7	Southern Betpak – Dala/Muynkum Desert	✓				
8	Balkhash	✓				

Table 16.

Priority desert regions identified previously (Source: Schmidt, 2017).

⁷⁰ For future nomination, it will be useful and even necessary to compare this level of endemism in cold deserts to that of other large deserts worldwide in further detail.

⁷¹ Section 5.7, p. 30.

Figure 5.

Priority regions in terms of habitat diversity overlapping at least three different desert types within a reasonable sized territory © Michael Succow Foundation (figure modified from Schmidt, 2017).

Based on these findings, this report concludes there are two main options:

- *a serial transboundary nomination of Middle Asian cold winter desert:* Bereketli Garagum SNR (870 km², Turkmenistan) and the Repetek SBR (346 km², Turkmenistan), both located in the southeastern Karakum Desert, when considered together contain high potential for nomination.⁷² The entire area is very remote, overlaps with the only desert currently on the TL of Turkmenistan, and is a good representation of the largest Middle East Asian desert where environmental processes, combined with their size and intactness, are still functioning naturally, which suggests the potential for nomination at least under criterion (ix). Besides its biological interest and value, this area is pristine and sparsely populated. There also appears to be a strong public interest for its proper management.⁷³ A serial and transboundary site should be evaluated, centred around those two protected areas, encompassing also the central part of the Kyzylkum Desert (Uzbekistan and Kazakhstan), if extractive industries are not a potential threat.
- *a complex of areas representative of the desert biodiversity on the southern Ustyurt Plateau:* the Ustyurt Plateau lies in Uzbekistan and Kazakhstan, on roughly 200,000 km² between the Aral Sea and the Amu Darya River delta in the east, and the Mangyshlak Plateau and the Kara-Bogaz-Gol in the west. This large area consists primarily of stony desert with rich specific flora species⁷⁴ and where many endemic fauna species (e.g.,

⁷² Repetek is one of the few places in the Karakum Desert where desert forest with black saxaul (*Haloxylon aphyllum*) have been preserved in the valley shaped depressions (Source: MAB website, 05/02/2019).

⁷³ Source: Michael Succow Foundation pers. comm.

⁷⁴ Rachkovskaya, 1995.

genera *Diplomesodon*, *Spermophilopsis*, *Pyderethmus*, *Allactodipus*, *Eremodipus*, etc.) and the saiga thrive; thus, it may be eligible under criterion (x). Poaching, lack of environmental knowledge, and private-sector development have, however, been identified among the main threats affecting the whole area and they might have significant effects on its integrity, which required detailed investigation. The site would be transboundary or serial transnational and would cover the Ustyurt Nature Reserve (2,233 km²) in Kazakhstan and other areas to be determined in Uzbekistan and Turkmenistan.

4.2.4 Wetlands

More than 12,000 rivers and 10,000 lakes have been identified (Rustamov, 2018) that may offer — at least in theory — the potential for nomination. However, no comprehensive studies on the value of wetlands of the region have been carried out to date, and no regional/national wetland inventory is available, while literature containing information and data on wetlands is rare.

It is likely that some wetlands, particularly in the eastern part of the Caspian Sea Basin, may offer opportunities for site nomination; several lakes are listed on IBAs and KBAs and several areas have also been designated as Ramsar sites.

The two largest natural lakes in the region, Lake Balkhash and Issyk-Kul Lake, are already inscribed on the TLs of Kazakhstan and Kyrgyzstan respectively, though under cultural criteria:

- following the desiccation of the Aral Sea, Lake Balkhash has become the largest lake of Central Asia with an area of 17,000 km² (Bragin, 2010); the Ily Delta, covering around 8,000 km², through which 70-80% of the lake inflow passes annually, is the largest natural delta and wetland complex of Central Asia. This complex is therefore of crucial regional significance for biodiversity (Imentai et al., 2015). It is likely one of the most important wetlands in the region and it overlaps with one IBA.⁷⁵ The overall value and interest of the area for biodiversity were also recognised in 2012 when the *Ily River Delta and South Lake Balkhash were designated as a Ramsar Site. However, the lake and its tributary river valleys support three million people spread throughout the area (Dostaj, 2006 in Jungius, 2010) and this complex of wetlands and tugai forest is used for irrigated agriculture, municipalities, and industry. The entire area, with the exception of the southern lake shore, is occupied by small villages and family farms. A new PA was established there in July 2018 (4,150 km²), with a corridor of ten thousand km² that is important for connectivity.⁷⁶ An assessment of the integrity of the whole area is first needed, before any nomination;*
- Issyk-Kul Lake is a natural water body in a region famous for its natural resources; this lake has long been known as an area having potential for international recognition. A UNESCO BR was established in 2001 and the lake and the adjacent nature reserve were designated as a Ramsar site in 2002. The fauna is characterised by high species diversity and wide distribution over different landscapes. The site was nominated in the early 2000s under biodiversity criteria, and preparatory assistance for its inscription on the WH List was provided by UNESCO in 2003. However, the State Party was invited to reformulate its proposal as a cultural landscape nomination. The site was nominated in 2004 but this nomination was then withdrawn (Decision WHC 29 COM 8B.3).⁷⁷ Bordered by several small towns and villages, the area is an important tourism destination, especially on the north shore, where many

75 KZ 092 (<http://datazone.birdlife.org/site/factsheet/ili-river-delta-iba-kazakhstan>).

76 Balkhash Lake Strict Nature Reserve (WDPA/PID 14231).

77 https://whc.unesco.org/en/decisions/?id_decision=465&

facilities and tourism infrastructure are located. Although the south shore has higher naturalness, it is also under strong human pressures and its ecological integrity may be deemed rather low. Thus, this area should not be prioritised for future nomination under natural criteria.

For sites to be nominated based on the values of wetlands alone, if there are any in the whole region, they still need to be clearly identified and delineated. As such, further field work is required in order to achieve this. For example, Zorkul Lake as part of the Zorkul SNR (Tajikistan), could have also been a candidate for nomination, but the management of this wetland first needs to be significantly improved. It can be expected in the context of natural complexes associating wetlands to several other types of ecosystems, forest and deserts, that sites overlapping wetlands may be identified in the future as having such potential.

The WH property Sayarka — Steppes and Lakes of Northern Kazakhstan, inscribed on the WH List in 2008, already includes wetlands of international importance and associated natural habitats. After consultation with experts and specialists, its extension may offer an excellent opportunity and should be prioritised (see Table 8).

Thus, in general, experts agree that Central Asia contains a high degree of biodiversity and is of great interest from the point of view of natural heritage. However, the potential OUV of this region is often yet to be reflected in the literature. This may be due to difficulties in accessing and generating the relevant data and literature, but certainly does not stem from a lack of environmental interest and natural values of the region.

Given the overall lack of relevant literature, this desk review is not sufficient to compile a comprehensive and well-considered list of priority sites. The following recommendations should therefore be considered carefully, as this is only a step in the comprehensive and complex process of prioritisation of sites having high potential for nomination under criteria (ix) and/or (x).

The next step for the State Parties, in close cooperation with all local stakeholders including scientific universities and organisations, with external support from IUCN as an advisory body for WH and other expert organisations, should be to assess the current situation of each site on the ground, and determine whether they can adequately meet all WH requirements, in terms of value, protection and management.

4.3 Prioritisation tools

A number of tools exist to facilitate and guide the process of prioritising sites for potential nomination. These tools include, but are not limited to, existing PAs and biodiversity related designations. Such areas have been delimited according to rigorous criteria that, although they may not always meet the standards for WH listing, could provide indications as to whether a site offers potential for nomination. These tools are presented below in this regard.

The following analysis is mainly based on the framework used by UNEP-WCMC during the IUCN WH evaluation process, for the comparative analysis of sites nominated under biodiversity criteria (IUCN 2014a). It covers only those prioritisation tools/systems that are relevant for Central Asia – and giving results for the study area.⁷⁸

⁷⁸ No “Alliance for Zero Extinction (AZE) site” (<http://zeroextinction.org/site-identification/2018-global-aze-map/>) and “Centre of Plant Diversity” in Central Asia (<http://www.biodiversitya-z.org/content/centres-of-plant-diversity-cpd>) are currently identified.

4.3.1 Global 200 Priority Ecoregions

In 2002, WWF scientists identified 238 “Global 200 Priority Ecoregions”, including 142 terrestrial and 53 freshwater regions (Olson and Dinerstein, 2002). Situated entirely in the Palearctic biome, the Central Asian region encompasses four of the Global 200 Priority Ecoregions, in whole or in part (Table 17 and Map 5). Among them, the “*Central Asian Deserts*” ecoregion appears to be the only ecoregion that is not currently represented on the WH List.

Table 17.

Natural WH sites currently listed in the four Global 200 Priority Ecoregions overlapping Central Asia (Source: adapted from WWF, 2012).

Number	Priority Ecoregions	WH sites
78	Caucasus Anatolian Hyrcanian Forests ⁷⁷	Western Caucasus
79	Altai Sayan Montane Forests	Golden Mountains of Altai Lake Baikal Uvs Nuur Basin
111	Middle Asian Montane Steppe and Woodlands	Xinjiang Tianshan Western Tien-Shan Tajik NP
134	Central Asian Deserts	-

Figure 6.

The four terrestrial Global 200 Priority Ecoregions overlapping Central Asia © Michael Succow Foundation (figure modified from Olson et al., 2002).

⁷⁹ This ecoregion is only marginally overlapping Central Asia. The “*Hyrcanian Forests*” site was nominated by Iran in 2018 and the WH Committee decision will be taken in 2019. Another site named “*Colchis rainforests and wetlands*” was nominated in that ecoregion by Georgia in 2019; the decision of the WH Committee will be taken in 2020.

4.3.2 Biodiversity hotspots

The “*biodiversity hotspot*” concept emerged from scientific literature in the late 1980s, and is still current, aiming to identify and select biogeographic regions with significant levels of biodiversity that are threatened by human activity (Myers, 1988; Myers et al., 2000).⁸⁰ To qualify as a biodiversity hotspot, an area must meet two strict criteria: contain at least 1,500 endemic species of vascular plants found nowhere else on Earth, and have lost at least 70% of its primary native vegetation.

Worldwide, 36 areas qualify currently as hotspots; they cover 2.3% of the Earth’s land surface and support more than 50% of the world’s endemic species of plants, and nearly 43% of bird, mammal, reptile and amphibian species.

Figure 7.

Biodiversity hotspots in Central Asia © Michael Succow Foundation (figure modified from Hoffman et al., 2016).

Hotspots cover very large areas, much larger than WH sites, and as such they can be useful indicative areas which may contain a number of sites with potential for nomination.

The Mountains of Central Asia analysed above in detail (section 4.2.2), are one of the currently recognised biodiversity hotspots known to provide crucial ecosystem services for humanity (Map 6).

Those mountains – together with the *Irano-Anatolian* hotspot covering the Kopetdag range in southern Turkmenistan, shared with Iran and extending far outside the region – are crucial to the maintenance of wild and domesticated biodiversity in Central Asia. They host a wide range of endemic species and natural habitats, including 5,000 to 6,000 vascular plants, 1,500 of which are endemic to the region. The fauna is also impressive,

⁸⁰ <https://doi.org/10.1007/BZ02240252> <https://link.springer.com/article/10.1007%2FBZ02240252#citeas>: <https://www.conservation.org/How/Pages/Hotspots.aspx>.

consisting of many species of mammals, birds and reptiles, including several endemic⁸¹ and/or iconic and threatened species, like the snow leopard.

The Irano-Anatolian hotspot is not represented in the WH List, unlike the Mountains of Central Asia hotspot, which is already represented by two WH properties, Western Tien-Shan and Tajik NP.

4.3.3 Important Bird Areas

IBAs⁸² are priority sites for bird conservation because they regularly hold significant populations of one or more globally or regionally threatened, endemic or “congregatory” bird species, or highly representative bird assemblages (Annex 4).

The threshold for IBA designation, however, is much lower than for WH, though the presence of an IBA may contribute in qualifying a site for nomination, especially under criterion (x).

In Central Asia, 258 IBAs have been defined, covering 227,000 km² (Table 18 and Map 7), and these areas host a minimum of 102 globally threatened species of birds.

Of those IBAs, 217 meet either criteria A1 (Globally threatened species),⁸³ A2 (Restricted-range species)⁸⁴ and/or A3 (Biome-restricted species)⁸⁵ of the IBA standard. More than half of these are located in Kazakhstan.

Country	Important Bird Areas	Total surface (km ²)	No. of IBAs meeting criteria A1, A2 and/or A3	No. of globally threatened species of birds
Kazakhstan	127	154,146	118	27
Kyrgyzstan	11	1,880	8	17
Tajikistan	18	11,832	18	16
Turkmenistan	50	34,602	44	21
Uzbekistan	52	24,628	49	21
TOTAL	258	227,088	217	102

The results presented in Table 18 give an overview of each country’s ecological value, and for the whole of Central Asia, from the perspective of bird species diversity. It also provides an overall idea of the level of endemism, both at the country and biome levels.⁸⁶

It may also be observed that several sites included currently in the TLs overlap with at least one IBA (Altyn Emel; Issyk Kul; Tigrovaya Balka; Zorkul; Amudarya; Badhyz; Koytendag; Hazar and Repetek).

Table 18.

IBAs in Central Asia
(Source: Birdlife International IBA’s website, 05/04/2019).

⁸¹ Menzbier’s marmot, Ili pika, etc.

⁸² <http://datazone.birdlife.org/home>.

⁸³ The site is known or thought regularly to hold a significant amount of a globally threatened species.

⁸⁴ The site is known or thought to hold a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).

⁸⁵ The site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome.

⁸⁶ For more detail, see for Kazakhstan (Sklyarenko et al., 2008; <http://datazone.birdlife.org/country/kazakhstan>); Kyrgyzstan (<http://datazone.birdlife.org/country/kyrgyzstan>); Tajikistan (<http://www.birdlife.org/datazone/country/tajikistan>); Turkmenistan (Rustamov et al., 2008; <http://datazone.birdlife.org/country/turkmenistan>) and Uzbekistan (Ten et al., 2012; <http://datazone.birdlife.org/country/uzbekistan>).

Figure 8.

Important Bird Areas in Central Asia © Michael Succow Foundation (figure modified from BirdLife International, 2019).

4.3.4 Key Biodiversity Areas

As is the case for IBAs, KBAs may help in qualifying a site for nomination under natural criteria.

KBAs⁸⁷ are areas contributing significantly to the global persistence of biodiversity. They are identified using a set of criteria and thresholds applicable to plants, animals and ecosystems, responding to the WH Convention obligations and to the OG requirements under both biodiversity criteria.⁸⁸

More than 250 KBAs are currently listed in the whole region, and many are also listed as IBAs.

Many areas having potential for KBAs have been also recently identified in the Mountains of Central Asia hotspot (See section 4.2.2) (Annex 5); they are situated in Kazakhstan (23), Kyrgyzstan (32), Tajikistan (35), Turkmenistan (3) and Uzbekistan (36) (CEPF, 2017) (Map 8). However, only some are protected.⁸⁹

The KBAs regional inventory is unfortunately far from exhaustive; many areas important for biodiversity, especially in desert and mountain ecosystems, are not yet listed or are still under assessment. Therefore, it is difficult to refer to this inventory to directly identify sites having potential for nomination.

⁸⁷ <http://www.keybiodiversityareas.org/home>.

⁸⁸ <https://portals.iucn.org/library/sites/library/files/documents/2016-048.pdf>.

⁸⁹ Further details can be found directly in the literature source (<https://www.cepf.net/sites/default/files/mountains-central-asia-ecosystem-profile-eng.pdf>).

Figure 9.

Key Biodiversity Areas in Central Asia © Michael Succow Foundation (figure modified from keybiodiversityareas.org, Accessed October 2018).

4.3.5 The most irreplaceable protected areas for mammal, bird and amphibian conservation

In 2013, researchers assessed the irreplaceability of each of the world's designated and proposed PAs for the conservation of vertebrate species, encompassing all amphibians, non-marine mammals, and birds (Le Saout et al., 2013). "*Protected area irreplaceability*" was defined as an aggregated measure of the degree of dependence of species on the PA, so that the irreplaceability scores reflect both the number of species in the PA and the degree to which the species present depend on the PA.

The study concluded on an agreement between the most irreplaceable PAs worldwide and those WH properties inscribed under criterion (x), and therefore argued that the irreplaceability scores could be used to identify potential candidate sites for the WH List.

According to this study, no PAs in Central Asia were included among the 100 most irreplaceable protected areas worldwide (IUCN, 2013). However, the detailed data for the five countries of the region shows that five PAs from Central Asia are within the top 1,000 PAs, with regard to one or more irreplaceability scores (Table 19).

Country	Name	PA category	Surface (km ²)	Irreplaceability highlights	Observations
Kazakhstan	Aksu-Dzhabagly	State Nature Reserve	750	Among top 1,000 PAs for mammals, threatened mammals and all threatened species	Key species: Menzbier's marmot (<i>Marmota menzbieri</i>)
	Lepsinskiy	Zakaznik	2,580	Among top 1,000 PAs for threatened amphibians	Key species: Semirechensk salamander (<i>Ranodon sibiricus</i>)
	Verkhnekoksyiskiy	Zakaznik	2,400	Among top 1,000 PAs for threatened amphibians and all threatened species	Key species: Semirechensk salamander (<i>Ranodon sibiricus</i>)
Kyrgyzstan	Manass	Wildlife Refuge	150	Among top 1,000 PAs for threatened mammals	Key species: Menzbier's marmot (<i>Marmota menzbieri</i>); Transborder with: Chandalash and Besh Aral (KG); Ugam Chatkal and Chatkalskiy (UZ) and Western Tien-Shan (KZ and UZ)
Tajikistan	-	-	-	-	-
Turkmenistan	-	-	-	-	-
Uzbekistan	Ugam Chatkal	National Park	11,492	Among top 1,000 PAs for mammals, threatened mammals and all threatened species	Key species: Menzbier's marmot (<i>Marmota menzbieri</i>); Transborder with: Chandalash, Besh Aral and Manass (KG); Chatkalskiy (UZ) and Western Tien-Shan (KZ and KG)

Table 19.

Most irreplaceable protected areas in Central Asia (Source: <http://irreplaceability.cefe.cnrs.fr/index.htm>, 02/04/2019).

These data suggest the possibility of considering Manass and Ugam Chatkal for potential extension of the Western Tien-Shan WH property in Kyrgyzstan and Uzbekistan. They also lend some support to nominate Aksu-Dzhabagly, inscribed on the TL of Kazakhstan. However, the two other PAs (Lepsinskiy and Verkhnekoksyiskiy) have not previously been identified in the literature as very important sites; their potential needs to be assessed further.

This methodology is considered in the IUCN guidance on comparative analysis for WH nominations under biodiversity criteria (IUCN, 2014a) but the results of this analysis should be considered with caution due to a number of factors:

- the limited number of taxonomic groups considered;
- the incomplete (especially in Central Asia) and, by now, outdated PA and species information used for the study;
- the fact that the irreplaceability of each PA is largely triggered by a single species;
- the reference only to existing PAs, excluding areas of high biodiversity not yet protected;
- the difficulty of using this methodology for nomination of serial sites, overlapping with several PAs.

5. Identification of priority sites for nomination

5.1 Prioritisation procedure

The recommendations that follow likely do not include all sites in the study area having a strong potential for nomination under biodiversity criteria. They reflect a certain level of knowledge that is tentative and should be strengthened in the future to ensure that the selected sites have the highest potential for nomination.

Due to language barriers, all available scientific and technical information have not been considered, though this would have been desirable. Many difficulties also arose during the study because the databases and other sources available on protected areas and sites of significant biological interest in the region are rarely up to date.

However, the sites recommended have appeared repeatedly during the study - as seen in the previous chapters - and over time, whether through the analysis of the literature, or in the discussions with the experts and specialists of the region during the three workshops and throughout the entire consultation process (Table 9). They have been prioritised based on their value, level of integrity, exposure to potential threats, legal regime of protection and effective adequate management, by cross-referencing the available information and data detailed above.

