

Biodiversity Assessment for Uzbekistan

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Biodiversity & Sustainable Forestry IQC (BIOFOR)**

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ACRONYMS

CAR	Central Asian Republic
ENRIN	Environment and Natural Resources Information Network
GEF	Global Environment Fund
GTZ	German Agency for Technical Cooperation
NABU	German Federation for Nature Conservation
NAPEESD	National Action Plan for Environment Protection and Ecological Provisions for Uzbekistan's Sustainable Development
NBSAP	National Biodiversity Strategy and Action Plan
NEAP	National Environmental Action Plan
NGO	non-governmental organization
NSDC	National Sustainable Development Commission
SCNP	State Committee for Nature Protection
SCF	State Committee for Forestry
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WWF	World Wildlife Fund

SECTION I

Introduction

The biodiversity assessment for the Republic of Uzbekistan was funded by USAID's Regional Mission to the Central Asian Republics in Almaty under a contract to Chemonics International through the Biodiversity and Sustainable Forestry (BIOFOR) IQC (see Annex B, Scope of Work). A two-person team consisting of Raymond Carl Daviesson and Dr. Galina Fet visited Uzbekistan from May 23 to June 7, 2000. Mr. Daviesson and Dr. Fet collaborated with local biodiversity specialist Dr. Elena Kreuzberg-Mukhina in researching and assessing biodiversity in Uzbekistan.

The approach used in the assessment was to collect and analyze information on biodiversity and related areas through documentation searches, interviews with key individuals and organizations concerned with biodiversity, both in Uzbekistan and Washington DC (see Annex C, List of Persons Contacted), and field trips.

Rather than duplicating research already undertaken and presented in strategy and project documents, this assessment has borrowed freely from these documents, and synthesized and adapted information where appropriate.

This assessment has three interlinked objectives:

- To summarize the status of biodiversity and its conservation in Uzbekistan; analyze threats, identify opportunities, and make recommendations for the improved conservation of biodiversity. This information will help USAID and other organizations and individuals, as appropriate, make decisions related to biodiversity conservation.
- To meet the requirements stipulated under Section 119 (d) of the Foreign Assistance Act (see Annex A, FAA Sections 117 and 119), required when USAID Missions are developing new strategic programs. The assessment also prepares the Mission to address issues arising under Sections 117 and 119 of the FAA, by providing information on biodiversity and natural resources in Uzbekistan.
- To analyze the impacts of current and future USAID activities in Uzbekistan on biodiversity conservation, suggest actions that USAID could take to support biodiversity conservation in Uzbekistan that are consistent with current and future USAID programs, and identify special opportunities for the Mission in the area of biodiversity conservation.

SECTION II

Status of Biodiversity

A. Overview

Located in the center of the Eurasian continent, the Republic of Uzbekistan is bordered by Kazakhstan to the north, Turkmenistan and Afghanistan to the south, and Kyrgyzstan and Tajikistan to the east. Covering 447,400 km², the territory is divided into 12 main administrative areas (*oblasts*) and the semi-autonomous Republic of Karakalpakstan in the northwest. With a population of 23.3 million, the country is densely populated compared with other Central Asian republics. Uzbekistan is globally and regionally important due to its location between the European, Middle Eastern, and Asian biogeographical regions. Its varying landscapes of high mountain ranges, wide steppes, deserts, riparian wetlands, and the Aral Sea has resulted in a diversity of habitats.

Uzbekistan is a very important flyway for many migratory bird species between northern Europe and their wintering grounds in Africa and Asia.

Almost 85 percent of Uzbekistan's territory is occupied by desert or semidesert, including the largest desert in Central Asia, the Kyzylkum. In the east and southeast, the extensive Tien-Shan and Gissar-Alai mountain systems, which occupy 15 percent of the territory, flank the deserts. The main water arteries are the transboundary rivers, the Amudarya and the Syrdarya, which used to deliver their waters into the Aral Sea, a large part of which is (or was) within Uzbekistan. These rivers have broad, flat valleys, used intensively for irrigated agriculture.



Potentilla sp, from the *Rosacea* family, a typical plant of rocky areas in foothills and mountains.

The Amudarya and Syrdarya drainage basins constitute almost the whole region's surface water resources. The majority of the runoff of these rivers and their tributaries is generated in their upper reaches in Tajikistan or Kyrgyzstan. A large number of small artificial water bodies and reservoirs have been created mainly for water management purposes. The only large natural body of water in Uzbekistan was the Aral Sea. This lake, half within Uzbekistan (Karakalpakstan) and half within Kazakhstan, has been severely affected by irrigated land development and unsustainable water management practices. Since the 1970s, the Aral has shrunk to approximately one-half of its original size, enormously impacting local ecology as well as the health, economy, and social situation of local populations. The Aral Sea crisis has gained international publicity and attention as the desiccation of the sea is a graphic example of the lack of sustainability of natural resource management in the region. In addition to the Aral Sea, a large artificial water body in Uzbekistan, the Aidarkul-Arnasay lake system, exists in the north-central part of the country. This lake system was created in 1969, mainly due to the

substantial dumping of up to 25 km³ of Syr-darya River flow into a natural depression (emergency discharge). The water is slightly saline, but the area has important potential for developing fisheries. In addition, it serves an important wetland area for migratory birds and continued existence of *tugai* forests.

The specific geographical position of Uzbekistan within the Central Asian region, on the crossroads of several biogeographical provinces, determined the richness of its natural habitats and high diversity of plant and animal species. Vast plains occupied by different kinds of deserts, mountain steppes, mountain forests and alpine meadows, riparian gallery forests in the desert river valleys, wetlands, and oases represent different ecosystems with their characteristic floristic and faunistic complexes.

B. Major Ecoregions

Four distinct major biogeographical zones can be distinguished in Uzbekistan, according to their ecological conditions and composition of their flora and fauna:

- Lowland deserts
- Submontane semideserts and steppes
- Mountain ecosystems
- Wetland and riparian ecosystems

B1. Lowland Deserts

Deserts occupy the main part of Uzbekistan's lowlands, including the Kyzylkum and Karakum Deserts, Ustyurt Plateau, the Karshi Steppe, and the Fergana Valley. Four kinds of desert ecosystems are present in Uzbekistan: sand, clay, salt, and stony deserts. All these desert types are located 100 m to 300 m above sea level under similar climatic conditions.

Sand deserts. Sand deserts in Uzbekistan makes up 27 percent of the total area of the lowlands. The Kyzylkum is the largest sandy desert of Uzbekistan. Other areas include the Sundukli Sands, located between the river valleys of Amudarya and Kashkadarya and the Kattakum sandy massif in the downstream part of the Surkhandarya. The physical and biological peculiarities of sandy habitats has resulted in distinct ecological communities. Trees and shrubs are a characteristic part of psammophyte vegetation, constituting up to 30 percent of total floral composition. Saxaul (*Haloxylum spp.*) woodlands are characteristic of the sand deserts (notably *H. persicum*). Other vegetative species include *sand accacia*, *Ammodendron conollyi*, *Salsola spp.*, *Calligorum*, *Astragalus*, *Eremosparton flaccidum*, and *Ephedra strobilacea*. The perennial grasses are represented by ephemeral (10 percent) and summer-vegetation grasses (20 percent). Of ephemeral plants, *Carex physodes*, *Poa bulbosa*, and *Ferula foetida* frequently co-dominate in vegetative cover. Perennial grasses *Stipagrostis spp.* are pioneer species on fixed sands. About 40 percent of sandy desert species are represented by grasses. The fauna of the sand deserts includes several rodents, notably jerboas, ground squirrels, and gerbils. Lizards, including agamas and racerunners, are characteristic. Several desert-adapted bird species breed there, including Pander's ground jay (*Podoces panderi*), saxaul sparrow, and sandgrouse.

Stony deserts are typical for Ustyurt plateau and a part of Kyzylkum desert. In stony deserts, the vertebrate fauna totals about 130 species, including 11 reptile species, about 100 bird species and 18 species of mammals. Of birds, about 30 species nest here, among which are found Pallas' and black-bellied sandgrouse and Houbara bustard.

Salt deserts have developed on the saline plains of plateau's (Usturt) and their slopes, on terraces of sand dunes (Aidarkul-Arnasai complex), natural depressions, and the modern Amudarya delta. Wetlands, important for migratory birds, are a feature of these areas.

Clay deserts are found in Kashkadarya basin and in Dalverzin and Golodnaya steppes. Clay deserts have shallow wetlands associated with them and a higher humidity level that results in denser vegetative cover. Rodents are again characteristic, but this type of desert is a habitat for saiga and goitered gazelle. Clay deserts are similar to stony deserts in their faunal composition.