Several sites recommended are serial and/or transboundary. In all cases, the extent of the sites, their component parts and boundaries will need to be more precisely ascertained.

Sufficient attention should be given to the comparative analysis that is required to characterise the OUV of each site nominated; by experience, the quality of these comparative analyses is very often unsatisfactory. There is no unique model for drawing comparisons with properties expressing potentially the same values as the site nominated. State Parties should use the most relevant local information they have and, ideally, design and analyse that best support their justification for nomination. Their first task after defining the combination of potential OUV and related features and attributes, is to ascertain whether this combination of values, features and attributes is already represented on the WH List.

Comprehensive guidance is available in the WH Resource Manual “*Preparing World Heritage Nominations*” (IUCN, 2011)⁹⁰ and, for further detail, in the IUCN/UNEP “*Comparative Analysis Methodology for World Heritage nominations under biodiversity criteria*” report (IUCN 2014a).

In summary, the following recommendations should be seen only as an initial assessment and they should be interpreted as a starting point for further analysis.

90 pp. 62-73 and 114.

Figure 10.

Priority sites for World Heritage nomination in Central Asia © Michael Succow Foundation.

5.2 Potential candidate sites recommended

Hereafter, nine priority sites are recommended as having strong potential for nomination under biodiversity criteria (ix) and/or (x) (Table 20; Map 9), in some cases in combination with other natural criteria, (vii) and (viii):

- three sites already inscribed in the WH List that may be extended;
- four sites currently included on TLs;
- two sites not currently included on TLs, one combining other areas recommended for nomination.

Those priorities are not binding for the five States concerned; they should only be viewed as suggestions based on expert opinion built only upon this desk review, to ensure that the outstanding natural heritage of Central Asia will be better represented in the future at the global level, on the WH List.

Site	Country					Year of inscription/ inclusion		Criteria		Observations
	KZ	KG	TJ	TM	UZ	WH List	TL	ix	x	
Extension of existing sites										
Golden Mountains of Altai	✓					2006			✓	inscribed in the Russian Federation
Saryarka – Steppe and Lakes of Northern Kazakhstan	✓					2008		✓	✓	
Western Tien-Shan	✓	✓			✓	2016			✓	potentially for (ix)
Nomination of new sites										
Tigrovaya Balka			✓				2006	✓	✓	potentially for (vii)
Badhyz and Kopetdag Mountains				✓			2009	✓	✓	
Northern Tien-Shan	✓						2002	✓	✓	
Repetek State Biosphere Reserve	✓			✓	✓		2009	✓	✓	included only on the TL of Turkmenistan
Southern Ustyurt Plateau	✓				✓			✓		potentially for (vii), (viii) and (x)
Cold Winter Deserts of Central Asia	✓			✓	✓			✓		potentially for (vii), (viii) and (x)

5.2.1 Extension of sites inscribed on the World Heritage List

Table 20.

Sites prioritised for nomination under criteria (ix) and (x).

5.2.1.1 Golden Mountains of Altai

The existing WH site is located entirely in Russia and was inscribed on the WH List in 1998, under criterion (x).⁹¹ Its extension is recommended to include the Katon Karagay NP in Kazakhstan.

Description

Katon-Karagay NP is located on the eastern edge of the country, in the Southern Altai Mountains. It is the largest national park in Kazakhstan (6,435 km²), sharing a 106 km of border with the Russian Federation along the existing Golden Mountains of Altai site. The inclusion of this PA will enlarge the overall inscribed area and contribute to maintaining and enhancing the integrity of the whole area.

⁹¹ Which overlaps the Altaisky Zapovednik and a BZ around Lake Teletskoye, Katunsky Zapovednik and a BZ around Mount Belukha, and the Ukok Quiet Zone on the Ukok Plateau.

The State Parties of Kazakhstan and the Russian Federation have officially approved a transboundary UNESCO BR “*Great Altai*”, which includes Katunsky State Nature Reserve, a component of the existing property, and Katon Karagai BR (Map 9) which overlaps with Katon-Karagay NP. This reserve was accepted in 2017 by the Man and Biosphere International Coordinating Council (MAB ICC).

Justification of Outstanding Universal Value

Katon Karagay NP has the same environmental and ecological features as the current WH property.

Criterion (x): inclusion of this PA bordering the current property will strengthen conservation and management of Altai biodiversity; the new transboundary property will enable the expansion of threatened species and their critical habitat areas. It will also consolidate the state of conservation of many rare and endemic fauna species, large ungulates (argali sheep, ibex) and felids, including the globally vulnerable snow leopard; all species having high value for science and conservation.

Integrity

Its integrity is deemed satisfactory; farming and tourism are the main socio-economic activities.

The current WH property, however, is under human pressure; a project has been planned to build a gas pipeline not been yet routed but which may cross the Ukok Plateau in the future, part of the property. This project represents an ascertained danger to the whole site's OUV and therefore a concern to be noted for its inscription on the List of WH in Danger. A licence has also been granted for gold mining on the same plateau, in close proximity to Lake Teletskoye. Planned and ongoing tourism infrastructure development within the property may also become a concern in the future (Decision WHC 42 COM 7B.75).⁹²

Additionally, two other sites (outside of the geographic scope of Central Asia) were identified in the Altai Mountain range, for other potential transboundary extensions of the WH property:

- Highlands of Mongol Altai (Mongolia), included on TL in 2014, under criterion (vii), (viii), (ix) and (x);
- China Altay (China), included on TL in 2010, under criteria (vii), (viii) and (ix).

Those two additional options should be discussed further, between all relevant countries.

Comparison with other similar areas

The IUCN evaluation report carried out upon the site's nomination (IUCN, 1998)⁹³ concluded that “*the Altai mountains do not rank as highly as the Caucasus, the Pamirs, the Tien Shan and the Alps. In many respects, they have many significant features and, specifically, have global significance as a centre of plant diversity and as a key location of extensive, undisturbed glaciers of global importance for assessing the impact of global warming on mountain ecosystems. The nominated area also enhances the conservation of globally endangered species such as the Snow Leopard and combine in a relatively small area a high diversity of landscapes features. Finally, there are no existing World*

92 https://whc.unesco.org/en/decisions/?id_decision=7304&

93 <https://whc.unesco.org/en/list/768/documents/>.

Heritage sites in this particular biogeographic province ... WWF's Global 200 programme also identifies the Altai-Sayan mountain ecoregion as a priority area for conservation".

The site has the same features and characteristics as the existing property, but it would not have an OUV and meet the OGs requirements as a stand-alone nomination.

This recommendation is an extension of the WH property; it should be seen as an improvement of the current context, especially with regard to very threatened species like the snow leopard, which will benefit from this extension and whose conservation is subject to international interest and cooperation. Such a transboundary extension of the existing site may indeed support further transboundary conservation efforts already underway. It would also greatly contribute to the overall integrity of this transboundary site.⁹⁴

This nomination should, however, be evaluated in line with the WHC decision encouraging the State Party to cooperate with neighbouring State Parties, *"to undertake a regional comparative biodiversity and geodiversity study of Inner Asian high mountains and deserts ... with a view to developing opportunities for future transboundary potentially serial nominations"* (Decision WHC 37COM 8B.14).

5.2.1.2 Saryarka – Steppe and Lakes of Northern Kazakhstan

Extension of this WH property was recommended by the WH Committee to secure habitat for the saiga antelope, and in particular through the Altyn Dala Conservation Initiative. The State Party was encouraged *"to consider further extensions of the WH property to contribute toward enhanced protection of this flagship steppe species and related steppe values"* and *"to expedite extensions of the property already planned, including the additional area of Korgalzhyn State Nature Reserve and an upgraded Sarykopa Wildlife Reserve, as they would add considerable value and increase the functional linkages of the serial property"* (Decision WHC 32COM 8B.8).⁹⁵

Description

This site was identified in 2005 as having high potential for meeting WH criteria (ix) and (x) as well as (vii) and (viii) (Magin, 2005).⁹⁶ However, the IUCN evaluation report, based on the nomination file presented in 2003, concluded that the site did not meet either of the latter two criteria (IUCN, 2003).⁹⁷

Its inscription was initially deferred by the WH Committee in 2004 (Decision WHC 27 COM 8C.6),⁹⁸ prior to adoption in 2008 (Decision WHC 32 COM 8B.8).⁹⁹

Since then, due to a number of factors outlined previously in this report, the status of the saiga antelope and its conservation has shifted. PAs in Kazakhstan are of the now of highest importance for the long-term preservation of this species, given the country harbours the largest population of the species, which only exists elsewhere in smaller numbers in Russia and Mongolia. Altyn Daya State Nature Reserve has now been established, and is the closest southern neighbour PA to the Naurzum Nature Reserve, one component of the WH property. Furthermore, Irgiz Turgai State Nature Reserve has been significantly extended further to the south of the property. All these areas are ecologically connected

94 It is important to note that the cultural dimension constitutes a fundamentally important feature of this site.

95 <https://whc.unesco.org/en/decisions/1466>.

96 p. 22.

97 pp. 19-28.

98 http://whc.unesco.org/en/decisions/?id_decision=701&.

99 http://whc.unesco.org/en/decisions/?id_decision=1466&.

through a 20,000 km² corridor, contributing to protecting the saiga migration and other ecological processes.

Two options should be evaluated further:

- inclusion of Altyn Dala State Nature Reserve in the WH site; this area covers important habitat for saiga (calving and summer pastures) and will therefore complement the aim of the site to protect saiga habitats and the migration process; both criteria may be applicable as rare fauna and flora species can also be found there. Since 2017, a project of reintroduction of kulan has also been started there;
- inclusion of a larger area to Irgiz-Turgay Reserve which is extremely significant for the saiga antelope of the Betpak-Dala population; this area is used by antelope for calving, rutting, and serves as a hub during its migration. The whole PA consists of two clusters plus Turgay Zakaznik which is internationally recognised as a Ramsar Site and IBA;¹⁰⁰ this area is also frequently used by saiga. All three PAs are interconnected by an ecological corridor intended to better protect the highly mobile saiga. Inclusion of Irgiz-Turgay Reserve, partly located within the desert biome, according to the Udvardy's classification, will also increase the presence of winter cold deserts in the WH network.

Justification of Outstanding Universal Value

Both options of extension share the same environmental and ecological features as the current property.

Criterion (ix): this extension will strengthen preservation of substantial steppe and lake areas and largely undisturbed associated environmental processes, among them the saiga migration which will be better preserved.

Criterion (x): it will help strengthen the preservation of steppe and wetlands ecosystems sustaining Central Asian flora and fauna and supporting millions of migratory birds, with substantial populations of many globally threatened species and the critically endangered saiga antelope.

Integrity

The level of integrity of the PAs that will extend the property is deemed satisfactory, although Altyn Dala has lost a part of its significance as saiga habitat after the mass die-off in 2015.

Comparison with other similar properties

The recommended site has the same features and characteristics as the existing WH property but it would not have an OUV and meet the OG requirements as a stand-alone nomination.

The current WH property was considered by IUCN in its evaluation report, as “*including the most important wetland areas in Central Asia*” (IUCN, 2008). This extension should be seen as an improvement, especially regarding very rare and endangered species, including many migratory bird species and the critically endangered saiga antelope, which will benefit from this extension. It will also respond directly to the WH Committee's recommendations.

100 KZ 042 (<http://datazone.birdlife.org/site/factsheet/irgiz-turgay-lakes-iba-kazakhstan>).

5.2.1.3 Western Tien-Shan

Description

The serial transnational WH property is located in the Tien-Shan mountain system, within Kazakhstan, Kyrgyzstan and Uzbekistan, and consists of 13 component parts drawn from seven protected areas, including:

- Kazakhstan: Karatau State Nature Reserve, Aksu-Jabagly (3 components), and Sairam-Ugam State National Nature Park (3 components);
- Kyrgyzstan: Sary-Chelek State Biosphere Nature Reserve, Besh-Aral State Nature Reserve (2 components), and Padysha-Ata State Nature Reserve;
- Uzbekistan: Chatkal State Biosphere Nature Reserve.

This site was identified in 2005 as having high potential for meeting WH criteria (vii) and (x). Inscribed in 2016 under criterion (x) (Decision WHC 40 COM 8B.9),¹⁰¹ it may also have potential under (ix) (Magin, 2005; WHC 42 COM 7B.69).¹⁰²

It is recommended that the opportunity of extending the WH property to Manass Wildlife Refuge (Kyrgyzstan) and Ugam Chatkal NP (Uzbekistan), among other PAs, also be assessed, to review its eligibility to criterion (ix) and, lastly, as recommended by the WHC (Decision WHC 42COM 7B.69), to rationalise the existing boundaries and remove components of the property which do not contribute to its OUV.

Justification of Outstanding Universal Value

As mentioned above and according to the WHC, this property was inscribed under criterion (x), though it may also have potential for inscription under criterion (ix).

Furthermore, the revision of the current boundaries of the components and their BZs should be addressed as a matter of priority; some areas originally included for their palaeontological values which do not contribute substantially to the property's OUV should be excluded, and other areas should be added so as to better follow ecological principles and improve the ecological connectivity between the component parts, thus maintaining and enhancing the property's OUV. The IUCN guidelines on areas of connectivity and transboundary conservation may be helpful in designing the site and its buffer zone, and progressing towards the establishment of adequate legal regimes of protection and management frameworks (IUCN, 2016a).

Criterion (ix): the property may contain large areas of mountain ecosystems and various ecotones with preserved associated biological and ecological processes that should be recognised.

Criterion (x): there may be a higher potential in this western part of the chain, around the existing property, that could be better recognised in changing the current property's boundaries.

Integrity

In its technical evaluation report on the initial nomination, IUCN concluded that information provided by the State Party “remained inconclusive as to the manner in which the serial

¹⁰¹ http://whc.unesco.org/en/decisions/?id_decision=6788&.

¹⁰² p. 32; (https://whc.unesco.org/en/decisions/?id_decision=7298& (in its decision the WHC encouraged the States Parties to consider as part of the boundary modification process the potential of the property to also meet criterion (ix), in addition to (x)).

property is configured to protect the most important areas with regards to the proposed biodiversity values and how they complement each other in demonstrating Outstanding Universal Value"; there were also "a large number of matters concerning the configuration of component parts, BZs and connectivity that require a substantial amendment to the nomination, in order to meet the integrity requirements of the WH Convention" (IUCN, 2016b).¹⁰³ Despite this, the site was inscribed on the WH List (Decision WHC 40COM 8B.9).

The modification of the current property should thus contribute to improving the site's configuration so as to meet at best the OG requirements (Section 78) for integrity and management. Its extension will enhance its OUV and should also be seen as an improvement of the current context, regarding the preservation of threatened species and their habitats, but also for the maintenance of the ecological processes upon which those species depend and which, themselves, contribute to building up the site's value. Lastly, it will be also a direct response to the WHC's recommendations.

Comparison with other similar areas

The new WH site will have the same features and characteristics as the existing property; it should be compared in priority with other areas from the same broad-scale global conservation priorities areas, inscribed either on the WH List (Xinjiang Tianshan) or on the TLs (Aksu-Zhabagly State Natural Reserve; Amudarya State Nature Reserve; Boysun; Dinosaurs and Caves of Koytendag; Fann Mountains; Gissar Mountains; Hazar State Nature Reserve; Mountains of the Western Tien Shan; Northern Tyan-Shan (Ile-Alatau SNNP); Palaeolithic sites and geomorphology of Karatau; Repetek State Biosphere Reserve; Sarmishsay; Shokhimardon; Altyn-Emel State National Nature Park; Syunt Hasardag State Nature Reserve; Turkic Sanctuary of Merke; Zaamin Mountains and Zakaznik Kusavlisay).

5.2.2 Nomination of new sites

5.2.2.1 Tigrovaya Balka

Description

This site was identified in 2005 as having high potential for meeting criteria (ix) and (x) (Magin, 2005)¹⁰⁴ and was included on the TL of Tajikistan in 2006.¹⁰⁵

The reserve is a strictly protected state-owned property (IUCN PA Category 1a). It is a large flat area situated in the Vakhsh River valley, at the confluence with the Panj River where they form the Amu Darya River, near the Afghani border.

Its territory covers an area of 460 km², extending over 40 km from southwest to northeast. The reserve is composed of a series of floodplain terraces covered by alluvial soils and has long been considered one of the most important PAs in the region, comprising tugai riverine forests with very specific biodiversity in the valley. The name "Tigrovaya Balka" means Tiger Gorge in Russian, and the Caspian tiger historically inhabited this area. Many other rare, endemic and/or specialised species are also found in the reserve (Kvartalnov, 2011 among other publications).

¹⁰³ . <https://whc.unesco.org/en/list/1490/documents/>.

¹⁰⁴ p. 24.

¹⁰⁵ <https://whc.unesco.org/en/tentativelists/2108/>.

Various other ecosystems can also be found within the area, such as semi-desert landscape represented within the hilly range of the Kashkakum Mountain massif, submontane low grassy semi-savannahs and shibliak widespread at the Buritau peak and in the Hodja-Kazyon Mountains, and water reservoirs and other types of wetlands.¹⁰⁶

It is an IBA¹⁰⁷ and has the potential for being listed as a KBA.¹⁰⁸

Justification of Outstanding Universal Value

Tigrovaya Balka is considered the most important PA in Tajikistan, in terms of ecosystem diversity and values for species.

It is situated within the Global 200 Priority Ecoregion “*Middle Asian Montane Woodlands and Steppes*”, represented on the WH List by Xinjiang Tianshan and Western Tien Shan.¹⁰⁹ However, this reserve bears features that are distinct from those two properties, and it contains the largest and most intact tugai forest massif in Central Asia.

Criterion (ix): the reserve hosts various ecological units, not only tugai lowland forests, but also steppe and semi-desert areas and their various ecotones where many stenoeceous species of flora are found; more than 160 species of birds have also been recorded there, of which 17 were included in the Red Data Book of Tajikistan (1988) and about 70 species breed in the site.¹¹⁰ The reserve supports an important population of Bukhara deer and a number of endemic plant populations. It is influenced by very specific environmental processes directly related to the particular and diverse climatic conditions.

Integrity

Moderate to intense droughts have occurred in recent times due to the absence of flooding in spring and summer following flow regulation of the Vakhsh River by the Rogun Dam. Pesticide pollution from farming activities and climate change (decreasing trend in overall water discharge from the Fedchenko and Abramov glaciers) may also affect the integrity of the site.

Comparison with other similar areas

The particular suite of ecological characteristics of the reserve should be carefully analysed in the comparative analysis, especially with the WH properties from the same ecoregion (Xinjiang Tianshan, Western Tien Shan, and Tajik NP), and with other wooded areas and steppe ecosystems from the same broad-scale global conservation priorities areas, particularly those inscribed on TLs (Aksu-Zhabagly State Natural Reserve; Boysun; Fann Mountains; Gissar Mountains; Dashti Djum State Reserve; Zaamin Mountains; Northern Tyan-Shan/Ile-Alatau SNNP) and with other gallery forests globally.

106 For further details: <https://whc.unesco.org/en/tentativelists/2108/> and Magin (2005), 22-24 pp.

107 TJ 009 (<http://datazone.birdlife.org/site/factsheet/tigrovaya-balka-nature-reserve-iba-tajikistan>).

108 Currently under assessment (CEPF, 2017).

109 Tajik NP is inscribed only under criteria (vii) and (viii).

110 <http://datazone.birdlife.org/site/factsheet/tigrovaya-balka-nature-reserve-iba-tajikistan>.

5.2.2.2 Badhyz and Kopetdag Mountains¹¹¹

Description

Badhyz was identified as having high potential for meeting WH criteria (ix), (x) and (vii) (Magin, 2005),¹¹² and in 2009, it was included on the TL of Turkmenistan, as “Badhyz State Nature Reserve”, under those three criteria.¹¹³

The site encompasses plateau, hilly and lowland landscapes, in the foothills of the Eastern Kopetdag Mountains. Therefore, given its overlap with the Kopetdag Mountains, however marginal, it is suggested that this area be renamed the Badhyz and Kopetdag Mountains.

As inscribed on the TL, the site covers a series of four adjacent state-owned PAs, totalling an area of 1,447 km²:

- Badhyz State Nature Reserve (877 km²);
- Pulikhatumskiy State Sanctuary (150 km²);
- Kyzyljarskiy State Sanctuary (300 km²);
- Chemenabitskiy State Sanctuary (120 km²).

The area is a mix of plateau, abrupt cliffs, springs, hills and low landscapes, extending in elevation from 200 to 1,000 m. The climate is arid, though more humid than in the typical desert, generally with high winds.

Badhyz State Reserve and the surrounding sanctuaries were established in 1941 for conservation and restoration of the native population of kulan.¹¹⁴ It is also Eurasia's largest natural pistachio (*Pistacia badhysi*) forest, covering over 400 km².

This is considered one of the most spectacular nature reserves in Central Asia, hosting the Persian leopard and various large ungulates from the region (e.g.: goitered gazelle, wild goat, urial).

Justification of Outstanding Universal Value

The area is one of the “*Unique Nature Complexes*” of Central Asia. The recommended site combines unique natural features: relict pistachio savannas, ancient extinct volcanoes, brackish seasonal lakes, rocky, sandy and other types of deserts and semi deserts. It also harbours a significant number of endemic and threatened flora and fauna species.

Criterion (ix): Badhyz belongs to the “*cold winter desert*” biome, which is not currently represented on the WH List. It is part of the Turanian Biogeographic Province, also currently unrepresented in the WH List and is considered as the best-preserved natural arid grassland ecosystem in Central Asia. The site is also sufficiently large to maintain and support ecological processes, such as speciation and succession, as well as wildlife migration.

Criterion (x): lying very near the junction of two priority Global 200 Ecoregions, the Caucasus-Anatolian-Hyrcanian Temperate Forest and the Central Asian Desert - the latter currently unrepresented in the WH network - Badhyz contains many key species associated with both regions, with a high number of endemic plant species. It once also hosted significant populations of many flagship, threatened, large ungulate species,

¹¹¹ <https://whc.unesco.org/en/tentativelists/5432/>.

¹¹² p. 22.

¹¹³ <https://whc.unesco.org/en/tentativelists/5432/>.

¹¹⁴ There were around 650 individuals in the early 2000s (Moehlman, 2002); the 2013 estimate was 420 individuals and may even be lower (<https://www.iucnredlist.org/species/7951/45171204#population>).

including kulan, urial, goitered gazelle and Turkmen wild goat, and a small population of Persian leopard, and thus represents an important site for *in situ* conservation of threatened species and biological diversity.

This is an IBA¹¹⁵ that supports a unique complex of bird species and is an important area for threatened raptor species, and a breeding area for numerous globally threatened and near threatened bird species such as Egyptian vulture (EN), Saker falcon (EN) and Lesser kestrel (LC), and a wintering area for the Steppe and Eastern imperial eagles (VU). Many of these raptors nest in the pistachio groves and on the steep cliffs, which also provide breeding habitat for passerines, and for some species, this is the only site of presence in Central Asia.

Criterion (vii): the complex of savannah landscapes and rolling hills provides the area with exceptional natural beauty and aesthetic importance, which might support its inscription under this criterion.

Integrity

The area is large enough to sustain key species populations and their habitats.

The legal regime of protection seems adequate; however, the management of the area might be weak and not fully appropriate. Livestock and settlements may also potentially threaten the site's values and integrity.

Comparison with other similar areas

Badhyz has no equivalent in Central Asia in terms of globally threatened mammal diversity and size of populations. The extensive coverage of pistachio woodlands in such concentrations on one site is also exceptional. Most similar sites from the region — with the possible exception in Altyn-Emel (Kazakhstan) which may be recommended to become a component of Northern Tien Shan (Section 5.2.3)¹¹⁶ — have only much smaller, introduced kulan populations.

The only other natural WH site in Central Asia comparable to Badhyz (i.e. Saryarka – Steppes and Lakes of Northern Kazakhstan) is situated much farther north, at the steppe/northern boreal forest interface, and it has completely different ecological and biological characteristics, and therefore very different fauna and flora composition and diversity.

It might be useful to compare the site globally to other savannas worldwide that host ungulates.

5.2.2.3 Northern Tien Shan¹¹⁷

Description

The area was identified as having high potential for meeting criterion (x) (Magin, 2005),¹¹⁸ and it was included on the TL of Kazakhstan, as *Northern Tien-Shan (Ile-Alatau State National Natural Park)*, in 2002.¹¹⁹

¹¹⁵ TM 038 (<http://datazone.birdlife.org/site/factsheet/badhyz-iba-turkmenistan>).

¹¹⁶ This should be assessed in further detail, based on the most up to date field information.

¹¹⁷ <https://whc.unesco.org/en/tentativelists/1681/>.

¹¹⁸ p. 34.

¹¹⁹ <https://whc.unesco.org/en/tentativelists/1681/>.

As included in TL, the site encompasses three PAs, all of which are state-owned lands:

- Alma Atinskiy State Nature Reserve, established in 1961 and covering an area of 733 km² and containing an IBA;¹²⁰
- Ile-Alatau State National Nature Park, established in 1996 and covering an area of roughly 2,000 km². It is located on the northern slopes of the Zailiysky Alatau massif, Northern Tian Shan physical geographical province;
- Altyn-Emel State National Nature Park¹²¹, set up in 1996; the park encompasses an area of 1,700 km² and was established as a Biosphere Reserve in 2017. It contains an IBA¹²² and comprises various ecosystems, such as deserts, riparian forests, deciduous and spruce forests, as well as salt marshes and floodplains in the Ili River valley.

The entire site will cover around 4,000 km² and contain a wide spectrum of diverse ecosystems, from low to high elevations, supporting relatively high biodiversity with endemic plants and rich fauna, including the snow leopard and kulan.

Justification of Outstanding Universal Value¹²³

Lying within the “*Middle Asian Montane Woodlands and Steppes*” Global 200 Priority Ecoregion that is already represented by three WH properties (Tajik National Park (Mountains of the Pamirs); Xinjiang Tianshan and Western Tien-Shan), the area is also near the border of the “*Central Asia Deserts*” Global 200 Priority Ecoregion which is currently not represented on the WH List (Table 17).

Criterion (ix): the area is a good example of mixed ecosystems and their ecotones, comprising deserts, deciduous and spruce forests, riparian forests and floodplains, and salt marshes. It covers important environmental gradients and ecotones, illustrating several environmental processes, including altitudinal succession.

Criterion (x): the area also hosts rich and rare flora communities with a high number of threatened species, many endemic to the country and to the Pamir Tian Shan Highlands biogeographical province, which however is already represented on the WH List by two WH properties (Western Tien Shan and Tajik NP) (Table 1). Altyn Emel SNP hosts the fourth largest population of kulan in the world, estimated currently at around 2,500-3,000 animals (Plakhov *et al.*, 2012).

Other criteria: the presence of historical and cultural heritage (petroglyphs, burial mounds, medieval sites, etc.) will require further assessment. Altyn Emel is well known for its cultural features and heritage (archaeological monuments) and may also meet criteria (vii) and (viii).

Integrity

- Alma Atinskiy is a mountainous area, forming part of northern ridge of the Tien Shan mountains including the northern Zailiysky Alatau and Illissky depression. As an SNR, its protection regime is adequate. The area is not exposed to significant threats and its integrity seems satisfactory;
- Ile-Alatau is also a mountainous and harsh landscape, stretching from a few hundred to around 5,000 m in altitude, offering many alpine and sub-alpine landscapes

120 KZ 099 (<http://datazone.birdlife.org/site/factsheet/almaty-state-nature-reserve-iba-kazakhstan>).

121 See: <https://whc.unesco.org/en/tentativelists/1682/>.

122 KZ 101 (<http://datazone.birdlife.org/site/factsheet/altyn-emel-national-park-iba-kazakhstan>).

123 For more detail, (Magin, 2005: 32-34).

with glaciers, moraines and other erosive reliefs, stone falls, gorges and deep river valleys. Its flora and fauna are typical of the Northern Tien Shan massif, with high diversity representative of the zonation of the area. This area is also subject to low anthropogenic pressure and seems to meet the intactness requirements;

- Altyn-Emel is inscribed on the TL under criterion (ix) and may also meet criterion (x); it also benefits from a good protection and management regime. Its integrity seems satisfactory, with a very low level of threat although a resident population of about 4,000 inhabitants live there engaged in agriculture and cattle rearing, as well as ecotourism and recreational tourism.

In conclusion, the site's integrity will be globally satisfactory; recreational and tourism activities may cause only potential low threats, which however require appraisal in greater detail during the preparation phase of nomination.

Comparison with other similar areas

The area should first be compared to Xingjiang Tianshan (China) and to other WH properties from the same Global 200 Priority Ecoregions in Central Asia, Western Tien-Shan and Tajik National Park (Mountains of the Pamirs). It should also be compared to other sites inscribed on TLs from the same broad-scale global conservation priorities areas (Aksu-Zhabagly State Nature Reserve; Badkhyz State Nature Reserve; Boysun; Dinosaurs and Caves of Koytendag; Fann Mountains; Gissar Mountains; Sarmishsay; Shokhimardon; Dashti Djum State Reserve; Syunt Hasardag State Nature Reserve; Tigrovaya Balka; Zaamin Mountains; Zakaznik Kusavlisay and Zorkul State Reserve).

5.2.2.4 Repetek State Biosphere Reserve

Description

Established in 1927, Repetek State Reserve is one of the oldest reserves in Turkmenistan, encompassing an area of approximately 346 km². It was designated as a Biosphere Reserve in 1978, and included on the TL of Turkmenistan in 2009.¹²⁴ The reserve is situated in the southeastern Karakum Desert and it overlaps with an important IBA.¹²⁵ It is also one of the few natural desert sites in Central Asia with large coverage of black saxaul.

The area recommended for nomination could qualify as a serial transnational nomination (Kazakhstan, Turkmenistan and Uzbekistan), centred around the Repetek State Biosphere Reserve and overlapping with the Karakum and Kyzylkum Deserts. In case of serial nomination, it would go far beyond Repetek SBR as defined in the TL, and this should be reflected clearly in the final title of the nominated site.

The area will also include the Bereketli Garagum State Nature Reserve (870 km²), established in 2013, and could encompass the central part of the Kyzylkum Desert that is shared by Uzbekistan and Kazakhstan, to ensure good representation of this Central Asian ecosystem, as the largest Middle East Asian Desert. Thus, this will require the establishment of new protected area(s) in order to meet the WH Convention requirements.

¹²⁴ <https://whc.unesco.org/en/tentativelists/5435/>.

¹²⁵ TM 045 (<http://datazone.birdlife.org/site/factsheet/repetek-iba-turkmenistan>).

Justification of Outstanding Universal Value

This site is a good example of “cold winter deserts” in Central Asia, an ecosystem currently unrepresented on the WH List and having high ecological and biological value, including original desert ecosystems exposed to natural factors (e.g., radiation, heat/cold, temperature, wind, water regime). It will meet criterion (ix) and may have potential for criterion (x); however, its eligibility to meet the latter criterion should be assessed in more detail.

Criterion (ix): the site includes the main ecosystem components of “cold winter deserts” with their typical large black saxaul forests and sands, functional desert landforms, and natural processes (wind, erosion, endorheism, etc.), flora and fauna adaptation, and endemism associated with these ecosystems.

Criterion (x): Repetek is one of the few natural desert sites in Central Asia with large areas of black saxaul; the area also supports the most complete assemblage of bird species typical of the Karakum sand desert and stable populations of globally threatened mammals and globally threatened and near threatened birds. It is also an important habitat for the Houbara bustard (*Chlamydotis macqueenii*).¹²⁶

Integrity

Remote and pristine area; good integrity.

Comparison with other similar areas

The site should be compared with similar sites in the Kyzylkum Desert (Uzbekistan) and Gobi Desert (Mongolia), and to other desert landforms worldwide (IUCN, 2011).

More specifically, comparisons should be made to the existing properties encompassing desert ecosystems (Lut, Iran; Western Desert, Egypt; Namib Desert, Namibia; Chott el Jerid, Tunisia; Thar Desert, India; Taklimakan, China; Wadi Rum, Jordan; El Pinacate, Mexico; and Ennedi, Chad, among others).

This nomination should be evaluated in relation to the recommended extension of Saryarka – Steppe and Lakes of Northern Kazakhstan WH property to Irgiiz Turgay Reserve, which also overlaps with Central Asia desert ecosystems (Section 5.1.2) and to the potential nomination of Altyn Emel (Section 5.2.3). It should also be appraised in relation to the two following recommendations that also encompass desert ecosystems.

5.2.2.5 Southern Ustyurt Plateau

In addition to the recommendations above of extending Saryarka – Steppe and Lakes of Northern Kazakhstan to Irgiiz Turgay Reserve, which also overlaps with Central Asia desert ecosystems (Section 5.1.2), and nominating Altyn-Emel (Section 5.2.3) and Repetek (Section 5.2.4), a further recommendation is to assess the potential of the Ustyurt Plateau for nomination.

Description

This low plateau is a very large desert area overlapping with Kazakhstan and Uzbekistan and bordering the Kyzylkum Desert that is also shared with Turkmenistan, between

¹²⁶ <https://whc.unesco.org/en/tentativelists/5435/>.

the Caspian and Aral seas. It encompasses an area of approximately 200,000 km², at elevations from 100 m to 350 m, and characterised by a now dried-up sea that existed there 21 million years ago.

This area is currently not included on any TL under natural criteria.¹²⁷

The site will be transboundary or serial transnational (Kazakhstan, Turkmenistan and Uzbekistan) and it may include at least three components:

- Kaplankyr State Nature Reserve (Turkmenistan), established in 1979 and covering an area of 2,820 km²;
- Ustyurt State Nature Reserve (Kazakhstan), established in 1984 and covering an area of 2,233 km²;
- a PA that is planned for establishment in Uzbekistan, at the border of the Ustyurt Plateau in the Kyzylkum Desert.

Justification of Outstanding Universal Value

This area is a good example of “cold winter deserts” in Central Asia, including original desert ecosystems of high ecological and biological value, subject to natural and climatic driving factors (radiation, heat/cold, temperature, wind, water regime, etc.) which are currently unrepresented on the WH List.

It may meet criterion (ix) and may have potential for criteria (vii), (viii) and (x); however, its eligibility to meet the latter three criteria should be assessed in more detail.

Criterion (vii): the site contains superlative natural phenomena or desert areas of exceptional natural beauty and aesthetic importance, typical of this region and different from other desert ecosystems worldwide;

Criterion (viii): it is an outstanding example representing major stages of the Earth's history in this part of the world, and significant on-going geological processes in the development of desert landforms, very specific to the region due to the geological and climatic original contexts and influences;

Criterion (ix): it illustrates the main ecosystem components of the “cold winter deserts” with their typical large black saxaul forests and sands, functional desert landforms, and serves as an excellent example of the natural processes characterising the evolution and development of those ecosystems (wind, erosion, endorheism, flora and fauna adaptation and endemism);

Criterion (x): it hosts flora and fauna species and ecosystems, specific of cold desert ecosystems (high endemism) and overlaps with at least one IBA located in the Kazakh part of the plateau,¹²⁸ providing a typical assemblage of desert species and other taxa, with a locally high density of breeding raptors.

Integrity

The existing PAs benefit from an adequate protection regime and are under moderate and local anthropogenic threats and impacts (ancient signs of extractive and quarrying activities; pipeline construction locally but outside the protected areas). The management

¹²⁷ It was included on the TL of Kazakhstan as part of the “Silk Road” in 2012, under cultural criteria (<https://whc.unesco.org/en/tentativelists/5754/>).

¹²⁸ KZ 018 (<http://datazone.birdlife.org/site/factsheet/north-western-cliff-faces-of-the-ustyurt-plateau-iba-kazakhstan>). (see also: Barge, 2015).

plans/systems also seem appropriate (institutional, technical and financial capacities), though their effective implementation should be assessed further.

There needs, however, to be a trilateral agreement among the three States Parties to have a common vision and understanding of the protection and management of the area as a whole in the future, before any nomination.

Comparison with other similar areas

The site should be compared with similar sites in the Kyzylkum Desert (Uzbekistan) and the Gobi Desert (Mongolia), and to other desert landforms worldwide.

More specifically, comparisons should be made to the existing properties overlapping desert ecosystems (Lut, Iran; Western Desert, Egypt; Namib Desert, Namibia; Chott el Jerid, Tunisia; Thar Desert, India; Taklimakan, China; Wadi Rum, Jordan; El Pinacate, Mexico; and Ennedi, Chad, among others).

5.2.2.6 Cold winter deserts of Central Asia

This option combines several areas recommended above, including:

- Berektli Garagum SNR (Section 4.2.3);
- Altyn-Emel already listed on the TL of Kazakhstan (Section 5.2.2.3);
- Repetek State Biosphere Reserve, also covering a site already listed on the TL of Turkmenistan (Section 5.2.2.4);
- Southern Ustyurt Plateau (Section 5.2.2.5).

It will establish a “finite” serial transnational site, intending to represent those unique types of cold winter desert ecosystems.

Although potentially difficult to implement, this alternative should be assessed further, to verify its relevance and operational feasibility.

Justification of Outstanding Universal Value

The site recommended will be a good example of the “cold winter deserts” specific to the region. It would include original desert ecosystems of high ecological and biological value that are subject to very specific natural factors (radiation, heat/cold, temperature, wind, water regime, etc.), and that are currently unrepresented on the WH List.

The site will meet criterion (ix) and may have potential for criteria (vii), (viii) and (x); however, its eligibility to meet the latter three criteria should be assessed in more detail.

Criterion (vii): the site contains natural features characterising desert areas of exceptional natural beauty and aesthetic importance, typical of the region and different from other desert ecosystems worldwide;

Criterion (viii): it is an outstanding example of stages of the Earth’s history in this part of the world and also illustrates significant on-going geological processes in the development of desert landforms, very specific to the region, due to geological and climatic original contexts;

Criterion (ix): it illustrates the main ecosystem components of the “cold winter deserts” with their typical large black saxaul forests and sands, functional desert landforms, and serves as an excellent example of biological processes characterising the evolution and

development of those ecosystems (wind, erosion, endorheism, flora and fauna adaptation and endemism).

Criterion (x): it hosts flora and fauna specific of cold desert ecosystems (high endemism) and overlaps with several IBAs and KBAs, providing a typical assemblage of desert species and other taxa, with a locally high density of breeding raptors.

Integrity

The existing PAs benefit from an adequate protection regime and are under moderate and local human pressures (ancient signs of extractive and quarrying activities; pipeline construction locally but outside the protected areas). Their management plans/systems seem also appropriate (institutional, technical and financial capacities), though their effective implementation should be assessed and discussed in more detail.

Comparison with other similar areas

The site should be compared with similar sites in the Gobi Desert (Mongolia), and other desert landforms worldwide.

More specifically, comparisons should be made to the existing properties encompassing desert ecosystems (Lut, Iran; Western Desert, Egypt; Namib desert, Namibia; Chott el Jerid, Tunisia; Thar desert, India; Taklimakan, China; Wadi Rum, Jordan; El Pinacate, Mexico; and Ennedi, Chad, among others).

6. Conclusions

Since Magin (2005), significant progress has been made in better recognising the unique value of natural heritage in Central Asia. In recent years, several natural properties from the region have been inscribed on the WH List, while others have been included on national TLs, pending more in-depth analyses for potential nomination.

The work and consultations carried out during the present study has enabled stakeholders involved in the consultation process to better appreciate the current context and, based on improvement of the knowledge over the past fifteen years, to initiate a work programme including data collection and updating available information to facilitate identification of areas and sites with the highest potential for nomination, under the prioritised biodiversity criteria.

The recommendations that follow reflect this current level of knowledge and should be strengthened in the future to ensure that areas and sites identified and prioritised have the strongest assets for nomination. Therefore, these recommendations should be interpreted as a starting point for further technical analysis.