B2. Submontane Semidesert

This ecoregion represents foothills extending up to altitudes of 800 to 1,200 m. The width of the submontane semidesert belt is 30 to 50 km and makes up two-thirds of mountain territories in Uzbekistan. In submontane semidesert, the flora is divided into perennial grasses and annual plants. The fauna includes reptiles such as Central Asian tortoise, Turkestan gecko, takyr toad agama, desert monitor, and several lizard and snake species.

B3. Mountains

Mountain deciduous forests occupy small areas with complex relief, at the altitudes between 800 to 1,000 and 2,500 to 2,800 m. The basic vegetation pattern consists of trees and shrubs alternating with steppe and meadow areas or bare rocks. The largest areas of deciduous species are concentrated in the Western Tien-Shan mountains. They are located at altitudes from 800 to 2,000 m and contain relict forests of walnut (*Juglans regia*) mixed with wild apple, apricot, plum, and other fruit tree species.



Botanically rich lower mountain ecosystem.

Juniper forests constitute the principal mountain forests. These forests are dominated by three juniper species: *Juniperus seravschanica*, *J. semiglobosa* and *J. turkestanica*. In Pamir-Alai mountain system, juniper trees are widespread on northern slope of Turkestan ridge, forming, along with fescue (*Festuca*) steppes, a distinct vegetation belt at altitudes from 2,000 to 3,000 m. At higher altitudes, Turkestan juniper forms low, creeping thickets. It is succeeded by frost-resistant vegetation at higher altitudes. Mountain forests are inhabited by a diverse mix of animals, including several bird species characteristic of Chinese and Himalayan faunas. Mammals include fox, wolf, stone marten, Tien-Shan brown bear, and wild boar. Reptiles include Chernov's agama, Himalayan and Turkestan agamas, and the shield-headed snake.

Mountain steppes occupy areas at the altitudes up to 2,000 to 2,600 m.

Subalpine and alpine meadows are located at altitudes between 2,800 m and 3,700 m. Meadow vegetation is dominated by *Polygonum*, *Prangos*, and *Ferula*.

The zone of *high mountains* starts from 3,500 m. Vegetation is represented by “carpet” meadows of dwarf grasses that are characteristic of the alpine belt of glaciated high mountains. Up to 110 species are known, 40 of which are Central Asian endemics.

In *subalpine and alpine zone*, only one amphibian species exists, the green toad; common reptiles are Himalayan agama and cottonmouth. Characteristic birds include Himalayan vulture, bearded vulture, alpine chough, horned lark. Mammals include Tien-Shen bear, snow leopard, ermine, weasel, Siberian mountain goat, mountain urial, Menzbier’s and long-tailed marmots, field voles, and red pikas.

B4. Wetlands and Riparian Forests

The Amudarya delta belongs to those natural territories in the country that have undergone major changes. The modern delta of the Amudarya lies downstream from Nukus city, and totals about 7,000 km². Since the mid-1960s, Amu-Darya stopped reaching the Aral Sea in dry years. Due to decreased water flow into the delta and the retreat of the coastal line of the Aral Sea, the area of riparian forests has declined. There are extensive marshes and reedbeds. These wetlands of the lower parts of the Amudarya River are historically an area of concentration of many wetland birds during both nesting and seasonal migrations. There are large colonies of white pelicans (*Pelecanus oncorhynchus*) and the globally threatened Dalmatian pelicans, (*P. crispus*), glossy ibis, cormorants, and herons. Characteristic mammals are muskrat, wild boar, jackal, badger, fox, steppe cat, and crested gerbil; among reptiles, water grass snake, racerunner lizards, grey gecko, toad agama, and variegated grass snake are common.

Riparian and riverine ecosystems are linked mainly to Amudarya and Syrdarya Rivers and the downstream parts of the Zerafshan and Surkhandarya. Significant areas of *tugai* (riparian forest) have only survived as narrow corridors in the Amudarya valley and delta and occasionally in other river valleys. Their total area is about 1.6 million hectares. In *tugai* riparian forest, the flora includes 285 species of vascular plants belonging to 35 families and 105 genera. These forest form a refuge for mammals, birds and reptiles, including Bukhara deer, foxes, badgers, and wild boar.

In recent decades, littoral habitats around artificial reservoirs have become extremely important in conservation of wetland birds and waterfowl. The largest areas are the Aidarkul-Arnasai lake system, lakes Dengizkul, Karakir, and Solenoye, and a number of artificial reservoirs: Tudakul, Talimardzhan, Chimkurgan.

C. Species Diversity

The rich flora of Uzbekistan is represented by at least 4,500 species of vascular plants belonging to 115 families and 650 genera. Endemism is rather low (around eight percent). Relict endemic species constitute 10 to 12 percent of all endemics.

The fauna of Uzbekistan has an ancient and complex evolutionary history. In addition to the endemic fauna, other species migrated during geological history of the area from the deserts and mountains of surrounding territories of Central Asia, and from India, China, and the grasslands of Kazakhstan, as well as from Siberia, southern Europe, and northern Africa. The present fauna of vertebrate animals includes 682 species: 108 mammals, 431 birds, 58 reptiles, two amphibians, and 83 fishes. The fauna of invertebrate animals is estimated at 15,000 species.

Loss and degradation of habitats in Uzbekistan has led to the reduction of ranges and decrease in numbers of many species and the extinction of others. Especially threatened are commercial game species of large mammals and birds. Endemic and locally distributed species with a narrow ecological and geographical ranges are under particular threat. Caspian tiger (*Panthera tigris*), Asiatic cheetah (*Acinonyx jubatus*), wild ass (*Equus hemionus*), and Aral trout (*Salmo trutta aralensis*) have been extirpated in Uzbekistan. Other species, such as leopard (*Panthera pardus*), striped hyena (*Hyaena hyaena*), great bustard (*Otis tarda*), large and small Amu-Darya shovelnose sturgeons (*Pseudoscaphirhynchus kaufmanni*, *P. hermanni*), Syr-Darya shovelnose sturgeon (*Pseudoscaphirhynchus fedtschenkoi*), and ship sturgeon (Aral Sea stock) (*Acipenser nudiventris*) are severely threatened. A third group of animals is endangered and vulnerable. These include Ustyurt and Bukhara subspecies of wild sheep (*Ovis vignei arkal*, *O. v. bucharensis*), markhor (*Capra falconeri heptneri*), snow leopard (*Uncia uncia*), caracal (*Caracal caracal*), Central Asian otter (*Lutra lutra seistanica*), marbled teal (*Marmaronetta angustirostris*), houbara bustard (*Chlamydotis undulata*), pin-tailed sandgrouse (*Pterocles alchata*), Khentau toad agama (*Phrynocephalus rossikowi*), Strauch's toad agama (*Phrynocephalus strauchi*), sand racerunner (*Eremias scripta pherganensis*), Aral barbel, pike asp, as well as several mollusk and insect species.



Cheetah, formerly widespread in open habitats, now probably extinct in Central Asia.

The changes in the riparian forest and direct threat posed by human activities there led to the decrease in the ranges of the Bukhara deer (*Cervus elaphus*), Central Asian otter, six endemic subspecies of pheasant (*Phasianus colchicus*), and other *tugai* inhabitants.

Owing to changes of ecological conditions in the Aral Sea region, the wetlands in the delta of the Amudarya River have lost much of their diversity. The breeding habitats of mute swan, Dalmatian and great white pelicans, pygmy cormorant, and other threatened bird species have

declined. The original ichthyofauna of the Aral Sea has been decimated, and many endemic species of mollusks and crustaceans have become critically endangered.

D. Agrobiodiversity

Agrobiodiversity refers to the genetic variability in cultivated plants and domestic animals, together with their ancestors and closely related wild species growing and evolving under natural conditions.

Work initiated by N.I. Vavilov in the 1920s to map centers from which cultivated plants originated identified that Central Asia, including Uzbekistan, is an important “hot spot” for agrobiodiversity. The importance of the region includes both wild ancestor species and high genetic crop diversity. Unfortunately, past policies and approaches have underestimated the value of traditional crops and livestock, with the result that there has been extensive replacement with introduced exotic breeds and decline/endangerment of traditional cultivars.

E. Major Threats to Biodiversity

Habitat loss and desertification as a result of agriculture and irrigation and land development remain key issues for Uzbekistan’s biodiversity. The principal threats include:

1. Loss or degradation of habitat through direct conversion or exploitation of natural ecosystems.
 - Conversion of desert and floodplain habitats for arable agriculture and cotton production. Irrigation has dramatically changed the ecological situation in different regions, which has rendered the survival of many desert animals impossible under new ecological conditions. In the last decades, Golodnaya, Karshi, Surkhan-Sherabad steppes, central part of Fergana valley, the narrow area of foothills along the western edge of Tien-Shan and Pamiro-Alai mountain systems has been developed for agriculture, thus leading to a decrease of habitat for goitered gazelle, houbara bustard, sandgrouse, and other dryland species.

Almost all of the original clay deserts have been converted to agriculture. The Golodnaya steppe has been almost completely transformed into a cultivated landscape, and the Karshi steppe is also threatened by intensive development.

- Unregulated deforestation. Cutting of woodlands and forests for commercial and fuelwood needs, as well as the clearing of land for agriculture, is a major threat to biodiversity in Uzbekistan. Particularly affected have been the desert-adapted saxaul (*Haloxylon spp*) woodlands, the riparian *tugai* forests, and mountain forests.
- Drainage of wetlands. Rich water meadows have increasingly been drained, either directly or indirectly, resulting in loss of species diversity and wholesale reduction of important reedbed habitats. The quality of the pasture for grazing and hay production has consequently declined.

- Overgrazing by domestic livestock. The conversion of floodplains and wetlands has considerably reduced the area available for livestock grazing, concentrating domestic herds on fragile remaining habitats and around water points. This in turn results in further degradation. Compared to the arable agriculture, changes in the development of the livestock sector since independence are occurring much more rapidly because there is less dependence on a centralized a system and on water infrastructure. Thus, livestock numbers are rapidly increasing as people strive to meet short-term economic objectives at the expense of damage to sensitive, arid ecosystems. Unless carefully regulated, this will become a major threat to desert, steppe, and, to a lesser extent, mountain ecosystems. In addition, traditional practices, such as pasturing in mountain meadows, is being replaced by year-round grazing around homesteads.
2. Loss or degradation of habitat through indirect effects of changing land use patterns.
- Changing water balance through poor irrigation practices. Widespread irrigation, using poor, water-wasting technologies, has had a disastrous effect on the country's ecology, leading to desiccation, salinization, erosion, and alteration of water balances. This has significantly affected desert ecosystems, which are highly sensitive to change. The exposure of the Aral seabed and decreased vegetative cover have caused significant local climate change with increased aridity and temperature extremes, higher wind speeds, and rapid onset of desertification processes. Windblown pollutants are also having a negative effect.
 - Diversion of water through hydroschemes. Dams, together with extensive irrigation and drainage systems, have resulted in significant changes in local hydrological regimes. *Tugai* forests that depended on natural cycles of flooding have been adversely affected, and shallow wetlands have dried up. Transboundary issues of

Aral Sea Crisis

The Aral Sea basin, which is the hydrological sink for almost the entire Central Asia region, has suffered the worst impacts from the development of irrigated agriculture. The expanded and inefficient use of irrigation water resulted in a rapid decline of inflow to the sea, causing its level to drop drastically. The Aral Sea, half within Uzbekistan (Karakalpakstan) and half within Kazakhstan, had until the 1960s a surface area of 66,000 km² and a volume of 1,000 km³. A stable water level was maintained by a balance between evaporation from its surface (about 60 km³) and the inflow of water from the Amudarya and Syrdarya Rivers, plus precipitation (also about 60 km³). Between the 1960s and 1980s, development of irrigation, mainly for cotton production, began to divert substantial amounts of the rivers to irrigation fields. Much of this water was not returned to the rivers due to loss from evaporation, loss to ground water, or dumping of irrigation drainage water in the desert depressions. As a result the flow of water from the rivers to the Aral Sea reduced to 30 percent of the original by the 1980s, and the sea level dropped by about 16 m. The Aral is now approximately one-half of its original size, and has split into two parts, one fed by the Amudarya in the south (Karakalpakstan), and one fed by the Syrdarya in the north (Kazakhstan). Although flow to the Aral has reportedly increased, it is still receding at an estimated two to three centimeters annually.

The direct impacts of this change has been the increase in the salinity of the sea from 10 percent to 30 percent, the creation of a highly saline desert about 20,000 km² in size on the former seabed and the gradual desiccation of the two deltas. Though historically the Aral has varied considerably in size, never has this change occurred at such a rate (less than 20 years) or in combination with the other negative anthropogenic activities – thus ecosystems and species have not been able to adapt adequately. Of the 24 original fish species believed to occur in the Aral, only four remain. The ecologically rich deltas, “wetlands within deserts,” are rapidly deteriorating. Natural vegetation, particularly the important riparian (*tugai*) forest, has either been cleared for agricultural purposes or is dying due to changed water regimes. Economically, the desiccation of the Aral has deprived the area of an annual fish production of 40,000 tons, as well as a steep decline in employment and agricultural production. The local climate has become more severe, with higher summer temperatures and lower winter temperatures, and dust storms that carry salt and pollutants over great distances, affecting ecosystem and human health. (*Adapted from NBSAP*)

water supply and distribution are also at issue, as upland watersheds are degraded, leading to lower and irregular supply. Although substantial areas of the Amudarya wetlands were partially restored in the past, their long-term survival is severely endangered unless specific actions are taken.

- Overuse of agricultural inputs. Soviet agriculture was characterized by high levels of inputs, such as fertilizers, pesticides, and herbicides. Concentrations of these inputs through irrigation systems has resulted in salinization of soils.
3. Over-exploitation of individual species, through hunting, overfishing, and persecution. With the decline of the strict enforcement capacity of the former Soviet protected area and wildlife systems, citizens of the newly-independent republics have taken advantage to promote hunting, including trophy shooting. Collection of birds of prey for the falconry trade, particularly to the Arab states, has increased, as has collection of threatened reptiles, such as Horsefield's tortoise, for the pet trade.
 4. Effects of introduced or non-native species. This has been especially catastrophic for the native fish fauna.

SECTION III

Status of Biodiversity Conservation

A. Protected Areas

There are four categories of protected areas in Uzbekistan: state nature reserves (*zapovedniks*), national parks, conservation areas (*zakazniks*), and natural monuments (Annex F).

However, the protected areas with strict regime and long term protection (IUCN Category I and II, including national parks, a biosphere reserve, and state nature reserves) cover only 8,171 km² or 1.8 percent of the country's territory. It is estimated that total government expenditure on these protected areas amounted to less than \$ 300,000 in 1996, equivalent to 0.003 percent of total government expenditure (NBSAP).

A1. State Reserves (*Zapovedniks*)

This is the traditional category of strict protected areas, corresponding to IUCN Category I protected areas. They are permanent reserves, established to protect a target species or ecosystem, where only controlled research activities are allowed.

There are nine state reserves totaling 2,164 km², including six mountain nature reserves (Gissar, Zaamin, Kitab, Nurata, Surkhan, and Chatkal) and three desert-*tugai* nature reserves (Kyzyl-Kum, Badai-*Tugai*, and Zarafshan). This constitutes slightly more than 10 percent of the total protected area system. Reserves are generally small (maximum 814 km²; minimum 24 km²; average 236 km²). All are managed by the State Committee for Forestry, with the exception of the largest (Gissar Reserve).

A2. National Parks

National parks are a relatively recent introduction to the system of protected areas. Ugam-Chatkal National Park was established in 1990 and Zaamin National Park in 1976. National parks cover a total area of 6,061 km² and constitute 30 percent of the total protected areas and 74 percent of the areas with strict regime and long-term protection. Their basic objective is to protect biodiversity while allowing regulated land use, such as tourism, hunting, timber and forest-product harvesting, and some agriculture.

Ugam-Chatkal National Park is located in the Tashkent Region, within the Chatkal mountain range of the West Tien-Shan Mountains. Bordering Kazakhstan and Kyrgyzstan, the park has an approximate area of 5,746 km² and includes Chatkal Biosphere Reserve (452 km²) within its borders. It includes areas of agricultural and urban land use as well as water development installations. Zaamin National Park is located in the Djizak Region, within the Turkestan Mountain range and has an area of about 315 km². Contiguous with Zaamin Reserve (156 km²), it borders Tajikistan. Both national parks are managed by the Forestry State Committee (Goscomles).

A3. State Conservation Areas (*Zakazniks*)

The *zakazniks*, which are not permanent reserves, provide only a limited level of protection. They often are a part of other land-use areas, such as collective farms (*kolkhoz*) or forest plantations (*leskhoz*), and are designated for limited periods, which can be as short as five or ten years. Although the State Committee for Nature Protection has responsibility for monitoring these areas, the local authority directly responsible for land use retains actual control, including the right to discontinue the conservation regime. These areas are, therefore, a rather tenuous part of the protected area system, and the effectiveness of management is highly variable. Due to recent economic and land-use pressures in Uzbekistan, these areas have become increasingly vulnerable.

Nine conservation areas (Arnasai, Dengizkul, Karakir, Karakul, Karnabchul, Koshrabad, Saigachiy, Sarmysh, and Sudochye) with a total area of 12,186.5 km² constitute 56 percent of the protected area system. The size of these areas varies from 10,000 km² to 25 km² with comparatively large size at 1,447 km².