However, though this study is an initial assessment, most areas and sites recommended here below have appeared repeatedly during the work process and over time, as being of particular interest for biodiversity, whether through the analysis of literature, or in discussions between experts and specialists.

They have been prioritised, based on their value, level of integrity, exposure to potential threats, and an initial assessment of their legal protection regime and management, by cross-referencing the available information and data. Several of the recommended areas and sites are serial and/or transnational or transboundary.

Nine areas and sites have been recognised as having strong potential for nomination under biodiversity criteria (ix) and/or (x), in some cases in combination with other WH natural criteria (vii) and (viii):

- three sites already inscribed in the WH List that should be extended: Golden Mountains of Altai, Sayarka – Steppe and Lakes of Northern Kazakhstan, and Western Tien-Shan;
- four sites currently included on TLs: Tigrovaya Balka, Badhyz and Kopetdag Mountains, Northern Tien-Shan and Repetek State Biosphere Reserve;
- two areas not currently included on TLs: Southern Ustyurt Plateau and Cold Winter Deserts of Central Asia.

In all cases, the nominated sites' territories, component parts and boundaries need to be ascertained with greater precision.

In order to ensure the best preparation of the nomination dossier for these sites, it is also highly recommended that the State Parties carefully follow the guidance of the UNESCO manual, published in partnership with the advisory bodies, on how to prepare WH nominations,¹²⁹ and the UNEP-WCMC publication on comparative analysis methodology for WH nominations under biodiversity criteria, which should also be very

129 <http://whc.unesco.org/en/preparing-world-heritage-nominations/>.

helpful in the nomination process.¹³⁰ The upstream process created by the WHC in 2010 may also contribute in providing essential support to State Parties for the preparation of nomination documents.¹³¹

Finally, it is worth noting that local communities inhabit some very remote areas prioritized above, at least seasonally and sometimes year-round. Unfortunately, it was beyond the scope of this survey to address the cultural aspect and indigenous matters, but it is fundamental to underline that rights issues have to be appropriately considered during every nomination process. The State Parties and all experts and organizations associated in such a process are strongly advised to address this central topic and refer to the existing “good practices” in relation to human rights and World Heritage when starting their work.¹³²

Additional recommendations

It was also deemed useful to make a series of additional operational recommendations, intended to fill the major administrative and technical gaps and difficulties observed during the study.

The following recommendations seek to guide and facilitate the future work of States Parties, having in mind that the nomination of sites for their inscription on the WH List is a long and difficult process that often requires years of study and work. This may generate frustration, should the proposal not be properly prepared and thus endorsed.

Recommendation 1 - Create and/or update current Tentative Lists

State Parties are encouraged and invited to re-examine or review their Tentative Lists (TLs), with a focus on criteria (ix) and (x), without excluding other natural criteria (vii and/or viii). Findings of this Thematic Study should be taken into account while reviewing TLs.

All TLs should be updated after a consultation process to ensure that the sites included in the lists are harmonized and have the highest potential for nomination at the regional level, based on a solid overall comparative analysis, which could not be performed during this process. States Parties are invited to take into account the findings and recommendations of this study into these processes.

A comparative analysis specific to each site should also provide useful information on its value, main attributes and features for potential nomination under either criterion.¹³³ The purpose of this analysis is to ascertain whether there is scope for the inclusion of the site on the list, and to demonstrate that there is no other natural property with similar values inscribed on the TL, or that might be nominated in the future and have a higher value.

¹³⁰ IUCN (2014a).

¹³¹ Decision WHC 40 COM 9A (https://whc.unesco.org/en/decisions/?id_decision=6842&).

¹³² Larsen (2012a, b); IUCN (2014b).

¹³³ IUCN (2014a).

Recommendation 2 - Improve the protection regime of areas and ecological corridors that have the highest values for natural heritage

Central Asia is a global biodiversity hotspot, home to numerous iconic and threatened species and key natural habitats and ecosystems. They include significant migratory routes and flyways, and important breeding areas.

Source populations of several species are known to be located there as well; saiga is one such species, and likely the most iconic. In this context, the establishment of adequate BZs will be of the highest importance for nomination under either biodiversity criterion, to enhance and maintain the natural processes and preserve the state of conservation of those species.

Thus, the ecological corridors and key habitats for wildlife throughout the year should be first clearly identified, then delimited and prioritised. In this context, identification of areas of sufficient size and establishment of adequate buffer zones will be of the highest importance for nomination under either biodiversity criterion, to enhance and maintain the natural processes and preserve the state of conservation of those species. This work will seek inputs of expertise from the IUCN SSC Specialist Groups and other relevant conservation expertise (e.g. conservation NGOs, scientific bodies of the relevant international conventions¹³⁴).

The IUCN guidelines on areas of connectivity and transboundary conservation may also be helpful in designing sites and their BZs, and progressing towards the establishment of adequate legal regimes of protection and management frameworks (IUCN, 2016a).

The fact that areas or sites may be not currently under protection should never be used by the State Parties as an argument to exclude them from their TLs, if those areas and sites have high potential for nomination. Instead, this potential for nomination should be used by the State Parties to improve their current level of protection and management.

Recommendation 3 - Consider a range of international designation mechanisms to recognize areas of global importance

Areas of international importance and sites recognised under other international legal instruments or through knowledge-based tools (international/regional inventories of areas important for biodiversity conservation can help formulate Statements of Outstanding Universal Value (OUV) of existing and future WH sites.

State Parties should consider those already existing designations and inventories as opportunities to identify and select the areas and sites having the highest potential for nomination.

¹³⁴ e.g.: Convention on Migratory Species, Ramsar Convention and their subsequent agreements and programmes.

Recommendation 4 - Foster transnational cooperation and transboundary sites, to support ecological functionality that guarantees the maintenance of natural processes

There is strong potential for identifying transboundary and transnational sites. Some protected areas from the region may have difficulty in meeting the WH requirements if only areas within one country are included. Therefore, it would be helpful to foster cooperation and agree on a common regional strategic approach between State Parties for the identification and delimitation of transnational and/or transboundary sites.

States Parties are invited to build a common vision of WH in the region to facilitate the nomination of natural sites having the highest potential under natural criteria, especially in the cold winter desert ecosystems that are poorly represented on the WH List, based on the recommendations made in this study.

Recommendation 5 - Develop continuous dialogue among stakeholders

The need to develop dialogue among stakeholders at all levels — national, regional and international — emerged as one of the major conclusions of the consultations conducted during this study. This dialogue should be strengthened in the future, based on more frequent and regular exchanges and stronger cooperation among members of all groups of stakeholders (e.g. State Parties, scientists, NGOs, local communities) and between those groups.

International organisations should encourage this dialogue, facilitate exchange of good practices and contribute to identifying solutions to common problems, and the means to facilitate the nomination processes.

Recommendation 6 - Improve enforcement and compatibility between local, national and international laws

Difficulties in the practical implementation of international laws and agreements at the national and local levels, related to a lack of compatibility among the diverse regulations, were raised during the consultations.

Efforts should be made by the States Parties to improve this compatibility in the future and adapt their internal law and regulations to their international commitments.

Recommendation 7 - Conduct training sessions and activities on how to prepare site nomination

Consultation workshops confirmed that difficulties observed during the IUCN evaluation process could be associated with the lack of capacity for WH nomination. In order to overcome these shortcomings, there is a need to develop operational guidance focusing on specific phases of the nomination process, such as preparing the comparative analysis, nomination under criteria (ix) and serial and/or transnational or transboundary sites.

Based on existing good practices and guidance documentation, specific training and tutoring activities should be organised during the upstream process of site nomination, for public service officers and local specialists, with support from IUCN and other relevant international organizations.

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Annexes

Annex 1

Participants to the workshops and consulted experts

Name	Organisation
Kazakhstan	
Beisembayeva, Lazzat	Ministry of Culture and Sports
Ilina, Viktoriya	Tethys Scientific Society
Jashenko, Roman	Tethys Scientific Society
Maltseva, Elina	National World Heritage Committee
Massanov, Madjer	Member of the World Heritage Committee of Kazakhstan's National Commission, International Institute for Central-Asian Studies (IICAS)
Sklyarenko, Sergey	Association for the Conservation of Biodiversity of Kazakhstan
Kyrgyzstan	
Akulov, Ruslan	Protected Areas department of State Agency for Environmental Protection and Forestry
Domashov, Ilia	National Expert
Mambetaliev, Kumar	State Agency for Environmental Protection and Forestry
Kirilenko, Ana	Ecological Movement "BIOM"
Kirstad, Malen	BIOM international
Rustamov, Abdykalyk	State Agency for Environmental Protection and Forestry
Shukurov Japarovich, Emil*	Ecological Movement "BIOM"
Soronkulov, Gamal	OO Zamaat Alan-Too project
Tentieva, Ainura	Advisor for the National Commission of the Kyrgyz Republic for UNESCO
Turdumatov, Talantbek	State Agency for Environmental Protection and Forestry
Tajikistan	
Davlatzoda, Zevar	Ministry of Culture of Tajikistan
Karimov, Khalil	Hunting and Conservation Alliance of Tajikistan
Nazhmudinov, Najmiddin	Sector for International Relations, tourism and tourist marketing, State Institution of Specially Protected Natural Areas
Nuritdin Nazurleovich, Sayfulloev	Department of Archaeology of the Institute of History, Archaeology and Ethnography

* deceased

Turkmenistan	
Allekow, Serdar	Society of Nature Protection of Turkmenistan
Karryeva, Shirin	RSPB
Rustamov, Eldar	Society for Nature Protection of Turkmenistan
Saparmyradov, Jumamyrat	National Institute of Desserts, Flora and Fauna, under the State Committee on Environment Protection and Land Resources of Turkmenistan
Uzbekistan	
Ahmedashaev, Ahmadjon	Geological Museum of the Republic of Uzbekistan
Bykova, Elena	Uzbekistan Academy of Sciences · Institute of Zoology
Khurramov, Farrukh	Cadastre and Monitoring Department, Biological Inspection under the State Committee of Ecology and Environmental Protection
Kasimova, Shahzoda	Geological Museum of the Republic of Uzbekistan
Kashkarov, Roman	Institute of Zoology of the Republic of Uzbekistan
Shagiahmetova, Gulshad	Protected Areas Department, Biological Inspection under the State Committee of Ecology and Environmental Protection
Sherimbetov, Khalilulla	Protected Areas Department, Biological Inspection under the State Committee of Ecology and Environmental Protection
Zagrebin, Sergey	Field Coordinator on Protected Areas
Xamidov, Odiljon	Archaeology Samarkand
IUCN	
Erg, Boris	IUCN ECARO
Hofman, Maarten	IUCN ECARO
Nikodinovic, Aleksandra	IUCN ECARO
Osipova, Elena	IUCN WHP
Protas, Yelizaveta	IUCN ECARO
Volonsyachuk, Roman	IUCN ECARO
International experts	
Akoijam, Yaziphaba	Assistant Advisor for the Asia/Oceania Region, Secretariat of the Ramsar Convention on Wetlands
Ash, Neville	UNEP-WCMC
Balbakova, Farida	National coordinator of WWF projects in the Kyrgyz Republic and Head of the NGO "GLIP"
Bertzky, Bastian	Joint Research Centre (JRC)
Bunting, Gill	BirdLife
Dieterich, Til	NABU/International Eurasian Working Group
Farhadinia, Mohammad	WildCRU, Zoology, University of Oxford
Garstecki, Tobias	International World Heritage expert
Jaeger, Tilman	International World Heritage expert
Kaliankin, Michael	Zoological Museum of Lomonosov, Moscow State University

Kang, Aili	WCS Executive Director, Asia Program
Karina, Zhanel	Ramsar Regional Initiative for Central Asia (RRI-CA)
Kormos, Cyril	Executive Director, Wild Heritage and IUCN WCPA Vice Chair, World Heritage
Linnell, John	Norwegian Institute for Nature Research (NINA), Department of Terrestrial Ecology
Launay, Frederic	Panthera
Michel, Stefan	NABU
Novikov, Viktor	Zoï Environment Network
Ostrowski, Stephane	WCS
Pereladova, Olga	WWF Central Asia Program
Reiko, Litsuka	Senior Regional Advisor for the Asia/Oceania Region, Secretariat of the Ramsar Convention on Wetlands
Roettger, Christiane	CMS
Rothberg, Daniel	CEPF
Wunderlich, Jens	Michael Succow Foundation
Zuther, Steffen	International coordinator of the Altyn Dala Conservation Initiative, Frankfurt Zoological Society

Annex 2

Terrestrial threatened species (fauna)¹³⁵

(Source: IUCN Red List of Threatened Species website, accessed 15 April 2018)

Class	Genus	Species	Common names (Eng)	Red List status
Amphibians	Ranodon	sibiricus	Semirechensk Salamander	EN
Birds	Emberiza	aureola	Yellow-breasted Bunting	CR
	Leucogeranus	leucogeranus	Siberian Crane, Siberian White Crane, Snow Crane	CR
	Numenius	tenuirostris	Slender-billed Curlew	CR
	Vanellus	gregarius	Sociable Lapwing, Sociable Plover	CR
	Aquila	nipalensis	Steppe Eagle	EN
	Falco	cherrug	Saker Falcon, Saker	EN
	Haliaeetus	leucoryphus	Pallas' Fish-eagle, Band-tailed Fish-eagle, Pallas's Sea-Eagle	EN
	Neophron	percnopterus	Egyptian Vulture, Egyptian Eagle	EN
	Oxyura	leucocephala	White-headed Duck	EN
	Anser	cygnoid	Swan Goose	VU
	Anser	erythropus	Lesser White-fronted Goose	VU
	Aquila	heliaca	Eastern Imperial Eagle, Asian Imperial Eagle, Imperial Eagle	VU
	Aythya	ferina	Common Pochard, Northern Pochard, Pochard	VU
	Branta	ruficollis	Red-breasted Goose	VU
	Bubo	scandiacus	Snowy Owl	VU
	Chlamydotis	macqueenii	Asian Houbara, Asian Houbara Bustard, Macqueen's Bustard	VU
	Clanga	clanga	Greater Spotted Eagle, Spotted Eagle	VU
	Clangula	hyemalis	Long-tailed Duck	VU
	Columba	eversmanni	Yellow-eyed Pigeon, Yellow-eyed Dove, Yellow-eyed Stock Dove	VU
	Emberiza	rustica	Rustic Bunting	VU
	Larus	relictus	Relict Gull	VU
	Marmaronetta	angustirostris	Marbled Teal, Marbled Duck	VU
	Melanitta	fusca	Velvet Scoter	VU
	Otis	tarda	Great Bustard	VU
	Podiceps	auritus	Horned Grebe, Slavonian Grebe	VU
	Saxicola	insignis	White-throated Bushchat, Hodgson's Bushchat, White-throated Bush Chat	VU
	Streptopelia	turtur	European Turtle-dove, European Turtle Dove, Turtle Dove	VU

¹³⁵ Except Least Concern species.

Class	Genus	Species	Common names (Eng)	Red List status
Insects	Chalepoxenus	spinosus		VU
	Chalepoxenus	tarbinskii		VU
	Chalepoxenus	zabelini		VU
	Graphoderus	bilineatus		VU
	Onychogomphus	assimilis	Dark Pincertail	VU
	Onychogomphus	flexuosus	Waved Pincertail	VU
	Parnassius	apollo	Apollo, Apollo Butterfly, Mountain Apollo	VU
	Parnassius	autocrator		VU
	Phyllodesma	ilicifolia	Small Lappet Moth	VU
	Saga	pedo	Common Predatory Bush-cricket, Predatory Bush Cricket	VU
	Strongylognathus	minutus		VU
Mammals	Camelus	ferus	Bactrian Camel, Two-humped Camel, Wild Bactrian Camel	CR (extinct in Central Asia)
	Mustela	lutreola	European Mink	CR (extinct in CA)
	Saiga	tatarica	Saiga, Mongolian Saiga, Saiga Antelope	CR
	Cuon	alpinus	Dhole, Asiatic Wild Dog, Indian Wild Dog, Red Dog	EN (to be assessed)
	Desmana	moschata	Russian Desman	EN
	Equus	ferus	Przewalski's Horse, Asian Wild Horse, Mongolian Wild Horse	EN
	Panthera	tigris	Tiger	EN (extinct in CA)
	Acinonyx	jubatus	Cheetah, Hunting Leopard	VU (extinct in Central Asia, still present in Iran)
	Capra	aegagrus	Wild Goat, Bezoar	VU
	Gazella	subgutturosa	Goitered Gazelle	VU
	Marmota	menzbieri	Menzbier's Marmot	VU
	Moschus	moschiferus	Siberian Musk Deer	VU
	Nyctalus	lasiopterus	Giant Noctule, Greater Noctule Bat	VU
	Ovis	orientalis	Mouflon, Cyprian Wild Sheep, Cyprus Mouflon, Red Sheep, Urial	VU
	Panthera	pardus	Leopard	VU
	Panthera	uncia	Snow Leopard, Ounce	VU
	Vormela	peregrina	Marbled Polecat, European Marbled Polecat	VU

Class	Genus	Species	Common names (Eng)	Red List status
Reptiles	Alsophylax	laevis	Southern Even-fingered Gecko	CR
	Alsophylax	tadjikiensis	Tajikistan Even-fingered Gecko	CR
	Phrynocephalus	golubewii		CR
	Darevskia	kopetdaghica		EN
	Phrynocephalus	rossikowi	Uzbekistan Toadhead Agama	EN
	Alsophylax	loricatus	Strauch's Even-fingered Gecko	VU
	Alsophylax	szczerbaki	Szczerbak's Even-fingered Gecko	VU
	Phrynocephalus	saidalievi		VU
	Phrynocephalus	strauchi	Strauch's Toad Agama	VU
	Testudo	horsfieldii	Afghan Tortoise, Central Asian Tortoise, Four-toed Tortoise, Horsfield's Tortoise, Steppe Tortoise	VU

Annex 3

Terrestrial threatened species (flora)¹³⁶

(Source: IUCN Red List of Threatened Species website, accessed 15 April 2018)

Genus	Species	Common names (Eng)	Red List status
<i>Aldrovanda</i>	<i>vesiculosa</i>	Waterwheel, Common Aldrovanda	EN
<i>Ammopiptanthus</i>	<i>nanus</i>		CR
<i>Amygdalus</i>	<i>ledebouriana</i>	Wild Almond	EN
<i>Amygdalus</i>	<i>bucharica</i>	Wild Almond	VU
<i>Armeniaca</i>	<i>vulgaris</i>	Wild Apricot	EN
<i>Astragalus</i>	<i>bobrovii</i>		EN
<i>Atraphaxis</i>	<i>muschketowi</i>	Shrubby Buckwheat	EN
<i>Berberis</i>	<i>karkaralensis</i>		CR
<i>Berberis</i>	<i>iliensis</i>		VU
<i>Betula</i>	<i>talassica</i>		EN
<i>Betula</i>	<i>tianschanica</i>		EN
<i>Calligonum</i>	<i>calcareum</i>		CR
<i>Calligonum</i>	<i>triste</i>		CR
<i>Calligonum</i>	<i>elegans</i>		EN
<i>Calligonum</i>	<i>matteianum</i>		EN
<i>Calligonum</i>	<i>molle</i>		EN
<i>Calligonum</i>	<i>paletzianum</i>		VU
<i>Crataegus</i>	<i>darvasica</i>		CR
<i>Crataegus</i>	<i>knorringiana</i>		CR
<i>Crataegus</i>	<i>necopinata</i>		CR
<i>Damasonium</i>	<i>alisma</i>	Starfruit	VU
<i>Lonicera</i>	<i>karataviensis</i>		CR
<i>Lonicera</i>	<i>paradoxa</i>		EN
<i>Malus</i>	<i>niedzwetzkyana</i>		EN
<i>Malus</i>	<i>sieversii</i>		VU
<i>Polygonum</i>	<i>toktogulicum</i>		CR
<i>Populus</i>	<i>berkarensis</i>		CR
<i>Prunus</i>	<i>tadzhikistanica</i>		EN

¹³⁶ Except Least Concern species.