A4. Natural Monuments

These include natural monuments (Vardanzi and Yazyavan), a geological reserve, and an ornithological reserve. These are very small areas (average of 35 km²), which constitute only 0.1 percent of all protected areas. Natural monuments are administered by Forestry State Committee, Nature Protection State Committee (Goscompriroda), and other agencies.

In regard to the overall protected areas system, there is a reasonable coverage of most of Uzbekistan's ecosystems and habitats, with perhaps the exception of *tugai* and habitats typical of the Amudarya delta and the Aral Sea zone. More than one-half of the protected areas represent desert ecosystems (53 percent). Mountain ecosystems dominate the remaining areas (40 percent). Wetlands include about six percent of the system, with *tugai* forests representing of about one percent. However, virtually 100 percent of Category I and II areas are mountain ecosystems. Desert, *tugai*, and wetland ecosystems are effectively unrepresented in Category I and II protected areas.

Uzbekistan currently has 4.6 percent of its land protected, and of this only 1.8 percent is classified as IUCN Category I and II protected areas. With the exception of the national parks, many protected areas in Uzbekistan are considered too small to ensure the viable maintenance of ecosystems, particularly in desert areas and Category I areas (state nature reserves). In addition to their small size, many areas are widely dispersed and largely surrounded by the territories of low biodiversity value, thereby reducing the possibility of maintaining their ecosystems in their naturally diverse state.

Many animal species included in the Red Data Book have been preserved within the existing system of protected areas in Uzbekistan, since the rationale for the establishment of most protected areas has historically been based on the presence of large "game" or endangered animals. These include Bukhara deer, markhor, Severtzov's urial, Menzbier's marmot, Tien-Shan brown bear, Turkestan lynx, large birds of prey, and many threatened insects. However, not all Red Data Book species are represented in the current protected area system. These include

Transcaspian urial, goitered gazelle, houbara bustard, pin-tailed sandgrouse, marbled teal, and ferruginous duck. No wetland nature reserves exist in Uzbekistan to protect its threatened fish species.

The establishment of “a system of protected areas with strong legal protection and effective management which is properly representative of the range of Uzbekistan's ecosystems and species, and which covers at least 10 percent of the country” is the first objective of the NBSAP. This includes a review of institutional and legal provisions and the effectiveness of management (including staffing) and the development of an ecosystem approach to a representative protected areas system. It also notes the need to move away from a pure protectionist approach, as exemplified by the zapovedniks, to a more multiple use approach in a wider landscape.

B. *Ex-situ* Conservation

Uzbekistan has two zoos (one in Tashkent, one in Termez) and a botanical garden (Tashkent). With the goals of creating collections of rare and endangered animal species, nurturing captive breeding, and increasing public awareness of the regional wildlife, the Tashkent Zoo keeps 124 species on 3.2 ha. The Botanical Garden (80 ha since 1968) has the status of a research institute. Its collection of more than 6,000 species of live plants includes 2,500 species of trees.

The Djeiran Centre for captive breeding of rare desert animal species was established in Bukhara Region, initially to restore declining populations of goitered gazelle. The center expanded its efforts and now works for the restoration of goitered gazelle, wild ass, Houbara bustard, and Przewalski's horse.



Przewalski's Horse. Formerly an important element of steppe and semi-desert ecosystems, now extinct in the wild. A captive breeding program could be developed, e.g. at the Djheiran Ecocenter in Bukhara, Uzbekistan for eventual reintroduction in Kazakhstan.

Since 1991, the State Biological Control Service (Gosbiocontrol) has been jointly implementing, with “Denis” Joint Venture, a project for captive breeding of saker falcons (*Falco cherrug*). In the last five years, 27 chicks have been successfully reared. In 1996, for the first time ever, eleven birds were reintroduced into their natural habitats. Based on the same center, a similar project dealing with Houbara bustard has recently got underway.

C. Agriculture

During the last decades, natural habitats in Uzbekistan have been subject to a considerable anthropogenic pressure due to intensive economic development. More than 60 percent of the total land area is used for agricultural purposes, the majority for extensive livestock pasturing. Only about ten percent of land is cultivated, primarily for irrigated cotton production. An estimated 85 percent of available water resources is used for this purpose; irrigation techniques rely on canal and furrow systems that are very wasteful of water, with high evaporation rates.

Despite extensive drainage systems, serious problems with waterlogging and salinization of soils are widespread.

Although irrigated lands comprise only 10 percent of total land area, their impacts on the ecology of Uzbekistan and neighboring countries has been enormous, resulting in the total destruction of some ecosystems, severe degradation of others, and significant modification of almost all. Threats vary from direct destruction of habitats (land clearance) to indirect and less quantifiable impacts (climate change and changes in hydrological cycles).

D. Forests

Forest and woodlands are naturally unevenly distributed within the territory of the republic. According to the Forestry State Committee, natural vegetation currently occupies 85 percent of desert and semidesert areas and 13 percent of mountains. In the valleys and floodplain areas, which originally were well covered, only two percent remains. Small sectors of riparian forests (*tugai*) are still located along large rivers. Until recently, relatively large areas were covered with forests, but, as a result of logging of the riparian forests and river flow control, their area has decreased by more than 90 percent. Mountain forests are still quite widespread. Desert shrubs and other vegetation that grow mostly on sandy soils are very important to protect sands from wind erosion and to improve the strictly continental desert climate. The largest areas of steppe/desert shrublands are located in Bukhara Region and Karakalpakstan; smaller areas are also dispersed among Surkhandarya, Khorezm, and Syrdarya Regions, and Fergana valley.

E. Hunting

There are more than 50 hunting and fishing reserves where animal stocks are managed (fed and protected). The majority of these reserves are located in wetland areas, with the most important game species being waterfowl. In the last five years, recreational hunting has experienced a significant decline due to the high costs of equipment and ammunition and other economic factors. In addition, muskrat trapping for fur, which used to be an important economic activity in the Aral Sea/Amu Darya Delta area, has almost ceased due to drastic declines in muskrat populations resulting from habitat loss.

F. Fisheries

Until the 1960s, the fishing industry was concentrated in the Aral Sea, with Muinak being the main fishing port. In total, the sea used to produce on average 40,000 tons per year — 25,000 from the Uzbekistan portion. Since the disappearance of the Aral Sea, other opportunities are being explored, including expanded development of lake and pond fisheries, particularly in the Aidar-Arnasai system.

Prior to the 1960s, 39 indigenous fish species occurred in Uzbekistan. Over the last 30 years, many exotic fish species were introduced from regions such as China, North America, and Siberia. As a result, the total number of species in the country has increased to almost 80. At the same time, a number of indigenous fish species have become endangered or already disappeared. In particular, a number of endemic species from the middle parts of rivers have become extinct

due to construction of dams that changed the ecological conditions required for fish reproduction.

SECTION IV

Policy and Institutional Framework

A. Policy Framework

The policy framework of the Government of Uzbekistan towards the environment and natural resources, including biodiversity conservation is spelled out the National Environmental Action Plan (NEAP) of 1998. The section of the NEAP on biodiversity conservation refers exclusively to protected areas and recommends the implementation of the National Biodiversity Strategy and Action Plan (NBSAP). The principal objectives of the NBSAP are:

- Protected area system development
- Public awareness, participation and education
- Sustainable use of biodiversity
- Regional and local level biodiversity action plans

More detailed recommendations are presented in Annex H. The NBSAP also proposed a National Commission for Biodiversity and an action plan coordination group in order to implement NBSAP recommendations. To date, these structures have not been established, presumably because of lack of financing.

At the onset of the NEAP program, it was acknowledged that there were insufficient resources and inadequate institutional support to implement the Action Plan. To overcome these constraints, it was stated that the project goals could only be achieved if sound macroeconomic stability and sectoral policies were put in place. These two components are at the heart of environmental and the biodiversity conservation and remain goals rather than accomplishments.

B. Legislative Framework

The basic laws of resource use, development and management are very much the same that existed in Soviet times. They are not adapted to the new socio-political and economic realities of the post-Soviet era and the fact that diminished financing, resources, and capacity are insufficient to implement and enforce these policies and laws. Adopted in 1978, the Forestry Code regulates use and restoration of forestry resources and responsibility of juridical and nature protection when using forestry resources. It was revised in 1999, with the adoption of some normative measures, including harvesting, livestock grazing, and hay making in forests.

The law “On protection and use of wildlife” (1982) states legal acts aimed at protection, sustainable use, and reproduction of wildlife.

The law “On land” was adopted in 1990 and modified by the Supreme Council of the Republic of Uzbekistan in 1991, 1993, and 1994. It is directed at the regulation of land-related arrangements to promote rational use and protection of land, maintain the fertility of soils, and protect and improve the natural environment.

Adopted in 1992, the law “On protection of nature” defines legal, economic, and organizational principles to protect the natural environment, rational use of natural resources, protection of ecological systems, natural complexes, and natural monuments. It guarantees the rights of citizens to a clean environment and determines powers of official bodies and departments in the field of nature protection.