Genus	Species	Common names (Eng)	Red List status
<i>Pyrus</i>	<i>korshinskyi</i>		CR
<i>Pyrus</i>	<i>tadshikistanica</i>		CR
<i>Pyrus</i>	<i>cajon</i>		EN
<i>Rhus</i>	<i>coriaria</i>	Sumac, Elm-Leaved Sumac	VU
<i>Ribes</i>	<i>malvifolium</i>		CR
<i>Sibiraea</i>	<i>tianschanica</i>		CR
<i>Spiraeanthus</i>	<i>schrenkianus</i>		EN
<i>Swida</i>	<i>darvasica</i>		CR
<i>Zygophyllum</i>	<i>bucharicum</i>		CR
<i>Zygophyllum</i>	<i>darvasicum</i>		CR

Annex 4

Important Bird Areas in Central Asia

(Source: Birdlife International, 13 February 2019)

Country	International Name	FinCode
Kazakhstan	Kultansor and Tatysor Lakes	KZ060
	Irgiz-Turgay Lakes	KZ042
	Sorbulak Lake System	KZ097
	Zheltoranga	KZ094
	Naurzum State Nature Reserve	KZ040
	Syrdarya Delta Lakes	KZ044
	Kyzylkol Lake	KZ072
	Zharsor-Urkash Salt Lakes	KZ038
	Tortoise Islands	KZ117
	Tassuat Lake	KZ059
	Karasar Lake	KZ088
	Zhusandala	KZ095
	Ili River Delta	KZ092
	Vicinity of Korgalzhyn village	KZ054
	Aktubek	KZ057
	Amangeldy	KZ052
	Irtys-Karaganda Waterworks 10	KZ085
	Cherdoyak	KZ118
	Kamysh-Samarskie Lakes	KZ006
	Mugodzhary	KZ022
	Lower reaches of the Ashchyozek River	KZ002
	Urda Sands	KZ005
	North-western cliff faces of the Ustyurt Plateau	KZ018
	Western cliff faces of the Ustyurt Plateau	KZ014
	Korgalzhyn State Nature Reserve	KZ051
	Karakol Lake	KZ012
	Kaundy Depression	KZ016
	Basgurly-Zhazgurly Depression	KZ017
	Karagie Depression	KZ015
	Ashchykol and Barakkol Lakes	KZ061
	Balyktykol Lake	KZ089
	Teke Lake	KZ080
	Korgankol Lake	KZ081
	Shcherbakty Lakes	KZ106
	Saumalkol Lake	KZ087
	Shaglyteniz Lake and marshes	KZ048
	Karasuk	KZ082
	Sarykopa Lake System	KZ041
	Western and northern foothills of the Kalba Range	KZ108
	Kulykol-Taldykol Lake System	KZ036
	Lakes in the lower reaches of the Chu River	KZ069
	Kazakhstan portion of the river Volga's Delta - Zhambay	KZ008
	Delta of the Ural River	KZ009
	Tyulen'i (Seal) Islands	KZ011
	Topar Lake System	KZ093

Country	International Name	FinCode
	Zharkol Lakes	KZ050
	Akzhar Lakes	KZ071
	Lesser Aral Sea	KZ043
	Donyz-Tau cliff faces	KZ019
	Aktau cliff faces	KZ013
	Ulytau Mountains	KZ062
	Cherniy (Black) Irtysh Delta	KZ120
	Markakol State Nature Reserve	KZ119
	Lower reaches of the Karatal River	KZ090
	Ushkol Lake	KZ091
	Lower reaches of the Emba River	KZ010
	Irtysh-Karaganda Waterworks 9	KZ086
	Alekseevskie steppe pine forests	KZ049
	Iskrinskie Pine Forests	KZ083
	Ereymentau Mountains	KZ084
	Ortau upland massif	KZ064
	Ayak-Bestau Hills	KZ063
	Western edge of the Karakoyin and Zhetikonyr Sands	KZ067
	Middle reaches of the Sarysu River	KZ065
	Lower reaches of the Sarysu River	KZ066
	Koybagar-Tyntyugur Lake System	KZ033
	Shoshkaly Lake System	KZ027
	Kushmurun Lake	KZ032
	Shalkar Lake	KZ001
	Sarshyganak Lake	KZ003
	Teniz-Karakamys Lakes	KZ023
	Aksuat Lake	KZ029
	Bolshoy Kak Lake	KZ028
	Sorbalyk-Maybalyk Lake System	KZ025
	Terenkol Lake	KZ045
	Zhaltyr Lake	KZ030
	Balykty Lake	KZ047
	Maliy Kak Lake	KZ031
	Telikol Lakes	KZ068
	Amankaragay Forest	KZ034
	Arkaly Mountains	KZ113
	Karabas Mountains	KZ112
	Ertis Ormany (Shaldai Forest)	KZ105
	Semey Ormany (Semipalatinsk Forest)	KZ107
	Paradise Valley mountain plateau	KZ116
	Zhagalbayly and Tuyemoynak Hills	KZ111
	Eastern Kazakhstan uplands	KZ110
	Chingiztau Mountains	KZ109
	Kushum Lakes	KZ004
	Akzhan Lake	KZ024
	Sulukol Lake	KZ035
	Kapchagay Canyon	KZ096
	Uyalyshalkar Lake System	KZ055
	Kumdykol-Zharlykol Lake System	KZ056
	Tuzashchy and Karasor Lakes	KZ058
	Zhumay-Mayshukyr Lake System	KZ053
	Manyrak Mountains	KZ121

Country	International Name	FinCode
	Kamyshevov-Zhamankol Lakes	KZ026
	Tounsor Hollow Lakes	KZ037
	Sankebay Lakes	KZ039
	Tentek River Delta	KZ114
	Lake Alakol Islands	KZ115
	Zhagabulak Forest	KZ021
	Uil River and Taysoygan Sands	KZ007
	Sagyz	KZ020
	Assy Plateau	KZ100
	Arystandy	KZ073
	Almaty State Nature Reserve	KZ099
	Tuzkol Lake	KZ104
	Kenshektau Mountains	
	Altyn-Emel NP	
	Toraygyr Ridge	
	Big Almaty Gorge	
	Aksu-Dzhabagly State Nature Reserve	KZ078
	Chardara Reservoir	KZ076
	Shoshkakol Lakes	KZ074
	Chokpak Pass	KZ077
	Upper Charyn	KZ103
	Arys-Karaktau State Reserved Zone	KZ075
	Ters-Ashchibulak Reservoir	KZ079
Kyrgyzstan	Tokmak Pheasant Reserve	
	Water reservation of Northern Chu Valley	
	Tulek Valley	
	Son-Kul Lake	
	Lake Chatyr-Kul	
	Karkyra Valley	
	Eastern Alai	
	Western Alai, Kok-Suu River	
	Western Issyk Kul Lake	
	Eastern Issyk Kul Lake	
	Gorge Tash-Rabat	
Tajikistan	Kondara Gorge	TJ008
	Drumkul Lake	TJ015
	Dashtidjum	TJ011
	Tigrovaya Balka Nature Reserve	
	Kayrakkum Reservoir	TJ003
	Iskanderkul lake and mountains	TJ007
	Zorkul Nature Reserve (Lake Victoria)	TJ018
	Rangkul valley (Rangkul & Shorkul Lakes)	TJ013
	Kattasay and Daganasay Reservoirs	TJ004
	Bulunkul and Yashilkul lakes and mountains	TJ014
	Karakul lake and mountains	TJ012
	Dzhavshangoz	TJ016
	Aktash massif	TJ002
	Mogoltau massif	TJ001
	Dangara massif	TJ010
	Kulikalon Lakes	TJ006
	Ishkashim	TJ017
	Sarazm	TJ005

Country	International Name	FinCode
Turkmenistan	Garabogaz - Garshy	TM002
	Karabogaz	TM003
	South Cheleken Bay	TM005
	Garshy - Tarta	TM001
	Turkmenbashy Bay	TM006
	Turkmen Bay	TM007
	Garadashly - Ekerem	TM008
	Ekerem - Esenguly	TM009
	Sumbar	TM020
	Dushakerekdag	TM024
	Gurykhovudan	TM029
	Kurtusuv - Khovudan	TM027
	Goyungyrlan	TM025
	Sarygamys	TM022
	Ayrakly - Garadzhaovlak	TM032
	Jarsay - Khangui	TM035
	Khankhovuz	TM036
	Repetek	TM045
	Erajy	TM040
	Nargyz	TM043
	Soltandag - Gyzylyburun	TM047
	Ersarybaba - Akkyr	TM013
	Depmechay	
	Akjagaya	TM026
	Ketteshor - Ramankol	TM044
	Zeyit - Kelif	TM048
	Garashor	TM021
	Koymat - Begarslan	
	Tekejik - Biynekyr	
	Chokrak-Tutly	
	Tejen	TM034
	Badhyz	TM038
	Garachop	TM041
	Garabil	TM046
	Uly Balkan	TM012
	Kurendag - Garagoz	TM014
	Gorelde	TM039
	Muskinata	TM033
	Uzboy	
	Delili - Garajabatyr	TM010
	Garadegish	TM011
	Kopetdagkhovudan	TM023
	Gurtli	TM028
	Deryatakyr	TM030
	Mergen	TM031
	Saryyazy	TM042
	Soltansanjar - Duyeboyun	TM037
	Ogurjaly Island	TM004
	Tallymerjen	TM049
	Koytendag	

Country	International Name	FinCode
Uzbekistan	Mount Aktau	UZ010
	Aksay Lake and surrounding desert	UZ007
	Achinskoe Lake	UZ022
	Aktepe Reservoir and Three Lakes	UZ048
	The desert around Kurkuduk village	UZ005
	Saiga Nature Sanctuary	UZ001
	Zekry Lake	UZ020
	Rogatoe Lake	UZ008
	Kagan Fish Farm	UZ016
	Vardanzi	UZ014
	Sudochye Lake	UZ002
	Amudarya floodlands near Termez	UZ047
	Yuzhno-Surkhan (South-Surkhan) Reservoir	UZ046
	Dengizkul Lake	UZ021
	Tudakul and Kuymazar Reservoirs	UZ015
	Bukantau Mountain Range	UZ006
	Zholdyrbas Lake	UZ003
	Karnabchul Steppe	UZ018
	Karakyr Lakes	UZ012
	Dzheiran Ecocentre	UZ017
	Buzaubay	UZ009
	Khorezm Fish Farm and adjacent lakes	UZ011
	Khodzha-Davlet	UZ019
	Northern part of the Assake-Audan depression	UZ004
	Akpetky Lakes and surrounding Aralkum Desert	UZ049
	Ayakaghytma Lake and surrounding desert	UZ051
	Sarykamysh Lake and surrounding Ustyurt Plateau	UZ050
	Mashankul and Khojakul Lake complex	UZ052
	Bashkyzylsay Unit of the Chatkal Mountains Biosphere Reserve	UZ028
	Angren Plateau	UZ027
	Nuratau Range	UZ037
	Tuzkan Lake	UZ035
	Central section of the Kurama Mountain Range	UZ033
	Chimkurgan Reservoir	UZ041
	Gissar State Nature Reserve	UZ042
	Kattakurgan Reservoir	UZ038
	Northern shore of Aydarkul Lake	UZ029
	Talimardzhan Reservoir	UZ023
	Oygaing River Valley	UZ024
	Dzhum-Dzhum	UZ040
	Balykchi Fish Farm	UZ031
	Arnasay Lake System	UZ030
	Dalverzin State Forestry and Hunting Management Area	UZ036
	Tuyabuguz Reservoir	UZ032
	Terekli say section of the Chatkal Mountains Biosphere Reserve	UZ026
	Sarmysh Nature Park	UZ013
	Pulatkhan Gorge	UZ025
	Darasay Gorge	UZ045
	Mirzaaral Tugay	UZ034
	Middle reaches of the Sherabad River	UZ044
	South-west Gizzar Foothills	UZ043
	Zarafshan State Nature Reserve	UZ039

Annex 5

Areas having potential for key biodiversity areas

in the mountain hotspot of Central Asia and overlapping with existing protected areas

(Source: adapted from CEPF, 2017)

Country	KBA name	Km ²	Global KBA criteria met	Potential trigger species for criteria (x)
Kazakhstan	Karatau	390	B1	<i>Dryopteris mindshelkensis</i> , <i>Aquilegia karatavica</i> , <i>Eremogone turlanica</i> , <i>Populus berkarensis</i> , <i>Acantholimon inczevskii</i> , <i>Arabis mindshilkensis</i> , <i>Stroganowia robusta</i> , <i>Oxytropis echidna</i> , <i>Hedysarum karataviense</i> , <i>Hedysarum mindshilkense</i> , <i>Eryngium karatavicum</i> , <i>Schrenkia kultiassovii</i> , <i>Prangos equisetoides</i> , <i>Karatavia kultiassovii</i> , <i>Rubia pavlovii</i> , <i>Dracocephalum karataviense</i> , <i>Cousinia mindshelkensis</i> , <i>Saussurea mikeschinskii</i> , <i>Rhaponticum karatavicum</i> , <i>Tanacetopsis pjataevae</i> , <i>Tulipa alberti</i> , <i>Dracocephalum karataviense</i> , <i>Pseudoeremostachus sewerzowii</i> , <i>Vormela peregrina</i> , <i>[Aquila nipalensis]</i> , <i>[Aquila heliaca]</i> , <i>[Neophron percnopterus]</i> , <i>[Falco cherrug]</i> , <i>[Otis tarda]</i> , <i>[Columba eversmanni]</i> , <i>[Streptopelia turtur]</i> , <i>[Parnassius apollo]</i> , <i>[Saga pedo]</i> *
	Turkestan	580	B1	<i>Botschantzevia karatavica</i> , <i>Cotoneaster karatavicus</i> , <i>Cousinia grandifolia</i> , <i>Ferula leucographa</i> , <i>Fraxinus sogdiana</i> , <i>Lepidolopha karatavica</i> , <i>Pseudosedum karatavicum</i> , <i>Rhapidophyton regelii</i> , <i>Rhaponticum karatavicum</i> , <i>Scutellaria karatavica</i> , <i>Spiraeanthus schrenkianus</i> , <i>Stipa karataviensis</i> , <i>Stroganowia robusta</i> , <i>Thesium minkvitzianum</i> , <i>[Aquila heliaca]</i> , <i>[Columba eversmanni]</i> , <i>[Neophron percnopterus]</i> , <i>[Streptopelia turtur]</i> , <i>[Testudo horsfieldii]</i> , <i>[Saga pedo]</i> , <i>[Malus sieversii]</i>
	Ugam	110	A1, B1	<i>Marmota menzbieri</i> , <i>Aconitum talassicum</i> , <i>Arabis popovii</i> , <i>Allium lutescens</i> , <i>Bergenia ugamica</i> , <i>Betula talassica</i> , <i>Lepidolopha karatavica</i> , <i>Oxytropis ugamica</i> , <i>Rhapidophyton regelii</i> , <i>[Panthera uncia]</i> , <i>[Neophron percnopterus]</i> , <i>[Falco cherrug]</i> , <i>[Streptopelia turtur]</i> , <i>[Parnassius apollo]</i> , <i>[Saga pedo]</i>
	Tolebi	170	A1, B1	<i>Marmota menzbieri</i> , <i>Stroganowia robusta</i> , <i>Ligularia pavlovii</i> , <i>Stipa karataviensis</i> , <i>[Panthera uncia]</i> , <i>[Neophron percnopterus]</i> , <i>[Falco cherrug]</i> , <i>[Streptopelia turtur]</i> , <i>[Parnassius apollo]</i> , <i>[Saga pedo]</i>
	Boraldai	80	B1	<i>Rhapidophyton regelii</i> , <i>Betula talassica</i> , <i>Lepidolopha karatavica</i> , <i>Stroganowia robusta</i> , <i>Pseudosedum karatavicum</i> , <i>Bergenia ugamica</i> , <i>Cotoneaster karatavicus</i> , <i>Oxytropis talassica</i> , <i>Schrenkia kultiassovii</i> , <i>Rhaponticum karatavicum</i> , <i>Karatavia kultiassovii</i> , <i>Ferula leucographa</i> , <i>Rubia pavlovii</i> , <i>Fraxinus sogdiana</i> , <i>Scrophularia nuranae</i> , <i>Dracocephalum karataviense</i> , <i>Cousinia grandifolia</i> , <i>Ligularia pavlovii</i> , <i>Allium lutescens</i> , <i>Pseudoeremostachus sewerzowii</i> , <i>Anaphalis racemifera</i> , <i>[Vormela peregrina]</i> , <i>[Aquila heliaca]</i> , <i>[Falco cherrug]</i> , <i>[Neophron percnopterus]</i> , <i>[Streptopelia turtur]</i> , <i>[Saga pedo]</i> , <i>[Malus sieversii]</i>
	Aksu-Zhabagly	700	B1	<i>Lepidolopha karatavica</i> , <i>Dryopteris mindshelkensis</i> , <i>Malus niedzwetzkyana</i> , <i>Rhapidophyton regelii</i> , <i>Betula talassica</i> , <i>Betula tianschanica</i> , <i>Oxytropis talassica</i> , <i>Schrenkia kultiassovii</i> , <i>Karatavia kultiassovii</i> , <i>Lactuca mira</i> , <i>Cousinia grandifolia</i> , <i>Trichanthemis aulieatensis</i> , <i>Iris alberti</i> , <i>Juno kuschakewiczii</i> , <i>Tulipa alberti</i> , <i>Stipa karataviensis</i> , <i>Aconitum talassicum</i> , <i>Anaphalis racemifera</i> , <i>[Panthera uncia]</i> , <i>[Aquila nipalensis]</i> , <i>[Aquila heliaca]</i> , <i>[Neophron percnopterus]</i> , <i>[Falco cherrug]</i> , <i>[Streptopelia turtur]</i> , <i>[Parnassius apollo]</i> , <i>[Saga pedo]</i> , <i>[Malus sieversii]</i> , <i>[Columba eversmanni]</i>

Country	KBA name	Km ²	Global KBA criteria met	Potential trigger species for criteria (x)
	Berikkara	160	A1, B1	<i>Populus berkarensis</i> , <i>Scutellaria karatavica</i> , <i>Lonicera karataviensis</i> , <i>Fraxinus sogdiana</i> , <i>Schtschurowskia margaritae</i> , <i>Malus sieversii</i> , [<i>Aquila heliaca</i>], [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>], [<i>Streptopelia turtur</i>], [<i>Parnassius apollo</i>], [<i>Saga pedo</i>]
	Merke	650	B1	<i>Abelia corymbosa</i> , <i>Betula tianschanica</i> , <i>Bupleurum rosulare</i> , <i>Tulipa zenaidae</i> , [<i>Panthera uncia</i>], [<i>Aquila heliaca</i>], [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>], [<i>Streptopelia turtur</i>], [<i>Parnassius apollo</i>], [<i>Malus sieversii</i>]
	Aksay	1,000	B1	<i>Atraphaxis muschketowi</i> , <i>Euphorbia jaroslavii</i> , <i>Armeniaca vulgaris</i> , <i>Oxytropis almaatensis</i> , <i>Iris alberti</i> , <i>Gagea neo-popovii</i> , <i>Malus niedzwetzkyana</i> , <i>Malus sieversii</i> , <i>Tulipa ostrowskiana</i> , <i>Betula tianschanica</i> , [<i>Aquila heliaca</i>], [<i>Streptopelia turtur</i>], [<i>Parnassius apollo</i>], [<i>Saga pedo</i>]
	Almaty Nature Reserve	650	A1, B1	<i>Atraphaxis muschketowi</i> , <i>Pastinacopsis glacialis</i> , <i>Hieracium kumbelicum</i> , <i>Malus niedzwetzkyana</i> , <i>Armeniaca vulgaris</i> , <i>Oxytropis almaatensis</i> , <i>Erysimum croceum</i> , <i>Jurinea almaatensis</i> , <i>Eutrema pseudocordifolium</i> , <i>Iris alberti</i> , <i>Tulipa ostrowskiana</i> , <i>Sibiraea tianschanica</i> , [<i>Panthera uncia</i>], [<i>Parnassius apollo</i>], [<i>Saga pedo</i>], [<i>Malus sieversii</i>]
	Issyk	850	A1, B1	<i>Draba microcarpella</i> , <i>Betula tianschanica</i> , <i>Atraphaxis muschketowi</i> , <i>Oxytropis almaatensis</i> , <i>Eutrema pseudocordifolium</i> , <i>Malus niedzwetzkyana</i> , <i>Armeniaca vulgaris</i> , <i>Hieracium kumbelicum</i> , <i>Pastinacopsis glacialis</i> , <i>Jurinea almaatensis</i> , <i>Nepeta transiliensis</i> , <i>Ikonnikovia kaufmanniana</i> , <i>Sibiraea tianschanica</i> , [<i>Panthera uncia</i>], [<i>Streptopelia turtur</i>], [<i>Parnassius apollo</i>], [<i>Saga pedo</i>], [<i>Malus sieversii</i>]
	Assy Plateau	370	B1	<i>Betula tianschanica</i> , <i>Jurinea almaatensis</i> , <i>Oxytropis almaatensis</i> , [<i>Aquila heliaca</i>], [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>], [<i>Streptopelia turtur</i>], [<i>Parnassius apollo</i>], [<i>Saga pedo</i>]
	Kolsai	1,300	B1	<i>Stipa kungeica</i> , <i>Betula tianschanica</i> , <i>Erysimum croceum</i> , <i>Hieracium kumbelicum</i> , <i>Jurinea almaatensis</i> , <i>Stelleropsis tianschanica</i> , <i>Picea schrenkiana</i> , [<i>Panthera uncia</i>], [<i>Streptopelia turtur</i>], [<i>Neophron percnopterus</i>], [<i>Parnassius apollo</i>], [<i>Aquila heliaca</i>]
	Charyn Park	850	B1	<i>Fraxinus sogdiana</i> , <i>Oxytropis niedzweckiana</i> , <i>Lonicera iliensis</i> , <i>Ferula iliensis</i> , <i>Ferula sugatensis</i> , <i>Galatella saxatilis</i> , <i>Berberis iliensis</i> , [<i>Gazella subgutturosa</i>], [<i>Vormela peregusna</i>], [<i>Aquila nipalensis</i>], [<i>Aquila heliaca</i>], [<i>Neophron percnopterus</i>], [<i>Streptopelia turtur</i>], [<i>Saga pedo</i>], [<i>Falco cherrug</i>]
	Altyn-Emel	4,800	A1, B1	<i>Equus ferus</i> , <i>Tschulaktavia saxatilis</i> , <i>Ferula iliensis</i> , <i>Lonicera iliensis</i> , <i>Gentiana dshungarica</i> , <i>Lepechinella michaelis</i> , <i>Asterothamnus fruticosus</i> , <i>Fritillaria pallidiflora</i> , <i>Tulipa brachystemon</i> , <i>Berberis iliensis</i> , [<i>Gazella subgutturosa</i>], [<i>Aquila nipalensis</i>], [<i>Aquila heliaca</i>], [<i>Neophron percnopterus</i>], [<i>Pelecanus crispus</i>], [<i>Aythya ferina</i>], [<i>Oxyura leucocephala</i>], [<i>Chlamydotis macqueenii</i>], [<i>Otis tarda</i>], [<i>Columba eversmanni</i>], [<i>Streptopelia turtur</i>], [<i>Parnassius apollo</i>], [<i>Saga pedo</i>], [<i>Equus hemionus</i>]
	Koksu	2,400	A1, B1	<i>Ranodon sibiricus</i> , <i>Gentiana dshungarica</i> , <i>Malus sieversii</i> , [<i>Panthera uncia</i>], [<i>Aquila heliaca</i>], [<i>Falco cherrug</i>], [<i>Streptopelia turtur</i>], [<i>Parnassius apollo</i>], [<i>Saga pedo</i>]
	Zhongar-Alatau	3,500	A1, B1	<i>Ranodon sibiricus</i> , <i>Malus niedzwetzkyana</i> , <i>Malus sieversii</i> , <i>Stelleropsis tianschanica</i> , <i>Gentiana dshungarica</i> , <i>Senecio pyroglossus</i> , <i>Fritillaria pallidiflora</i> , <i>Tulipa alberti</i> , [<i>Panthera uncia</i>], [<i>Aquila nipalensis</i>], [<i>Aquila heliaca</i>], [<i>Neophron percnopterus</i>], [<i>Streptopelia turtur</i>], [<i>Parnassius apollo</i>], [<i>Saga pedo</i>]

Country	KBA name	Km ²	Global KBA criteria met	Potential trigger species for criteria (x)
Kyrgyzstan	Besh-Aral	900	A1, B1	<i>Marmota menzbieri</i> , <i>Crataegus knorringiana</i> , <i>Crataegus tianschanica</i> , <i>Juno zenaidae</i> , <i>Potentilla kamelinii</i> , <i>Thesium minkwitzianum</i> , <i>Primula eugeniae</i> , <i>Tulipa kaufmanniana</i> , <i>Viola allochroa</i> , [<i>Panthera uncia</i>], [<i>Aquila heliaca</i>], [<i>Falco cherrug</i>], [<i>Betula tianschanica</i>], [<i>Malus niedzwetzkyana</i>], [<i>Malus sieversii</i>], [<i>Pyrus korshinskyi</i>]
	Chandalash	140	B1	<i>Astragalus sandalaschensis</i> , <i>Betula czatkalensis</i> , <i>Calophaca pskemica</i> , <i>Hedysarum santalaschi</i> , <i>Psychrogeton adylovii</i> , <i>Seseli tenellum</i> , [<i>Betula tianschanica</i>], [<i>Falco cherrug</i>]
	Aflatun-Padyshata	600	B1	<i>Abies semenovii</i> , <i>Allium dodecadontum</i> , <i>Allium viridiflorum</i> , <i>Androsace aflatunensis</i> , <i>Bunium sary-cheleki</i> , <i>Bupleurum ferganense</i> , <i>Corydalis subverticillata</i> , <i>Elisanthe fedtschenkoana</i> , <i>Ferula czatkalensis</i> , <i>Lathyrus dominianus</i> , <i>Primula eugeniae</i> , <i>Pseudosedum ferganense</i> , <i>Silene fetissovii</i> , <i>Malus niedzwetzkyana</i> , <i>Malus sieversii</i> , [<i>Panthera uncia</i>]
	Sary-Chalek	200	B1	<i>Abies semenovii</i> , <i>Allium dodecadontum</i> , <i>Allium spathulatum</i> , <i>Allium viridiflorum</i> , <i>Androsace aflatunensis</i> , <i>Bunium sary-cheleki</i> , <i>Campanula eugeniae</i> , <i>Crataegus knorringiana</i> , <i>Crataegus tianschanica</i> , <i>Elisanthe fedtschenkoana</i> , <i>Exochorda tianschanica</i> , <i>Ferula czatkalensis</i> , <i>Ferula inciso-serrata</i> , <i>Hedysarum chaitocarpum</i> , <i>Hyalolaena intermedia</i> , <i>Leibnitzia knorringiana</i> , <i>Malus niedzwetzkyana</i> , <i>Malus sieversii</i> , <i>Onosma brevopilosa</i> , <i>Oxytropis fedtschenkoana</i> , <i>Oxytropis masarensis</i> , <i>Phlomis urodonta</i> , <i>Pseudosedum ferganense</i> , <i>Saxifraga vvedenskyi</i> , <i>Scutellaria knorringiae</i> , <i>Scutellaria urticifolia</i> , <i>Scutellaria xanthosiphon</i> , <i>Seseli giganteum</i> , <i>Silene eviscosa</i> , <i>Silene fetissovii</i> , <i>Tanacetopsis ferganensis</i> , <i>Tulipa anadroma</i> , [<i>Panthera uncia</i>]
	Besh-Tash	500	B1	<i>Abies semenovii</i> , <i>Bupleurum ferganense</i> , <i>Campanula eugeniae</i> , <i>Cousinia margaritae</i> , <i>Draba sarycheleki</i> , <i>Kosopoljanskia turkestanica</i> , <i>Neuroloma korovinii</i> , <i>Neuroloma pulvinatum</i> , <i>Onosma trachycarpa</i> , <i>Pyrethrum sovetkinae</i> , <i>Scutellaria popovii</i>
	Talas River	20	B1	<i>Leuciscus lindbergi</i> , <i>Dzihunia turdakovi</i> , <i>Triplophysa coniptera</i>
	Chychkan	300	A1, B1	<i>Abies semenovii</i> , <i>Allium chychkanense</i> , <i>Cotoneaster cinovskisii</i> , <i>Crataegus knorringiana</i> , <i>Draba sarycheleki</i> , <i>Juno zenaida</i> , <i>Leibnitzia knorringiana</i> , <i>Salvia vvedenskyi</i> , <i>Seseli korshinskyi</i> , <i>Silene sussamyrica</i>
	Dashman	420	B1	<i>Acantholimon knorringianum</i> , <i>Astragalus irisuensis</i> , <i>Campanula eugeniae</i> , <i>Chesneya quinata</i> , <i>Elisanthe fedtschenkoana</i> , <i>Exochorda tianschanica</i> , <i>Hedysarum chaitocarpum</i> , <i>Onosma brevopilosa</i> , <i>Oxytropis masarensis</i> , <i>Pseudosedum ferganense</i> , <i>Primula eugeniae</i> , <i>Salvia schmalhauseni</i> , <i>Scutellaria knorringiae</i> , <i>Scutellaria xanthosiphon</i> , <i>Tanacetopsis ferganensis</i> , [<i>Pyrus korshinskyi</i>]
	Leilek	660	B1	<i>Acantholimon strictiforme</i> , <i>Astragalus neobotschantzevii</i> , <i>Seselopsis pusilla</i> , <i>Incarvillea olgae</i> , <i>Tulipa korolkowii</i> , <i>Corydalis pseudoadunca</i>
	Isfairam-Shakhimardan	2,200	B1	<i>Acantholimon langaricum</i> , <i>Astragalus khassanovii</i> , <i>Bupleurum isphairamicum</i> , <i>Cousinia jassyensis</i> , <i>Crataegus isfajramensis</i> , <i>Eremurus zenaidae</i> , <i>Ferula alaica</i> , <i>Ferula subtilis</i> , <i>Incarvillea olgae</i> , <i>Nathaliella alaica</i> , <i>Neuroloma botschantzevii</i> , <i>Neuroloma tianschanicum</i> , <i>Pedicularis popovii</i> , <i>Phlomis drobovii</i> , <i>Phlomis pulchra</i> , <i>Phlomis stellata</i> , <i>Physochlaina alaica</i> , <i>Saussurea schachimardanica</i> , <i>Scutellaria nepetoides</i> , <i>Seseli alaicum</i> , <i>Semenovia alaica</i> , <i>Stubendorffia botschantzevii</i> , <i>Stubendorffia curvinervia</i>

Country	KBA name	Km ²	Global KBA criteria met	Potential trigger species for criteria (x)
	Alai-Kuu	1,650	B1	<i>Acantholimon karadarjense</i> , <i>Acanthophyllum coloratum</i> , <i>Allium zergericum</i> , <i>Crataegus knorringiana</i> , <i>Hedysarum chaitocarpum</i> , <i>Helichrysum ferganicum</i> , <i>Nepeta pseudokokanica</i> , <i>Neuroloma tianschanicum</i> , <i>Olgaea vvedenskyi</i> , <i>Onosma azurea</i> , <i>Oxytropis masarensis</i> , <i>Phlomis cordifolia</i> , [<i>Panthera uncia</i>]
	Chatyr-Kul Lake	220	B1, D1	<i>Tadorna ferruginea</i> , <i>Tianschaniella umbellifera</i> , [<i>Falco cherrug</i>], <i>Anser indicus</i>
	Son-Kul Lake	320	B1, D1	<i>Tadorna ferruginea</i> , <i>Taraxacum syrtorum</i> , [<i>Falco cherrug</i>], [<i>Aythya ferina</i>]
	Kumtor and Sarychat-Ertash	1,340	A1, B1	<i>Panthera uncia</i> , <i>Berberis kaschgarica</i> , <i>Saussurea involucreata</i> , <i>Taraxacum syrtorum</i> , [<i>Falco cherrug</i>]
	Karkyra	670	A1, D1	<i>Sibiraea tianschanica</i> , <i>Anthropoides virgo</i>
	Sary-Djaz	3,000	A1, B1	<i>Panthera uncia</i> , <i>Asterothamnus schischkinii</i> , <i>Astragalus dschangartensis</i> , <i>Artemisia saposchnikovii</i> , <i>Artemisia nigricans</i> , <i>Chorispora insignis</i> , <i>Cuscuta syrtorum</i> , <i>Oxytropis chantengriensis</i> , <i>Oxytropis piceetorum</i> , <i>Saussurea involucreata</i> , <i>Saussurea kara-artscha</i> , <i>Seseli kaschgaricum</i> , <i>Sibiraea tianschanica</i> , <i>Taraxacum syrtorum</i>
	Eastern Issyk-Kul Lakeshore	680	D1	<i>Anthropoides virgo</i> , <i>Netta rufina</i> , <i>Tadorna ferruginea</i> , [<i>Otis tarda</i>], [<i>Chlamydotis undulate</i>], [<i>Numenius tenuirostris</i>]
	Western Issyk-Kul Lakeshore	500	B1, D1	<i>Netta rufina</i> , <i>Chesneya villosa</i> , [<i>Gavia arctica</i>], [<i>Vanellus gregarius</i>], [<i>Aythya ferina</i>]
Tajikistan	Aktash	120	B1	<i>Phrynocephalus strauchi</i> , <i>Ferula mogoltavica</i> , [<i>Falco cherrug</i>]
	Ramit	660	B1	<i>Dracocephalum formosum</i> , <i>Eremurus tadshikorum</i> , <i>Iris hoogiana</i> , <i>Polygonum baldshuanicum</i> , <i>Thuja orientalis</i> , [<i>Clanga clanga</i>], [<i>Falco cherrug</i>], [<i>Testudo horsfieldii</i>]
	Sarikhadang	180	B1	<i>Amygdalus bucharica</i> , <i>Cousinia splendida</i> , <i>Lagochilus kschutensis</i> , <i>Rhus coriaria</i> , [<i>Panthera uncia</i>], [<i>Falco cherrug</i>], [<i>Malus sieversii</i>], [<i>Aquila nipalensis</i>]
	Shirkent	80	A1, B1	<i>Amygdalus bucharica</i> , <i>Lonicera paradoxa</i> , <i>Rhus coriaria</i> , <i>Juniperus semiglobosa</i> , [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>], [<i>Testudo horsfieldii</i>], [<i>Malus sieversii</i>]
	Tigrovaya Balka	620	A1, B1, D1	<i>Cervus hanglu</i> , <i>Netta rufina</i> , <i>Pseudoscaphirhynchus kaufmanni</i> , [<i>Columba eversmanni</i>], [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>], [<i>Aspiolucius esocinus</i>]
	Tajik Karatau	600	B1	<i>Anemone bucharica</i> , <i>Ferula decurrens</i> , <i>Tulipa maximowiczii</i> , <i>Tulipa rosea</i> , <i>Tulipa tubergeniana</i> , [<i>Testudo horsfieldii</i>]
	Kushvoristan	830	A1, B1	<i>Amygdalus bucharica</i> , <i>Amygdalus vavilovii</i> , <i>Crataegus darvasica</i> , <i>Ostrowskia magnifica</i> , <i>Rhus coriaria</i>
	Muminabad	460	B1	<i>Arabidopsis bactriana</i> , <i>Crataegus necopinata</i> , <i>Ostrowskia magnifica</i> , <i>Tulipa praestans</i> , <i>Iris hoogiana</i> , <i>Ranunculus baldshuanicus</i> , <i>Pyrus tadshikistanica</i> , [<i>Malus sieversii</i>]
	Dashtijum	400	A1, B1	<i>Amygdalus bucharica</i> , <i>Amygdalus vavilovii</i> , <i>Arabidopsis bactriana</i> , <i>Ostrowskia magnifica</i> , <i>Swida darvasica</i> , <i>Ungernia tadshikorum</i> , <i>Rhus coriaria</i> , [<i>Columba eversmanni</i>], [<i>Falco cherrug</i>]

Country	KBA name	Km ²	Global KBA criteria met	Potential trigger species for criteria (x)
	Darvaz	930	A1, B1	<i>Crataegus darvasica</i> , <i>Crataegus necopinata</i> , <i>Diospyros lotus</i> , <i>Iris darvasica</i> , <i>Kudrjaschevia korshinskiyi</i> , <i>Pyrus tadshikistanica</i> , <i>Rhus coriaria</i> , <i>Tulipa anisophylla</i> , <i>Tulipa linifolia</i> , <i>Ungernia tadshikorum</i> , <i>Zygophyllum darvasicum</i> , [<i>Falco cherrug</i>]
	Kamarou	200	B1	<i>Lonicera heterotricha</i> , <i>Taraxacum srtizhoviae</i> , <i>Ungernia tadshikorum</i> , <i>Aquila chrysaetos</i>
	Zorkul Mountains	1,000	B1, D1	<i>Tadorna ferruginea</i> , <i>Acantholimon alexeenkoanum</i> , <i>Acantholimon varivtzevae</i> , <i>Artemisia kuschakewiczii</i> , <i>Astragalus alexeenkoi</i> , <i>Desideria pamirica</i> , <i>Taraxacum murgabicum</i> , <i>Taraxacum tzvelevii</i> , [<i>Panthera uncia</i>], <i>Anser indicus</i> , [<i>Vanellus gregarius</i>], <i>Charadrius mongolus</i>
	Tajik NP	23,000	A1, B1, D1	<i>Panthera uncia</i> , <i>Tadorna ferruginea</i> , <i>Arabidopsis ovczinnikovii</i> , <i>Astragalus alexeenkoi</i> , <i>Clematis hilariae</i> , <i>Desideria pamirica</i> , <i>Piptatherum purpurascens</i> , <i>Potentilla borissi</i> , <i>Pulsatilla kostyczewii</i> , [<i>Clanga clanga</i>], [<i>Falco cherrug</i>], <i>Anser indicus</i> , [<i>Aquila heliaca</i>]
Turkmenistan	Koytendag	680	B1	<i>Astragalus aemulans</i> , <i>Astragalus kahircus</i> , <i>Astragalus kelifi</i> , <i>Astragalus kuhitangi</i> , <i>Astragalus leiosemius</i> , <i>Astragalus plumbeus</i> , <i>Astragalus rubrigalli</i> , <i>Astragalus willisii</i> , <i>Artemisia tenuisecta</i> , <i>Bunium kuhitangi</i> , <i>Carabus fedtschenkoi</i> , <i>Chesneya tribuloides</i> , <i>Cleome gordjagini</i> , <i>Cousinia bobrovii</i> , <i>Cousinia dimoana</i> , <i>Cousinia glabriseta</i> , <i>Echinops multicaulis</i> , <i>Echinops praetermissus</i> , <i>Haplophyllum vvedenskyi</i> , <i>Hedysarum plumosum</i> , <i>Hymenocrater incisodentatus</i> , <i>Jurinea tapetodes</i> , <i>Lagochilis nevskii</i> , <i>Lepidolopha fedtschenkoana</i> , <i>Melanoides kainarensis</i> , <i>Melanotus dolini</i> , <i>Onobrychis nikitinii</i> , <i>Oxytropis megalorrhyncha</i> , <i>Pentanema parietarioides</i> , <i>Phlomis spinidens</i> , <i>Rosa bellicosa</i> , <i>Scutellaria heterotricha</i> , <i>Scutellaria leptosiphon</i> , <i>Scutellaria nevskii</i> , <i>Scutellaria squarrosa</i> , <i>Silene nevskii</i> , <i>Tanacetopsis kraschennikovii</i> , <i>Xylanthemum rupestre</i> , <i>Troglocobitis starostini</i> , [<i>Falco cherrug</i>], [<i>Clanga clanga</i>], [<i>Streptopelia turtur</i>], [<i>Panthera pardus</i>]
	Zeyid Reservoir and Kelif Lakes	780	D1	<i>Netta rufina</i> , [<i>Pelecanus crispus</i>], <i>Pelecanus onocrotalus</i> , <i>Anas platyrhynchos</i> , [<i>Aythya ferina</i>], [<i>Leucogeranus eucogeranus</i>]
Uzbekistan	Pskem River Basin	2,550	A1, B1	<i>Cottus jaxartensis</i> , <i>Glyptosternum reticulatum</i> , <i>Acantholimon pskemense</i> , <i>Allium aflatunense</i> , <i>Allium pskemense</i> , <i>Armeniaca vulgaris</i> , <i>Astragalus abolinii</i> , <i>Astragalus lasiocalyx</i> , <i>Astragalus michaelis</i> , <i>Astragalus pskemensis</i> , <i>Bergenia ugamica</i> , <i>Betula tianschanica</i> , <i>Cousinia dolichophylla</i> , <i>Cousinia pterolepida</i> , <i>Dimorphosciadium gayoides</i> , <i>Dracocephalum adylovii</i> , <i>Dracocephalum spinulosum</i> , <i>Eremurus lactiflorus</i> , <i>Erysimum aksaricum</i> , <i>Hedysarum drobovii</i> , <i>Jurinea mariae</i> , <i>Malus niedzwetzkyana</i> , <i>Oxytropis maidantalensis</i> , <i>Pseudoglossanthus simulans</i> , <i>Pyrus asiae-mediae</i> , <i>Tulipa dasystemon</i> , <i>Tulipa dubia</i> , <i>Tulipa dasystemonoides</i> , <i>Tulipa greigii</i> , [<i>Panthera uncia</i>], [<i>Neophron percnopterus</i>], [<i>Malus sieversii</i>]
	Karzhantau Ridge	150	B1	<i>Cousinia dolichophylla</i> , <i>Eremurus lactiflorus</i> , <i>Tulipa dubia</i> , <i>Tulipa greigii</i>
	Chimgan	200	B1	<i>Acantholimon ekatherinae</i> , <i>Astragalus abolinii</i> , <i>Astragalus baranovii</i> , <i>Dracocephalum spinulosum</i> , <i>Eremurus lactiflorus</i> , <i>Hedysarum drobovii</i> , <i>Nanophyton botschantzevii</i> , <i>Oxytropis fedtschenkoi</i> , <i>Parrya tschimgamica</i> , <i>Phlomisoides tschimgamica</i> , <i>Tulipa dubia</i> , <i>Tulipa greigii</i> , [<i>Malus sieversii</i>]