The law “On specially protected natural territories” (1993) determines legal, organizational, and economic principles of management of protected natural territories.

Authorized in 1993, the law “On water and water use” regulates water-related areas, rational use of waters for needs of the population, and national economy. The law regulates protection of water from contamination and depletion, prevention of pollution, and protection of the rights of firms and establishments, organizations, private farms, and citizens in the field of the water management.

The Law “On underground resources” (1994) regulates the management, protection, and use of such resources.

The Law “On protection of atmospheric air” was adopted in 1996.

In addition to the above, regulation in the field of protection of valuable and disappearing species of plants and animals is carried out on the basis of the Resolutions of the Supreme Council of the Republic of Uzbekistan of September 3, 1993, No. 937-XII, “On greater protection of valuable and vanishing plants and animals and regulating their use;” Resolution of Cabinet of Ministers of the republic a Uzbekistan of December 15, 1993, No. 600, “About measures on strengthening of protection of the wild animals and plants and regulation of their use;” and “Instruction of the Cabinet of the Ministers of the Republic of Uzbekistan of February 11 1996, No. 76-F, “Concerning regulation of import/export of birds of prey.”

The order of hunting and fishery in Uzbekistan is carried out according to the above-mentioned laws as well as with the “Ordinance on hunting and support of a hunting and fishing facilities on the territory of the Republic,” authorized by Resolution of the Cabinet of Ministers on April 1, 1991, No. 95; and “Rules of hunting and fishery on territory of the Republic,” authorized by orders of State Nature Protection Committee of June 8, 1992 and January 5, 1993.

New laws for protection and sustainable use of wildlife and flora are being currently developed.

Uzbekistan and International Conventions and Agreements

- Vienna Convention for the Protection of the Ozone Layer. Signed 1985, ratified 1993.
- Montreal Convention on Ozone Depletion. Signed 1987, ratified 1993.
- Basel conventions on the control of transboundary movements of hazardous waste and their disposal Signed 1989, ratified 1995.
- Framework convention on climate change. Signed 1992, ratified 1993.
- UN convention to combat desertification. Signed 1994, ratified 1995.
- Convention on Biological Diversity. Signed 1992, ratified 1996.
- Convention on International Trade in Endangered Species (CITES). Signed 1973, ratified 1997.
- The World Heritage Convention. Signed 1973, ratified 1995.
- Convention on the Prohibition of Military or any other Aggressive Destructive Actions to the Environment. Signed 1977, ratified 1978.

C. Institutional Framework

C1. Government Agencies

The principal Government agencies with direct responsibilities for biodiversity conservation are listed below, with their mandates. The State Committee for Nature Protection (*Goskompriroda*) is responsible for coordinating nature protection activities, including:

- Implementing government policy on protection of the natural environment and the use of and restoration of natural resources
- Coordinating management of nature protection activities
- Taking other actions toward a ecologically sustainable and healthy environment
- Managing protected areas and ensuring the integrity of their protective regime

Within *Goskompriroda*, the State Biological Control Service remains responsible for conservation of flora and fauna and protected area management (*Gosbiocontrol*).

The State Committee for Forestry (*Goskomles*) — recently transferred to the Ministry of Agriculture and Water Resources — has primary responsibilities for:

- Management and protection of forests and forest resources, including reserves and national parks on forested lands
- Management and supervision of hunting on forest lands, including setting up joint ventures for foreign hunting tourism activities
- Forest policy and legislation

Departments within the State Committee for Forestry manage reserves and state hunting facilities, protect flora and fauna, regulate hunting, protect the reproduction and migration of animals, take inventory of wild animals on forest lands, and oversee collection and production of medicinal and food plants.

The protection of forestry resources is carried out by the State Forestry Inspection, with a staff of more than 1,000 inspectors (as of the end of 1996), including those from the Committee's headquarters, regional departments, forest nurseries, and state reserves.

The corporation *Uzfish* (*Uzryba*) is responsible for management and agency-level protection of fishery resources in natural and artificial reservoirs and streams. It is responsible for the management of the Arnasai Ornithological Conservation Area, which constitutes about 0.2 percent of all protected areas but about 56 percent of protected wetland areas.

The Union of Hunters and Fishermen of Uzbekistan is a national-level NGO using, on a long-term basis, game and fishery lands that are conserved by an agency-based, game-keeping service.

The Geology State Committee (*Goskomgeologia*) is responsible for management of the Kitab Geological Reserve.

It is clear from the above that both SCNP (State Committee for Nature Protection) and SCF (State Committee for Forestry) have roles and responsibilities regarding biodiversity conservation. However, it is not clear how these mandates can promote effective coordination and management. For example, for protected areas, SCNP is responsible for maintaining the integrity of nature reserves and protection regime enforcement. It is directly responsible for the management of two nature reserves (Chatkal and Gissar), eight conservation areas, the National Captive Breeding Centre (Ecocentre Djeiran), and one natural monument (Yazyavan). In total, this covers 62 percent of all protected areas.

The SCF is directly responsible for the management of both national parks (Zaamin and Ugam-Chatkal), six nature reserves (Zaamin, Badai-*Tugai*, Kyzylkum, Zerafshan, Nurata, Surkhan), and one natural monument (Vardanzi). In total, this covers 34 percent of all protected areas.

The NBSAP notes that “this situation results in a number of critical problems, including a lack of clarity and uncoordinated implementation of policy and planning, duplication of staff and activities, competition and confrontation over control and access to resources, etc. This is undoubtedly damaging and is limiting the development of biodiversity protection efforts in the Republic. It is an issue that must be addressed in the short term if a unified biodiversity policy and program is to be effectively implemented in the future.”

C2. Academic Institutions

The Academy of Sciences, which includes the Institute of Zoology and the Institute of Biological Sciences, leads the Uzbekistan academic institutions. Students from the State University and the smaller Turkic University carry out the fieldwork under the auspices of either the Academy or the Institute, depending on their specialty. The quality of education in all of these institutions is very high. There is clearly a role in environment and biodiversity issue as supporting research centers. Additionally, the knowledge of the natural scientists can be used in environmental and biodiversity monitoring. However, while considerable knowledge and experience can be found among individual scientists, it should be noted that formal academic and research institutes have experienced significant declines in resources and capabilities since independence. There exists quite a good network of scientific communication and collaboration among Central Asian states that can be tapped for transboundary issues and common environmental problems shared by these countries.

C3. Non-governmental Organizations (NGOs)

There are relatively few environmental NGOs in Uzbekistan (the NBSAP notes 30 (including public health NGOs), of which 13 are registered. These include NGOs formed by scientists currently or formerly supported by academic and research institutions that have suffered staff reductions and intermittent or non-existent salary payments. These NGOs offer greater potential for employment under small- and medium-sized grants from international organizations and NGOs, and donors, including UNDP, GEF, GTZ, NABU, and WWF. The projects often require a substantial technical experience and knowledge. The Government of Uzbekistan remains suspicious of NGOs and the legislative procedures for NGO registration and operation need revision. Partnerships between NGOs and state agencies are still rare. The NBSAP discusses the

issues faced by NGOs in Uzbekistan, their comparative advantages, and potential areas of engagement. These are summarized in Annex J.

D. International Projects

National Action Plan for Environment Protection and Ecological Provisions for Uzbekistan's Sustainable Development (NAPEESD). Prepared with the assistance of the World Bank, NAPEESD incorporates a biodiversity strategy as one of its major components. The NEAP aims to provide a unified approach is taken to environmental planning and that components are interrelated and supportive.

The National Sustainable Development Commission (NSDC). The NSDC, currently being established with the assistance of UNDP, will be responsible for guiding the future sustainable development within the Republic. Part of its responsibilities will include initiating policies, strategies, and action plans to achieve sustainable development, monitoring their effective implementation, and their review, revision, or updating. Therefore, central to its responsibilities will be the effective and integrated implementation of the Rio "Earth Summit" conventions to which Uzbekistan is a signatory. A major instrument for achieving the above will be the NAPEESD, including its biodiversity component.

International Conventions on Climate Change and Combating Desertification: A GEF project to carry out a country study on climate change in Uzbekistan is ongoing with UNDP assistance and preparations to produce a national desertification action plan are underway with UNEP/UNDP support. Both of these have a significant overlap and interrelation with biodiversity issues; unified actions by all three sectors will ensure concrete progress in addressing critical environmental problems in the Republic. However, it is important to ensure coordination and synergy of action.