Country	KBA name	Km ²	Global KBA criteria met	Potential trigger species for criteria (x)
	Akbulak River Basin	650	A1, B1	<i>Marmota menzbieri</i> , <i>Cottus jaxartensis</i> , <i>Allium aflatunense</i> , <i>Allium dodecadontum</i> , <i>Allium pskemense</i> , <i>Astragalus abolinii</i> , <i>Astragalus rubrivenosus</i> , <i>Betula tianschanica</i> , <i>Dimorphosciadium gayoides</i> , <i>Dracocephalum komarovii</i> , <i>Dracocephalum spinulosum</i> , <i>Ferula juniperina</i> , <i>Tulipa butkovii</i> , <i>Tulipa dasystemon</i> , <i>Tulipa dubia</i> , [<i>Malus sieversii</i>]
	Bashkizylsay River Basin	160	B1	<i>Adonis leiosepalis</i> , <i>Allium pskemense</i> , <i>Astragalus nucleosus</i> , <i>Astragalus pseudoamygdalinus</i> , <i>Astragalus rubrivenosus</i> , <i>Bunium angreni</i> , <i>Dracocephalum komarovii</i> , <i>Euphorbia mucronulata</i> , <i>Ferula juniperina</i> , <i>Oxytropis fedtschenkoi</i> , <i>Rindera fornicata</i> , <i>Salsola titovii</i> , <i>Salvia tianschanica</i> , <i>Thesium minkvitzianum</i> , <i>Tulipa dubia</i> , <i>Tulipa greigii</i> , [<i>Neophron percnopterus</i>], [<i>Falco cherrug</i>], [<i>Malus sieversii</i>]
	Karabau and Dukentsay River Basins	320	B1	<i>Allium pskemense</i> , <i>Astragalus rubrivenosus</i> , <i>Betula tianschanica</i> , <i>Euphorbia mucronulata</i> , <i>Kamelinia tianschanica</i> , <i>Salsola titovii</i> , <i>Tulipa mogoltavica</i> , <i>Tulipa vvedenskyi</i> , [<i>Malus sieversii</i>]
	Akkum Sands	110	A1, B1	<i>Phrynocephalus strauchi</i> , <i>Astragalus rubellus</i> , <i>Astragalus subauriculatus</i> , <i>Calligonum elegans</i>
	Northern Slope of the Turkestan Mountains	1,350	B1	<i>Astragalus belolipovii</i> , <i>Astragalus knorringianus</i> , <i>Amygdalus bucharica</i> , <i>Cousinia haesitabunda</i> , <i>Dracocephalum komarovii</i> , <i>Eremurus chloranthus</i> , <i>Ferula fedtschenkoana</i> , <i>Ferula sumbul</i> , <i>Lonicera paradoxa</i> , <i>Oxytropis kamelinii</i> , <i>Parrya olgae</i> , <i>Serratula lancifolia</i> , <i>Silene paranadena</i> , <i>Tulipa affinis</i> , <i>Tulipa dasystemon</i> , <i>Tulipa dasystemonoides</i> , [<i>Malus sieversii</i>]
	Nuratau Ridge	960	B1	<i>Acantholimon nuratavicum</i> , <i>Acantholimon subavenaceum</i> , <i>Acantholimon zakirovii</i> , <i>Allium isakulii</i> , <i>Allium praemixtum</i> , <i>Allium svetlanae</i> , <i>Amygdalus bucharica</i> , <i>Anura pallidivirens</i> , <i>Armeniaca vulgaris</i> , <i>Astragalus kelleri</i> , <i>Astragalus knorringianus</i> , <i>Astragalus leptophysus</i> , <i>Astragalus stipulosus</i> , <i>Cicer grande</i> , <i>Cousinia dshisakensis</i> , <i>Eremurus nuratavicus</i> , <i>Erysimum nuratense</i> , <i>Ferula sumbul</i> , <i>Helichrysum nuratavicum</i> , <i>Jurinea zakirovii</i> , <i>Lagochilus olgae</i> , <i>Lagochilus proskorjakovii</i> , <i>Lepidium olgae</i> , <i>Lepidolopha nuratavica</i> , <i>Nanophyton saxatile</i> , <i>Oxytropis pseudorosea</i> , <i>Parrya olgae</i> , <i>Parrya sarawschanica</i> , <i>Phlomis nubilans</i> , <i>Phlomisoides anisochila</i> , <i>Salvia submutica</i> , <i>Seseli turbinatum</i> , <i>Silene paranadena</i> , <i>Tulipa affinis</i> , [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>], [<i>Malus sieversii</i>]
	Aktau Ridge	360	B1	<i>Allium eremoprasum</i> , <i>Allium isakulii</i> , <i>Allium praemixtum</i> , <i>Anura pallidivirens</i> , <i>Astragalus kelleri</i> , <i>Astragalus nuratensis</i> , <i>Cicer grande</i> , <i>Cousinia pseudolanata</i> , <i>Ferula nuratavica</i> , <i>Helichrysum nuratavicum</i> , <i>Nanophyton saxatile</i> , <i>Parrya sarawschanica</i> , <i>Salsola titovii</i> , <i>Vicoa krascheninnikovii</i>

Country	KBA name	Km ²	Global KBA criteria met	Potential trigger species for criteria (x)
	Western Hissar	5,000	A1, B1	<i>Panthera uncia</i> , <i>Acantholimon annae</i> , <i>Acantholimon gontscharovii</i> , <i>Acantholimon hissaricum</i> , <i>Acantholimon taschkurganicum</i> , <i>Acantholimon vvedenskyi</i> , <i>Allium brevidentiforme</i> , <i>Allium dolichomischum</i> , <i>Allium hexaceras</i> , <i>Allium majus</i> , <i>Allium tyttanthum</i> , <i>Amygdalus bucharica</i> , <i>Astomaea galiocarpa</i> , <i>Astragalus bobrovii</i> , <i>Astragalus butkovii</i> , <i>Astragalus komarovii</i> , <i>Astragalus massagetowii</i> , <i>Astragalus pseudanthylloides</i> , <i>Astragalus schutensis</i> , <i>Astragalus stipulosus</i> , <i>Astragalus terrae-rubrae</i> , <i>Astragalus tupalangi</i> , <i>Bergenia hissarica</i> , <i>Cephalopodium hissaricum</i> , <i>Cicer incanum</i> , <i>Cousinia allolepis</i> , <i>Cousinia campyloraphis</i> , <i>Cousinia subcandicans</i> , <i>Cousinia vvedenskyi</i> , <i>Dianthus uzbekistanicus</i> , <i>Dimorphosciadium gayoides</i> , <i>Dionysia hissarica</i> , <i>Dracocephalum formosum</i> , <i>Eremurus aitchisonii</i> , <i>Eremurus iae</i> , <i>Eremurus pubescens</i> , <i>Erysimum nabijevii</i> , <i>Euphorbia kudrjashevii</i> , <i>Ferula fedtschenkoana</i> , <i>Ferula pratovii</i> , <i>Ferula sumbul</i> , <i>Hedysarum bucharicum</i> , <i>Hedysarum kudrjashevii</i> , <i>Hedysarum magnificum</i> ,
	Western Hissar (continued)	5,000	A1, B1	<i>Iskandera hissarica</i> , <i>Jurinea asperifolia</i> , <i>Jurinea pjataevae</i> , <i>Jurinea sangardensis</i> , <i>Lepidium minor</i> , <i>Ostrowskia magnifica</i> , <i>Oxytropis lasiocarpa</i> , <i>Oxytropis microcarpa</i> , <i>Oxytropis tyttantha</i> , <i>Parrya pjataevae</i> , <i>Pedicularis grandis</i> , <i>Rhus coriaria</i> , <i>Ribes malvifolium</i> , <i>Saponaria gypsacea</i> , <i>Scutellaria guttata</i> , <i>Scutellaria holosericea</i> , <i>Scutellaria villosissima</i> , <i>Seseli merkulowiczii</i> , <i>Silene michelsonii</i> , <i>Sphaerosciadium denaense</i> , <i>Tanacetopsis botschantzevii</i> , <i>Thesium ramosissimum</i> , <i>Tulipa carinata</i> , <i>Tulipa ingens</i> , <i>Tulipa lanata</i> , <i>Tulipa orythioides</i> , <i>Tulipa tubergeniana</i> , <i>Ungernia victoris</i> , <i>Vvedensia pinnatifolia</i> , <i>Zeravschania regeliana</i> , <i>Xylanthemum rupestre</i> , [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>], [<i>Malus sieversii</i>]
	Kugitang and Baysuntay Ridges	1,800	B1	<i>Glyptosternum reticulatum</i> , <i>Acantholimon butkovii</i> , <i>Acantholimon majewianum</i> , <i>Allium decoratum</i> , <i>Allium dolichomischum</i> , <i>Allium giganteum</i> , <i>Allium tyttanthum</i> , <i>Amygdalus bucharica</i> , <i>Astragalus bobrovii</i> , <i>Astragalus bucharicus</i> , <i>Astragalus juniperetorum</i> , <i>Astragalus plumbeus</i> , <i>Astragalus pseudanthylloides</i> , <i>Astragalus rotundus</i> , <i>Astragalus subschachimardanus</i> , <i>Astragalus terrae-rubrae</i> , <i>Astragalus willisii</i> , <i>Calispepla aegacanthoides</i> , <i>Calophaca reticulata</i> , <i>Cicer grande</i> , <i>Cleome tomentella</i> , <i>Cousinia glabriseta</i> , <i>Cousinia glaphyrocephala</i> , <i>Cousinia gnezdilloi</i> , <i>Cousinia haplophilla</i> , <i>Cousinia leptocladoides</i> , <i>Cousinia platystegia</i> , <i>Cousinia rhodantha</i> , <i>Cousinia vvedenskyi</i> , <i>Dionysia hissarica</i> , <i>Dracocephalum formosum</i> , <i>Eremurus aitchisonii</i> , <i>Eremurus alberti</i> , <i>Eremurus baissunensis</i> , <i>Eremurus iae</i> , <i>Eremurus pubescens</i> , <i>Eremurus suworowii</i> , <i>Euphorbia densiuscula</i> , <i>Ferula tuberifera</i> , <i>Halothamnus schurobi</i> , <i>Hedysarum bucharicum</i> , <i>Hedysarum magnificum</i> , <i>Heliotropium bucharicum</i> , <i>Jurinea gracilis</i> , <i>Jurinea sangardensis</i> , <i>Lepidium minor</i> , <i>Lepidoloph fedtschenkoana</i> , <i>Ostostegia bucharica</i> , <i>Oxytropis megalorrhyncha</i> , <i>Oxytropis pseudoleptophysa</i> , <i>Oxytropis tyttantha</i> , <i>Oxytropis vvedenskyi</i> , <i>Pyrus korshinskyi</i> , <i>Ribes malvifolium</i> , <i>Salvia lilacinocaerulea</i> , <i>Scutellaria colpodea</i> , <i>Scutellaria fedtschenkoii</i> , <i>Seseli nevskii</i> , <i>Silene nataliae</i> , <i>Spirostegia bucharica</i> , <i>Tulipa carinata</i> , <i>Tulipa ingens</i> , <i>Tulipa lanata</i> , <i>Tulipa orythioides</i> , <i>Tulipa tubergeniana</i> , <i>Xylanthemum rupestre</i> , [<i>Neophron percnopterus</i>], [<i>Malus sieversii</i>], [<i>Ovis orientalis</i>]*

* Square brackets indicate globally threatened species that are not confirmed to meet the threshold for any global KBA criterion

Annex 6

Areas having potential for Key Biodiversity Areas in the mountain hotspot of Central Asia and not overlapping with existing protected areas

(Source: adapted from CEPF, 2017)

Country	KBA name	Km ²	Global KBA criteria Met	
Kazakhstan	Kyzylkol	40	A1, D1	<i>Aythya ferina</i> , <i>Oxyura leucocephala</i> , <i>Pelecanus crispus</i> , <i>Tadorna ferruginea</i> , [<i>Streptopelia turtur</i>], [<i>Saga pedo</i>]*
	Arystandy	160	A1	<i>Otis tarda</i> , [<i>Aquila heliaca</i>], [<i>Streptopelia turtur</i>], [<i>Vormela peregusna</i>]
	Chakpak Pass and Ters-Ashchibulak Reservoir	130	D1	<i>Anthropoides virgo</i> , <i>Columba eversmanni</i> , <i>Tadorna ferruginea</i> , <i>Tetrax tetrax</i> , [<i>Aquila nipalensis</i>], [<i>Neophron percnopterus</i>], [<i>Falco cherrug</i>], [<i>Otis tarda</i>], [<i>Streptopelia turtur</i>]
	Toraigyr	1,500	B1	<i>Silene tianschanica</i> , <i>Ikonnikovia kaufmanniana</i> , <i>Jurinea robusta</i> , <i>Oxytropis niedzweckiana</i> , <i>Ferula iliensis</i> , <i>Ferula sugatensis</i> , <i>Heliotropium parvulum</i> , <i>Tanacetopsis goloskokovii</i> , <i>Galatella saxatilis</i> , <i>Tulipa ostrowskiana</i> , [<i>Gazella subgutturosa</i>], [<i>Vormela peregusna</i>], [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>], [<i>Streptopelia turtur</i>], [<i>Aquila nipalensis</i>]
	Narynkol	1,000	B1	<i>Betula jarmolenkoana</i> , <i>Erysimum croceum</i> , <i>Stipa kungeica</i> , [<i>Panthera uncia</i>], [<i>Aquila heliaca</i>], [<i>Streptopelia turtur</i>], [<i>Parnassius apollo</i>]
	Tuzkol	3	D1	<i>Tadorna ferruginea</i> , [<i>Falco cherrug</i>], [<i>Streptopelia turtur</i>]
Kyrgyzstan	Sumsar	20	B1	<i>Acantholimon karabajeviorum</i> , <i>Primula eugeniae</i>
	Kassan-Sai	750	B1	<i>Hyalolaena intermedia</i> , <i>Saussurea gorbunovae</i> , <i>Seseli giganteum</i> , [<i>Neophron percnopterus</i>], [<i>Malus niedzwetzkyana</i>], [<i>Malus sieversii</i>], [<i>Pyrus korshinskyi</i>], [<i>Vormela peregusna</i>]
	Nyldy	150	B1	<i>Allium dasyphyllum</i> , <i>Kosopoljanskia turkestanica</i> , <i>Neuroloma pulvinatum</i> , <i>Tulipa talassica</i> , [<i>Betula tianschanica</i>]
	Torkent-Kara-Jygach	160	B1	<i>Polygonum toktogulicum</i> , <i>Pyrethrum sovetkinae</i> , <i>Pyrethrum sussamyrense</i> , <i>Salvia vvedenskyi</i> , <i>Scutellaria botvaevae</i>
	Sargata	40	B1	<i>Phlomoides korovinii</i> , <i>Phlomoides milkoi</i> , <i>Tanacetopsis korovinii</i>
	Karasu	10	B1	<i>Acantholimon linczevskianum</i> , <i>Allium dodecadontum</i> , <i>Allium formosum</i> , <i>Delphinium knorringianum</i> , <i>Festuca tzeveleviana</i> , <i>Phlomoides kurpsaica</i> , <i>Scutellaria andrachnoides</i> , <i>Seseli galioides</i> , <i>Seseli korshinskyi</i> , <i>Silene fetissovi</i> , <i>Silene neoladyginae</i>
	Kurp-Sai	45	B1	<i>Cousinia abolinii</i> , <i>Phlomoides adylovii</i> , <i>Phlomoides kurpsaica</i> , <i>Scutellaria andrachnoides</i> , <i>Silene fetissovi</i>
	Bekechal	120	B1	<i>Allium bekeczalicum</i> , <i>Phlomoides kurpsaica</i> , <i>Pyrethrum brachanthemoides</i>

Country	KBA name	Km ²	Global KBA criteria Met	
	Kyzyl-Unur	480	B1	<i>Astragalus irisuensis</i> , <i>Campanula eugeniae</i> , <i>Exochorda tianschanica</i> , <i>Geranium sophiae</i> , <i>Hedysarum chaitocarpum</i> , <i>Juno zenaidae</i> , <i>Onosma brevipilosa</i> , <i>Oxytropis masarensis</i> , <i>Phlomoidea adylovii</i> , <i>Phlomoidea cordifolia</i> , <i>Pseudosedum ferganense</i> , <i>Salvia schmalhauseni</i> , <i>Scutellaria xanthosiphon</i> , <i>Silene fetissovi</i> , <i>Seseli korshinskii</i> , <i>Ungernia ferganica</i> , [<i>Malus niedzwetzkyana</i>], [<i>Malus sieversii</i>], [<i>Pyrus korshinskyi</i>]
	Bazar-Korgon	240	B1	<i>Astragalus irisuensis</i> , <i>Astragalus kugartensis</i> , <i>Delphinium ferganicum</i> , <i>Elisanthe fedtschenkoana</i> , <i>Exochorda tianschanica</i> , <i>Hedysarum chaitocarpum</i> , <i>Hylotelephium tianschanicum</i> , <i>Juno zenaidae</i> , <i>Oxytropis masarensis</i> , <i>Phlomoidea cordifolia</i> , <i>Pseudosedum ferganense</i> , <i>Silene fetissovi</i> , <i>Ungernia ferganica</i> , <i>Eminium regelii</i> , <i>Primula eugeniae</i> , <i>Viola allochroa</i>
	Tuz	550	B1	<i>Draba alajica</i> , <i>Iskandera alaica</i> , <i>Littledalea alaica</i> , <i>Paraquilegia scabrifolia</i> , <i>Pulsatilla kostyczewii</i> , <i>Rindera alaica</i> , [<i>Betula tianschanica</i>]
	Alai Valley	2,700	B1	<i>Acantholimon alaicum</i> , <i>Artemisia knorringiana</i> , <i>Draba alajica</i> , <i>Hedysarum daraut-kurganicum</i> , <i>Iskandera alaica</i> , <i>Littledalea alaica</i> , <i>Prangos gyrocarpa</i> , <i>Pulsatilla kostyczewii</i> , <i>Sorbaria olgae</i> , <i>Gloydus rickmersi</i> , <i>Ellobius alaicus</i> , [<i>Panthera uncia</i>], [<i>Falco cherrug</i>]
	Ak-Sai	900	B1	<i>Allium semenovii</i> , <i>Taraxacum syrtorum</i> , <i>Anthropoides virgo</i>
	Kavak-Too and Moldo-Too	120	B1	<i>Acantholimon linczevskianum</i> , <i>Cousinia schischkinii</i> , <i>Mogoltavia narynensis</i> , <i>Nepeta narynensis</i> , <i>Seseli luteolum</i>
Tajikistan	Asht	500	B1	<i>Amygdalus bucharica</i> , <i>Rhus coriaria</i> , [<i>Falco cherrug</i>], [<i>Malus sieversii</i>]
	Kayrakkum	1,000	B1	<i>Phrynocephalus helioscopus</i> , <i>Eremias scripta pherganensis</i> , <i>Carex bucharica</i> , <i>Cousinia darwasica</i> , <i>Cousinia leptocampyla</i> , <i>Lonicera paradoxa</i> , [<i>Columba eversmanni</i>], <i>Anas platyrhynchos</i> , <i>Grus grus</i> , [<i>Chlamydotis undulate</i>], [<i>Otis tarda</i>]
	Turkestan Mountains Southern Slope	500	B1	<i>Iskandera hissarica</i> , <i>Lonicera paradoxa</i> , [<i>Neophron percnopterus</i>], [<i>Malus sieversii</i>], [<i>Falco cherrug</i>]
	Upper Zeravshan	330	B1	<i>Blanfordimys bucharensis</i> , <i>Carex bucharica</i> , <i>Cousinia darwasica</i> , <i>Cousinia leptocampyla</i> , <i>Lonicera paradoxa</i> , <i>Blanfordimys bucharensis</i> , [<i>Panthera uncia</i>]
	Yagnob	20	B1	<i>Acantholimon komarovii</i> , <i>Iris hoogiana</i> , <i>Rochelia claviculata</i> , <i>Roegneria carinata</i> , [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>], [<i>Streptopelia turtur</i>]
	Upper Gissar	300	A1, B1	<i>Amygdalus bucharica</i> , <i>Iskandera hissarica</i> , [<i>Panthera uncia</i>], [<i>Malus sieversii</i>]
	Kondara	10	B1	<i>Allium flavellum</i> , <i>Allium lipskianum</i> , <i>Dracocephalum formosum</i> , <i>Stubendorffia aptera</i> , <i>Thesium gontscharovii</i> , <i>Tulipa praestans</i> , <i>Sorex buchariensis</i>
	Karnay	80	B1	<i>Astragalus tashkutanus</i> , <i>Gagea holochiton</i> , <i>Gagea villosula</i> , <i>Juniperus semiglobosa</i> , <i>Cousinia splendid</i> [<i>Falco cherrug</i>], [<i>Neophron percnopterus</i>]
	Tajik Babatag	850	B1	<i>Calligonum griseum</i> , <i>Gypsophila tadshikistanica</i> , <i>Gypsophila vedenevae</i> , <i>Stipa longiplumosa</i> , <i>Stipa ovczinnikovii</i> , <i>Tulipa tubergeniana</i> , <i>Testudo horsfieldii</i> , [<i>Neophron percnopterus</i>]
	Gazimalik	700	B1	<i>Allium gypsodictyum</i> , <i>Anemone bucharica</i> , <i>Circaetus ferox</i> , <i>Tulipa tubergeniana</i>

Country	KBA name	Km ²	Global KBA criteria Met	
	Sarsaryak	200	B1	<i>Salvia baldshuanica</i> , <i>Tulipa maximowiczii</i> , <i>Tulipa subpraestans</i> , [<i>Testudo horsfieldii</i>], [<i>Haliaeetus leucoryphus</i>]
	Ayvaj	220	A1, B1	<i>Allium gypsodictyum</i> , <i>Alsophylax tadjikensis</i> , <i>Pseudoscaphirhynchus kaufmanni</i> , [<i>Aspiolucius esocinus</i>], [<i>Chlamydotis macqueenii</i>]
Tajikistan	Khojamumin	30	B1	<i>Amygdalus bucharica</i> , <i>Crocus korolkowii</i> , <i>Ostrowskia magnifica</i> , <i>Rhus coriaria</i>
	Baljuvan	940	A1, B1	<i>Crataegus necopinata</i> , <i>Iris hoogiana</i> , <i>Pyrus cajon</i> , <i>Pyrus tadshikistanica</i> , <i>Ranunculus baldshuanicus</i> , <i>Salvia baldshuanica</i> , <i>Tulipa praestans</i> , <i>Malus sieversii</i>
	Tavildara	3,000	A1, B1	<i>Iris darvasica</i> , <i>Iris hoogiana</i> , <i>Juno popovii</i> , <i>Juno tadshikorum</i> , <i>Lonicera paradoxa</i> , <i>Rosa longisepala</i> , <i>Panthera uncia</i>
	Vanj	70	A1, B1	<i>Nepeta badachschanica</i> , <i>Parnassius autocrator</i>
	Rushan	50	B1	<i>Cicer garanicum</i> , <i>Cicer macracanthus</i> , <i>Hordeum brevisubulatum</i> , <i>Triticum aestivum</i>
	Shakh dara	30	A1, B1	<i>Lonicera pamirica</i> , <i>Myrtama elegans</i> , <i>Pyrus korshinskyi</i>
	Kudara	300	B1	<i>Artemisia kuschakewiczii</i> , <i>Cephalopodium badachschanicum</i> , <i>Lonicera pamirica</i> , <i>Taraxacum murgabicum</i> , <i>Taraxacum tzevelevii</i> , [<i>Falco cherrug</i>],
	Ishkashim	35	B1	<i>Acrocephalus orinus</i> , <i>Cicer garanicum</i> , <i>Hordeum brevisubulatum</i> , <i>Hordeum turkestanicum</i> , <i>riticum aestivum</i> , [<i>Falco cherrug</i>]
	Alichur Valley	65	B1	<i>Desideria pamirica</i> , <i>Myrtama elegans</i> , <i>Taraxacum jaschikuliense</i> , [<i>Falco cherrug</i>]
	Shorkul Lake	650	D1	<i>Tadorna ferruginea</i> , <i>Anser indicus</i> , <i>Charadrius mongolus</i>
Turkmenistan	Tallymerjen	1,500	D1	<i>Grus grus</i> , <i>Tadorna ferruginea</i> , <i>Vanellus gregarius</i> , [<i>Anser anser</i>]
Uzbekistan	Angren Plateau	700	A1, B1	<i>Marmota menzbieri</i> , <i>Vormela peregusna</i> , <i>Adonis leiosepala</i> , <i>Bunium angreni</i> , <i>Dimorphosciadium gayoides</i> , <i>Dracocephalum komarovii</i> , <i>Ferula juniperina</i> , <i>Hedysarum angrenicum</i> , <i>Hedysarum popovii</i> , <i>Oxytropis fedtschenkoi</i> , <i>Parrya kuramensis</i> , <i>Parrya saxifraga</i> , <i>Scutellaria angrenica</i> , <i>Tulipa dasystemon</i> , <i>Tulipa dasystemonoides</i> , <i>Tulipa dubia</i> , <i>Tulipa vvedenskyi</i> , <i>Helianthemum songaricum</i>
	Northern Slope of the Kuramin Ridge	680	B1	<i>Acantholimon laxiusculum</i> , <i>Acantholimon margaritae</i> , <i>Allium praemixtum</i> , <i>Allium pskemense</i> , <i>Astragalus dolonus</i> , <i>Astragalus nucleosus</i> , <i>Astragalus pseudoamygdalinus</i> , <i>Bunium angreni</i> , <i>Cicer mogoltavicum</i> , <i>Eremurus korovinii</i> , <i>Rindera fornicata</i> , <i>Salsola titovii</i> , <i>Tulipa mogoltavica</i> , <i>Tulipa vvedenskyi</i> , [<i>Falco cherrug</i>], [<i>Malus sieversii</i>]
	Upper Reaches of Chadak and Chorkesar Rivers	530	B1	<i>Acantholimon laxiusculum</i> , <i>Dracocephalum komarovii</i> , <i>Euphorbia mucronulata</i> , <i>Kuramosciadium corydaliifolium</i> , <i>Tulipa dasystemon</i> , <i>Tulipa dasystemonoides</i> , <i>Tulipa dubia</i>
	Pap Foothills	240	B1	<i>Allium haneltii</i> , <i>Allium isakulii</i> , <i>Allium kuramense</i> , <i>Anthochlamys tianschanica</i> , <i>Astragalus austroferganicus</i> , <i>Astragalus pseudodianthus</i> , <i>Dorema microcarpum</i> , <i>Mogoltavia sewerzowii</i> , <i>Salsola drobovii</i> , <i>Tulipa intermedia</i> , <i>Tulipa charipovii</i>
	Karatag	40	B1	<i>Acantholimon nabievii</i> , <i>Allium filidentiforme</i> , <i>Mogoltavia sewerzowii</i>
	Ungor Tepa	20	B1	<i>Allium filidentiforme</i> , <i>Allium tatyanae</i> , <i>Allium viridiflorum</i> , <i>Tulipa ferganica</i>

Country	KBA name	Km ²	Global KBA criteria Met	
	Chartak Foothills	30	B1	<i>Acantholimon nabievii</i> , <i>Hedysarum gypsaceum</i> , <i>Lamyropappus schakaptaricus</i> , <i>Mogoltavia sewerzowii</i>
	Syr Darya Upstream	40	B1	<i>Cottus spinulosus</i>
	Teshiktash Foothills	270	B1	<i>Salsola drobovii</i> , <i>Tulipa ferganica</i>
	Chilustun and Kyrtahtau Mountains	60	B1	<i>Allium alaicum</i> , <i>Astragalus rhacodes</i> , <i>Ferula vicaria</i> , <i>Salsola drobovii</i> , <i>Tulipa ferganica</i>
	Shakhimardan	40	B1	<i>Acantholimon katrantavicum</i> , <i>Acantholimon muchamedshanovii</i> , <i>Acantholimon schachimardanicum</i> , <i>Allium backhousianum</i> , <i>Allium isakulii</i> , <i>Allium schachimardanicum</i> , <i>Astragalus auratus</i> , <i>Astragalus borissianus</i> , <i>Astragalus dianthoides</i> , <i>Astragalus rhacodes</i> , <i>Fergania polyantha</i> , <i>Fumariola turkestanica</i> , <i>Iskandera alaica</i> , <i>Lepidium curvinervium</i> , <i>Lonicera paradoxa</i> , <i>Salsola drobovii</i> , <i>Salvia margaritae</i> , <i>Tulipa dasystemon</i> , <i>Tulipa ferganica</i>
	Sokh	200	B1	<i>Astragalus auratus</i> , <i>Astragalus dianthoides</i> , <i>Calligonum calcareum</i> , <i>Calligonum elegans</i> , <i>Ferula vicaria</i> , <i>Tulipa ferganica</i>
	Northern Aydarkul	1,400	A1, D1	<i>Pelecanus crispus</i> , <i>Fulica atra</i> , <i>Microcarbo pygmaeus</i>
	Tuzkan Lake	930	A1, D1	<i>Pelecanus crispus</i> , <i>Tadorna ferruginea</i>
	Northern Piedmont Plain of Nuratau Ridge	2,700	B1	<i>Allactaga vinogradovi</i> , <i>Astragalus kelleri</i> , <i>Tulipa lehmanniana</i> , [<i>Testudo horsfieldii</i>]
	Koytash Ridge	180	B1	<i>Acantholimon nuratavicum</i> , <i>Anura pallidivirens</i> , <i>Astragalus kelleri</i> , <i>Astragalus knorringianus</i> , <i>Cousinia dshisakensis</i> , <i>Erysimum nuratense</i> , <i>Helichrysum nuratavicum</i> , <i>Seseli turbinatum</i> , <i>Tulipa affinis</i>
	Kattakurgan Reservoir	130	D1	<i>Anthropoides virgo</i>
	Western Zeravshan	1,150	B1	<i>Astragalus chrysomallus</i> , <i>Astragalus stipulosus</i> , <i>Amygdalus bucharica</i> , <i>Cerastium borisii</i> , <i>Cousinia adenophora</i> , <i>Cousinia butkovii</i> , <i>Cousinia dshisakensis</i> , <i>Dianthus uzbekistanicus</i> , <i>Ferula sumbul</i> , <i>Hedysarum amankutanicum</i> , <i>Jurinea asperifolia</i> , <i>Komarovia angiosperma</i> , <i>Lepidium minor</i> , <i>Oenanthe heterococca</i> , <i>Oxytropis lipskyi</i> , <i>Parrya olgae</i> , <i>Salsola titovii</i> , <i>Serratula lancifolia</i> , <i>Silene oreina</i> , <i>Silene popovii</i> , <i>Tulipa fosteriana</i> , <i>Tulipa ingens</i> , [<i>Malus sieversii</i>]
	Chimkurgan Reservoir	40	D1	<i>Anser anser</i> , <i>Tadorna ferruginea</i>
	Talimarjan Reservoir	780	A1, D1	<i>Anser anser</i> , <i>Vanellus gregarius</i>
Uzbekistan	Tarkapchigay River Basin	700	B1	<i>Allium botschantzevii</i> , <i>Allium ophiophyllum</i> , <i>Crambe gordjagii</i> , <i>Eremurus suworowii</i> , <i>Eversmannia botschantzevii</i> , <i>Hedysarum bucharicum</i> , <i>Hedysarum magnificum</i> , <i>Heliotropium bucharicum</i> , <i>Jurinea gracilis</i> , <i>Phlomoides gypsacea</i> , <i>Salsola lipschitzii</i> , <i>Salvia lilacinocaerulea</i> , <i>Scutellaria colpodea</i> , <i>Spirostegia bucharica</i> , <i>Tulipa uzbekistanica</i>

Country	KBA name	Km ²	Global KBA criteria Met	
	Kelif-Sherabad Range	950	B1	<i>Allium giganteum</i> , <i>Allium margaritiferum</i> , <i>Allium ophiophyllum</i> , <i>Allium rhodanthum</i> , <i>Astragalus alexeji</i> , <i>Astragalus rubrigalli</i> , <i>Chesneya tribuloides</i> , <i>Cleome gordjagini</i> , <i>Cleome tomentella</i> , <i>Cousinia platystegia</i> , <i>Eremurus alberti</i> , <i>Eremurus baissunensis</i> , <i>Euphorbia densiuscula</i> , <i>Hammada eriantha</i> , <i>Heliotropium bucharicum</i> , <i>Phlomoides baburii</i> , <i>Plocama botschantzevii</i> , <i>Spirostegia bucharica</i> , <i>Tulipa tubergeniana</i> , <i>Zygophyllum bucharicum</i>
	Khaudaktau	440	B1	<i>Allium ophiophyllum</i> , <i>Allium rhodanthum</i> , <i>Climacoptera oxyphylla</i> , <i>Dipcadi turkestanicum</i> , <i>Euphorbia triodonta</i>
	Uzbek Babatag	980	B1	<i>Allium giganteum</i> , <i>Allium gypsodictyum</i> , <i>Allium margaritiferum</i> , <i>Allium sulphureum</i> , <i>Amygdalus bucharica</i> , <i>Astragalus bucharicus</i> , <i>Astragalus pseudoeremophya</i> , <i>Astragalus pseudorhacodes</i> , <i>Cousinia candicans</i> , <i>Cousinia stricta</i> , <i>Echinops babatagensis</i> , <i>Echinops brevipenicillatus</i> , <i>Eremurus alberti</i> , <i>Halothamnus babatagi</i> , <i>Lagochilus botschantzevii</i> , <i>Oxytropis babatagi</i> , <i>Reaumuria babataghi</i> , <i>Salvia insignis</i> , <i>Scutellaria colpodea</i> , <i>Tulipa lanata</i> , <i>Tulipa tubergeniana</i> , [<i>Neophron percnopterus</i>], [<i>Panthera pardus</i>]

* Square brackets indicate globally threatened species not confirmed to meet the threshold for any global KBA criterion

Annex 7

TENTATIVE LIST SUBMISSION FORMAT

STATE PARTY:

DATE OF SUBMISSION:

Submission prepared by:

Name:

E-mail:

Address:

Fax:

Institution:

Telephone:

Name of Property:

State, Province or Region:

Latitude and Longitude, or UTM coordinates:

DESCRIPTION:

Justification of Outstanding Universal Value:

(Preliminary identification of the values of the property which merit inscription on the World Heritage List)

Criteria met [see Paragraph 77 of the Operational Guidelines]:

(Please tick the box corresponding to the proposed criteria and justify the use of each below)

(i)

(ii)

(iii)

(iv)

(v)

(vi)

(vii)

(viii)

(ix)

(x)

Statements of authenticity and/or integrity [see Paragraphs 78-95 of the *Operational Guidelines*]:**Comparison with other similar properties:**

(The comparison should outline similarities with other properties on the World Heritage List or not, and the reasons that make the property stand out)

Annex 8

TENTATIVE LIST SUBMISSION FORMAT FOR TRANSNATIONAL AND TRANSBOUNDARY FUTURE NOMINATIONS

STATE PARTY:

DATE OF SUBMISSION:

Submission¹⁴ prepared by:

Name:

E-mail:

Title:

Address:

Fax:

Institution:

Telephone:

1.a Name of the transnational / transboundary future nomination¹⁵ :

1.b Other States Parties participating:

1.c Name(s) of the national component part(s):

1.d State, Province or Region:

1.e Latitude and Longitude, or Universal Transverse Mercator (UTM) coordinates:

2.a Brief Description of the transnational / transboundary future nomination¹⁶ :

2.b Description of the component part(s):

3. JUSTIFICATION FOR OUTSTANDING UNIVERSAL VALUE ¹⁷ OF THE FUTURE NOMINATION AS A WHOLE

(Preliminary identification of the values of the future nomination as a whole which merit inscription on the World Heritage List)

3.a Criteria met¹⁸ [see Paragraph 77 of the *Operational Guidelines*]:

(Please tick the box corresponding to the proposed criteria and justify the use of each below)

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
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¹⁴ This submission will be valid only when all the States Parties indicated in Section 1.b have sent their submissions.

¹⁵ The text provided in this section should be identical in all submissions of the States Parties involved in the presentation of the same transnational / transboundary future nomination.

¹⁶ In case of transnational/transboundary properties any modification will need the agreement of all States Parties concerned.

¹⁷ In case of transnational/transboundary properties any modification will need the agreement of all States Parties concerned.

¹⁸ In case of transnational/transboundary properties any modification will need the agreement of all States Parties concerned.

3.b Statements of authenticity and/or integrity [see Paragraphs 79-95 of the *Operational Guidelines*]:

3.c.1 Justification of the selection of the component part(s) in relation to the future nomination as a whole:

3.c.2 Comparison with other similar properties¹⁹ :

(This comparison should outline the similarities with other properties inscribed or not on the World Heritage List, and the reasons for the exceptional character of the future nomination).

**INTERNATIONAL UNION
FOR CONSERVATION OF NATURE**

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