Transboundary Biodiversity Project (Western Tien-Shan Mountains) (started in 2000): A World Bank/GEF supported project (US\$ 18 million) was prepared with the Governments of Kazakhstan, Uzbekistan, and Kyrgyzstan. Components include the development of NBSAP for Kyrgyzstan (NBSAPs for Kazakhstan and Uzbekistan were prepared with assistance of UNDP); the strengthening of policies, regulations, and institutional arrangements; the development of programs for the sustainable use of natural resources by local communities in the West Tien-Shan; the development of financing mechanisms, capable of duplication in the region to help protected areas meet recurrent costs; and the encouragement of regional cooperation and harmonization of environmental standards.

Aral Sea Programme (World Bank/UNDP/UNEP). The program is intended to address the long-term water and land-use management problems of the region while in the short- to medium-term providing support to address the immediate needs of populations within the worst affected areas. In addition to the long-term implications the program has in regards to more rational natural resource management in the region, three programs hold specific importance to biodiversity in Uzbekistan: Subprograms 4.1 – Amu-Darya Delta Wetlands Restoration (started in 1999); 4.3 – Environmental Studies, including biodiversity assessment (started in 1998); and 6 - Integrated Land and Water Management in the Upper Watershed (started in 1998).

Lake Sudochoye Wetlands Restoration Project (*GEF/World Bank*): This project, begun in 1999 as a component of the Aral Sea Program, aims to ensure the preservation/restoration of the Lake Sudochoye Wetlands area in the Amu Darya delta, thus conserving important and highly endangered biodiversity, improving socioeconomic conditions in the area (grazing, fishing, muskrat and other wildlife harvesting, and improved drainage of farm lands), and improving regulation of drainage water discharges through a major collector canal. The Lake Sudochoye area is of particular value for migratory birds (West Asian Flyway) and is proposed as a potential “Ramsar” Convention site.

National Environmental Information Network For Uzbekistan (UNEP/GRID-Arendal) (started in 1999). As part of its Environment and Natural Resources Information Network (ENRIN) in Countries in Transition program, GRID-Arendal is helping the governments of Central Asia develop National Environmental Information Networks. In Uzbekistan, an initial assessment has been completed and a feasibility study is underway. In addition to national efforts, a regional Environmental Information Network for the Aral Sea Basin is being developed within the Aral Sea Program. Currently, one of the major problems for effective environmental planning, including biodiversity planning, is the lack of accessibility to unified and accurate data for decision makers. The above projects will therefore be of enormous value for biodiversity conservation and sustainable use planning in the future.

Nuratau Biosphere Reserve Proposal (NABU) (started in 1999). The German Federation for Nature Conservation (NABU), an international NGO which has many years of experience working in protected areas in Central Asia, including the Nuratau Strict Nature Reserve in Djizak Region (“Oblast”), is working together with the state organizations responsible (Committee for Forestry of Ministry of Agriculture and State Committee for Nature Protection) to “preserve or restore nature in the Nuratau Nature Reserve and adjacent district, and promote sustainable economic development and ecological development of the region.” For this purpose, the Uzbek parties involved have committed themselves to submitting application documentation to UNESCO for certification as an international biosphere reserve. If implemented, this project, like the Western Tien Shan Biodiversity Project, will be important in putting strategic objectives into concrete actions and providing practical and tested models for other areas in the country.

Action Plan for the Sustainable Development of Tourism in Uzbekistan Project (UNDP). This project, which started in 1995, is intended to provide the guidance for the controlled development of tourism through the preparation and implementation of an action plan and assistance in the areas of policy direction, infrastructure development, and international marketing and training. Important considerations are to improve the institutional structures/staff capacities and also to provide a framework conducive to attracting private sector investment/involvement in tourism. This project has some important implications for protected areas management, and the potential economic benefits that can be gained from rational utilization of biodiversity resources, as it will provide for a more workable situation within the country regarding the development of appropriate eco-tourism.

SECTION V

Summary of Findings

1. General economic and political conditions in Uzbekistan have changed significantly since the break-up of the Former Soviet Union and the gaining of independence. The government has shown during the years since independence a significant commitment to furthering the protection of biological resources through creation of some new areas, issuing of new legislation, and signing of the International Convention on Biodiversity. However, this has occurred in an ad hoc manner, and there is now a need to consolidated and crystallize under a unified and clear cut plan the objectives, strategies, institutions and legal frameworks for the further long-term development of biodiversity protection and utilization in the Republic. Uzbekistan's biodiversity is globally and regionally important because of its biogeographical location between northern European, Asian, and Middle Eastern biogeographic faunal regions; its desert, wetland, and mountain ecosystems; the presence of internationally important populations of rare and threatened species of flora and fauna (often with restricted distributions); and its importance as a migratory crossroads.
2. Major threats to biodiversity include:
 - Degradation of natural landscapes and shrinking of natural habitats as a result of the expansion of irrigated agriculture and overgrazing
 - Poor water and soil management practices, leading to desertification, aridization, and salinization
 - Pollution from unregulated exploitation of petroleum and mineral deposits, and other industrial activities (airborne pollution increasing susceptibility of natural forests to disease) and heavy metal contamination
 - Unregulated forest exploitation (notably for gallery tugai forests) and hunting, particularly for large mammals (gazelles)
 - Unregulated fires and lack of fire control and management
 - Introduction of non-native fish species, resulting in disruption of natural freshwater communities and decline of native species.
3. The protected areas system in Uzbekistan is based on the Soviet-style strict protected area model and provides inadequate representation of the countries biodiversity, particularly for riparian forest and wetland ecosystems. Because of the small size and isolation of most protected areas, these may be inadequate to allow for migratory patterns of birds and large mammals. An approach that combines protected areas with wider, improved natural resources and land-use management practices is called for.

4. Uzbekistan's environmental and biodiversity strategy has been outlined by the National Environmental Action Plan and the National Biodiversity Strategy and Action Plan (NBSAP). However, these remain largely planning exercises, and implementation is problematic. Given the lack of government resources, external funds will be required, at least in the short term.
5. Information on biodiversity is well developed in Uzbekistan but mostly confined to a small group of NGOs and academics. The lack of information sharing among broader circles has been a critical constraint to management decision making. Computerization and established integrated database lines is needed in all areas of environment and biodiversity conservation and sustainable development of the natural resources. Currently, information is viewed as a commercial asset and is sold by many agencies. The ratification and the implementation of the Aarhus convention on public participation and access to information would advance the cause of this need.
6. Government agencies responsible for environmental management, including biodiversity conservation, remain dominated by a centralized Soviet-style command and control mentality. However, outside of direct donor-supported initiatives, budget and resource allocations are insufficient to support the needed management capacity, both at central and regional levels. Many Government scientists have formed or adapted NGOs as a response to donor interest in supporting non-governmental initiatives, potentially taking human resources further away from governmental functions. However, relatively few environmental NGOs in Uzbekistan have the capacity to develop and implement programs. There is an appreciation of the need for public-private partnerships and enterprise development but no clear idea on how this might be achieved. Consideration should be given to moving toward more sustainable management arrangements using incentive-based systems that involve public participation.
7. Awareness and understanding of biodiversity issues remains low. It is seen as the domain of academic scientists. The improvements witnessed in recent years, which are primarily due to the efforts of environmental NGOs, are just a beginning and much remains to be done, particularly with respect to biodiversity conservation. This extends from improving the understanding of biodiversity conservation and its importance in economic and social development by decision makers and politicians, to linking biodiversity conservation to immediate, day-to-day needs of local populations.
8. Much of the discussion and activity related to biodiversity conservation has focused on broad frameworks for action, been largely government driven (with input and support from NGOs and donors), and mostly confined to the capital. There is an urgent need to move this process "downward" to involve local authorities, communities, and CBOs in dialogue and develop local initiatives that can demonstrate success and inform the ongoing policy discussion.
9. The role of regional organizations, such as the Regional Environmental Center, should be examined for the promotion of shared lessons and experiences and transboundary issues. At the same time, partnerships among NGOs in neighboring countries should be promoted to

regionalize priority setting and information sharing, as well as on-the-ground transboundary initiatives in biodiversity conservation (including migratory species conservation).

10. NGOs in Uzbekistan are active in externally funded projects throughout the nation. Often they are the only ones working in the biodiversity and environmental fields since there are no internal funds available. Some of the most effective ones working for the causes of biodiversity are the NGOs formed by former and present members of the Academy of Sciences and the Institute of Biological Sciences, who are thus able to continue work in their specialties and earn enough money to live on. The NGOs Counterpart Consortium and ISAR are outstanding in helping startup NGOs become more effective, computer literate, and able to manage their accounts, and produce reports. They help them better compete in the small grant and contract markets, where most of the visible work in biodiversity is being done.
11. Transboundary issues have a growing importance, especially in environmental and biodiversity conservation matters. For this reason, partnerships between donor organizations could be promoted to address sensitive transboundary issues, where national governments can not reach consensus on such issues as the Aidar-kul Lake between Uzbekistan and Kazakhstan, for example. The upcoming Western Tien-Shan Trans-Boundary Biodiversity Project will be an ideal ‘test bed’ to see how well transboundary issues can be resolved.
12. Divided and unclear institutional and management responsibilities for biodiversity conservation stifles progress. Several institutions have some level of responsibility for protected areas, including the SCNP and SCF and other organizations in whose territory Special State Reserves (zakazniks) are located. The institutional situation and relationship between the SCF and the Ministry of Agriculture and Water is also unclear.
13. Due to the changing economic situation, the protected areas system has lost a large number of skilled personnel, particularly scientific staff. No facilities for the specialized training of either senior or junior protected areas staff currently exist in Uzbekistan. Senior staff have received training as either foresters or academic university courses in biology and related subjects. Field (inspection) staff receive little or no training. There is, therefore, a need to develop a cadre of personnel at all levels with specialized and practical training specific to the planning and management of protected areas.
14. Historically, the protected areas system has developed through an area-by-area basis without a strong unifying strategic target or long-term development plan. For example, State Reserves have been created with very narrow objectives (protection of specific species/habitats) but without reference to an overall development plan. Likewise, the initiation of the National Park concept, with emphasis on recreation/tourism and mixed land-use approaches, has occurred mainly through the initiative of organizations and individuals involved rather than from a strategic plan

SECTION VI

Recommendations for Biodiversity Conservation

These recommendations are based on the review and analysis of the current assessment and reflect some of the priority needs for improved biodiversity conservation. More specific recommendations linked the USAID programs and priorities in Kyrgyzstan are included in Section VII.

1. There is an urgent need to increase awareness of the importance of biodiversity conservation and its linkages to economic opportunities. This applies at all levels, from high level politicians and decision makers to local governments and communities. The role of protected areas is a particularly important focus, since some of these were set up to exclude local populations, and were seen as the domain of a privileged minority of scientific researchers. Media, NGOs and school programs can be effectively used for this purpose.
2. The policy and institutional framework for biodiversity conservation, and particularly protected area management, should be thoroughly reviewed. Recommendations for a more coherent, consistent, and streamlined structure based on realistic objectives should be developed. However, without increased resources, implementation will be difficult. Pilot activities that promote and reinforce improved policy and institutional responsibilities should be “field-tested.” These could include multiple use forest areas with management and protection functions and wetlands managed for a variety of goods and services.

The management of protected areas urgently needs to be improved. Objectives and management plans need to be developed, taking into account the viable size for certain large animals and their migratory patterns. It may be the some protected areas need to be reclassified and others integrated into a wider landscape to include rural development activities. The NBSAP proposes a review of the protected area system, and this should be supported. However, there is an urgent need for immediate action in some areas. Uzbekistan is participating in World Bank supported Western Tien-Shan Biodiversity that will help address some of the protected area management issues in the country.

3. Increase attention and funding for monitoring programs and regional surveys (at species and ecosystem level). It is hard or almost impossible to assess correctly the status of rare, endangered species or ecosystems under stress without surveys. Both publications and updates of current Red Data Book Lists as well as baseline data collection on major types of ecosystems would allow detecting changes are urgently needed. Scientific research leading to publications of current information is required for updates. As an example, the project on the ecological monitoring of the Sudochie Lake has developed information that indicates opportunities for more sustainable management of natural resources and identifies methodologies for the restoration of ecosystems.
4. The increase of industrial activity (mining in Navoi and Zeravshan region, gas and petroleum production in Bukhara and Navoi regions) offer significant opportunities for incorporating environmental management and biodiversity conservation into economic development

activities, through incorporation of these issues early in the planning process, and ensuring adequate monitoring. Environmental guidelines and EIA should explicitly incorporate biodiversity considerations.

5. Identify opportunities to develop recreational activity in and around protected areas. Use the opportunity to develop ecological and scientific tourism in national parks that will make them self-sufficient financially and less dependant on external funding.
6. Pre-qualify NGOs to carry out all phases of environmental and biodiversity work (assessments, monitoring and inventory and migratory counts under the Small and Medium Grant program). Perhaps this is the most important omission that many programs demonstrate; when funding for these programs was made, it was presumed that HydroMet as part of the national commitment, together with the various academies and institutes of natural sciences, would be able to cover monitoring. HydroMet is only involved in water flow and meteorological monitoring, and the academies and institutes are barely functional, due to lack of funding and equipment for the past five to ten years.
7. Encourage regional cooperation in reviewing policies and management of shared and common natural areas and biodiversity. Examples of best practices and lessons learned should be shared. The Transboundary Biodiversity project provides a framework for this.
8. Certain species, such as wild sheep and goats and snow leopards, are severely threatened by unregulated poaching. Immediate steps need to be taken to control these activities, including the commitment and resources to address the problem.

SECTION VII

USAID in Uzbekistan

A. Impact of USAID Program on Biodiversity

USAID’s regional Mission in Central Asia includes an environmental strategic objective “improved management of critical natural resources, including energy.” Intermediate results are:

- Increased management capacity in the natural resources sector
- Improved policy and regulatory framework for natural resources management
- Sustainable models developed for integrated natural resource management
- Public commitment established for natural resources management policies

While the program emphasizes natural resources, the focus is heavily oriented to water and energy, with “green” issues, such as forests, watershed protection, sustainable agriculture and biodiversity, conspicuously absent. This also appears to apply to models of “integrated” natural resources management.

Although the impact of current and planned activities on biodiversity is not negative, and in fact is probably beneficial — through activities such as oil field cleanup, environmental policy reform (global climate change, promotion of transboundary cooperation in water issues) — there remains a great potential to incorporate biodiversity issues into the proposed program at little cost and potentially high impact. These are discussed below in Section B. Recommendations.

USAID is also supporting the promotion of civil society under its democracy strategic objective. ISAR and Counterpart are working with nascent environmental NGOs and community groups to strengthen capacity and build partnerships. Through the local resource center, training programs and small grants, awareness of environmental and biodiversity issues is increasing, and local government and civil society representatives are engaging in dialogue and environmental activities.

B. Recommendations

The majority of recommendations focus on SO 1.6, since this directly addresses natural resources management. There is also discussion of other SOs that offer opportunity for improving biodiversity conservation and that can provide the Mission staff with the opportunity to think about how other SOs potentially can have positive and negative impacts on biodiversity. They also may help the Mission staff to identify easily implemented activities that will meet the requirements of more than one SO.

Strategic Objective 1.6 - Improved Management of Critical Natural Resources, including Energy

Protected areas play a critical role not only in biodiversity conservation but also improved natural resources protection and management throughout the region. Water management issues,

for example, are one of the critical components of USAID interest in the region, as stated in SO 1.6. Particularly since water rights and water resource-sharing is of particular regional stability concern, an effective tool for developing a watershed management system may be to establish some appropriate category of protected area so that scientists and professional resource managers can be responsible for part of this water-management process. USAID can play a valuable role in promoting commitment to establishing more functional protected areas. Well-managed protected areas can be the catalyzing force for establishing community-based management programs, protecting water sources, managing forest ecosystems, and educating the public on environmental issues. All of these programs entail improving natural resource management and, when combined, contribute to the overall conservation of biodiversity. The mission might consider involvement in:

1. Support “twinning” relationships between U.S. and Uzbek institutions involved in biodiversity conservation. An example is the U.S. National Park Service, which has a similar cooperative agreement (with USAID funding under an interagency agreement) with the government of Georgia for training and exchange visits, as well as twinning of individual protected areas in each country. This would raise the profile of protected areas in Uzbekistan and signal the importance of biodiversity at an international scale. It would also present opportunities to educate high-level decision-makers, as well as protected area managers.
2. Promote regional cooperation between NGOs and government agencies to share experiences and lessons learned. This could include study tours among countries. This can be valuable if government and NGO representatives work together to identify issues and solutions. Support NGOs to develop awareness and educational programs and materials that can have wide applicability throughout the region. Continue support to ISAR and Counterpart for NGO and community group development and capacity building. If appropriate, consider supplementary funding for small grants and partnerships (such as sending local government staff and community/NGO leaders on joint training and study tours).
3. Bring together government agencies, NGOs, and private sector organizations. The group should discuss and examine alternative methods and approaches that emphasize partnership and co-management of resources, and explore incentive-based management systems rather than strict enforcement models, for which resources and capacity are likely to remain low. This can be done through joint training, study visits, pilot initiatives, and regional partnership linking neighboring countries to learn from experiences elsewhere, both regionally and internationally. Pilot community-based initiatives, where clear opportunities and willingness to undertake improved management and conservation activities exist, should be explored. Examples could include integrated wetland management for improved water supply and quality (natural filtration by riparian vegetation or controlled hunting and fishing), ecotourism development, protected area management, and improved grazing practices.
4. More should be done by the institutions and ministries to establish links with the leading scientific communities. This isolation deprives them of the exchange of ideas, new technologies in biodiversity conservation, and resource management. The free exchange of information is the basis of transparency in government and will benefit the nation as a whole.

Opportunities exist for USAID to become further involved with facilitating these linkages through the USIS and small grants programs.

5. The upcoming USAID CAR Environment and Energy project provides an excellent framework and opportunity for the integration of biodiversity conservation initiatives at low cost and potentially high impact and visibility to broaden the Mission's development program. Examples include:
 - Wetland and riparian vegetation management as part of local water initiatives
 - Incorporating biodiversity in training and awareness programs
 - Including biodiversity in policy and legislative development and application
 - Considering biodiversity in monitoring and assessment in transboundary issues
 - NGO development

The following include recommendations directly linked to the recent CAR Regional Environment and Energy project procurement (where applicable, activities are linked to the illustrative activities (I.A.) referred to in the RFP).

1. Increase awareness and understanding of policy makers and technical managers of the benefits of an integrated natural resource management approach that emphasizes linkages and sustainability. As part of the proposed training for increased management capacity (I.A. #1), incorporate ecological principles into technical approaches. For example, this could include the role and importance of catchment forests in maintaining water quality and supply, the importance of vegetation in maintaining hydrological regimes, and the role of biodiversity in maintaining soil fertility. Since many of these issues are transboundary in nature, regional training and cooperation will be advantageous.
2. Incorporate biodiversity concerns into river basin management and monitoring, notably for the Syr Darya and Amr Darya drainages (I.A. #3). Many endemic fish species are known from these areas. Their range has been much reduced in recent years, and some face extinction.
3. Support climate change research in relation to potential impacts on natural ecosystems and biodiversity distribution and conservation.
4. Incorporate biodiversity into environmental impact policies and legislation as part of the regulatory framework for investment (mining operations, hydroelectric schemes).
5. Promote the prevention and rehabilitation of salinized soil through improved vegetation management and conservation, ecological improved irrigation, and better wetland conservation and management (I.A. # 9). This provides another opportunity to develop local partnerships based on community-led initiatives.

Strategic Objective 1.3 - Improved Environment for the Growth of Small and Medium Enterprises

One area that has potential for small- and medium-enterprise development is ecotourism. Uzbekistan has a developing tourist industry based on cultural landmarks, such as Bukhara and Samarkand on the Great Silk Road. Ecotourism can be linked to this nascent industry by improving opportunities to visit protected areas and other sites of biodiversity interest, such as through community-based bed-and-breakfast operations. For example in Ugam-Chatkal National Park, dilapidated infrastructure for hotels and skiing exists. If this could be upgraded and linked to the biodiversity of the park through trails and the like, it could generate significant revenues, some of which could be re-invested in park infrastructure. It is not clear what incentives currently exist for such investment, but this could be an area of review. The framework and incentives for tourism investments need to be addressed. Other natural-resource based enterprises, such as ornamental flowers and bulbs, and non-timber forest products can be explored. It is important that enterprise development not negatively impact the environment and biodiversity. One means to ensure this is through the development and improved monitoring and enforcement of environmental guidelines for enterprises, including EIA and environmental management systems.

Strategic Objective 2.1 - Strengthening Democratic Culture Among Citizens and Target Institutions

There is a need to improve understanding and develop constructive relationships between government and NGOs. Facilitated registration procedures and greater transparency are key areas. There is an opportunity to strengthen NGOs capabilities to allow them to assist with some of the forestry and protected area management responsibilities currently under government control. They may be able to help the government develop better management tools and practices, as well as promote and develop improved relationships and linkages between local government and local communities. Joint training and study tours are a means of bringing local decision makers and NGO and community representatives together to review alternative approaches to improved natural resources management. Supporting NGOs, which are by nature often run by local groups with interest in the community, has some direct and indirect effects on encouraging a civil society that participates in democratic processes. Improving access to information is another area that can be supported under this S.O. These activities potentially could be included as part of the SO 2.1 portfolio.

Strategic Objective 2.3 - More Effective, Responsive, and Accountable Local Governance

The role of local government and local communities in sustainable natural resource management and biodiversity conservation, including protected area management is currently unclear. Nature reserves (*zakazniks*) are one area where pilot partnerships can be developed. NGOs can help in developing and monitoring such initiatives.

Sections 117 and 119 of the Foreign Assistance Act

44 Foreign Assistance Act of 1961 (P.L. 87-195) Sec. 117

Sec. 117.⁶⁸ Assistance for Disadvantaged South Africans.—

* * * [Repealed—1993]

Sec. 117.⁶⁸ Environment and Natural Resources.—(a) The Congress finds that if current trends in the degradation of natural resources in developing countries continue, they will severely undermine the best efforts to meet basic human needs, to achieve sustained economic growth, and to prevent international tension and conflict. The Congress also finds that the world faces enormous, urgent, and complex problems, with respect to natural resources, which require new forms of cooperation between the United States and developing countries to prevent such problems from becoming unmanageable. It is, therefore, in the economic and security interests of the United States to provide leadership both in thoroughly reassessing policies relating to natural resources and the environment, and in cooperating extensively with developing countries in order to achieve environmentally sound development.

(b) In order to address the serious problems described in subsection (a), the President is authorized to furnish assistance under this part for developing and strengthening the capacity of developing countries to protect and manage their environment and natural resources. Special efforts shall be made to maintain and where possible to restore the land, vegetation, water, wildlife, and other resources upon which depend economic growth and human well-being, especially of the poor.

(c)(1) The President, in implementing programs and fully under this chapter and chapter 10 of this part, shall take fully

⁶⁸ Formerly at 22 U.S.C. 2151a. Sec. 117 was repealed by sec. 4(e)(3)(D) of the South African Democratic Transition Support Act of 1993 (Public Law 103-149; 107 Stat. 1506). It had been added originally by sec. 20(f) of Public Law 99-470 (100 Stat. 1064). Sec. 117 provided assistance for disadvantaged South Africans through South African non-governmental organizations, such as the Educational Opportunities Council, the South African Institute of Race Relations, REAID, professional teachers unions, Church Program of the University of the Western Cape, the National Council for Education, SACHED, UTP Trust, TOPS, the Willingruit Fellowship Center (WFC), and civic and other organizations working at the community level which did not receive funds from the Government of South Africa.

A previous version of sec. 117, "Infant Nutrition", was repealed in 1979.

⁶⁹ 22 U.S.C. 2151p. Sec. 117 was redesignated 117. See sec. 301(2) of Public Law 99-529 (100 Stat. 99-529, resulting in the creation of that section, which dealt with tropical forests, and then sec. 301(3). Public Law 99-239 added a new section 118 entitled "Tropical Forests". This section, as added by sec. 113 of Public Law 95-56 (91 Stat. 537) and amended by sec. 110 of Public Law 95-424 (92 Stat. 946) and sec. 122 of Public Law 95-53 (91 Stat. 946), "Cooperation Act of 1981 (Public Law 97-113; 96 Stat. 101-513); 104 Stat. 2026).", "Cooperation Act of 1981 (Public Law 97-113; 96 Stat. 101-513); 104 Stat. 2026)."

⁷⁰ Sec. 117 under this part for developing and strengthening the capacity of less developed countries to protect and manage their environment and natural resources. Special efforts shall be made to maintain and where possible restore the land, vegetation, water, wildlife, and other resources upon which depend economic growth and human well-being, especially of the poor.

⁷¹ In carrying out programs under this chapter, the President shall take into consideration the environmental consequences of development activities.

⁷² See also sec. 1990 (Public Law 101-167; 103 Stat. 1228), as amended, relating to "Global Warming Initiative".

⁷³ See also sec. 523 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1991 (Public Law 101-513; 104 Stat. 2013), as amended, relating to "Environment and Global Warming".

⁷⁴ See also sec. 532 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1992 (Public Law 102-166; 106 Stat. 1666), relating to "Environment".

⁷⁵ See also sec. 532 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1991 (Public Law 101-513; 104 Stat. 2026), added a new chapter 10 to part 1 of this Act.

45 Foreign Assistance Act of 1961 (P.L. 87-195) Sec. 119

to account the impact of such programs and projects upon the environment and natural resources of developing countries. Subject to such procedures as the President considers appropriate, the President shall require all agencies and officials responsible for programs or projects under this chapter—

(A) to prepare and take fully into account an environmental impact statement for any program or project under this chapter significantly affecting the environment of the global commons outside the jurisdiction of any country, the environment of the United States, or other aspects of the environment which the President may specify; and

(B) to prepare and take fully into account an environmental assessment of any proposed program or project under this chapter significantly affecting the environment of any foreign country.

Such agencies and officials should, where appropriate, use local technical resources in preparing environmental impact statements and environmental assessments pursuant to this subsection.

(2) The President may establish exceptions from the requirements of this subsection for emergency conditions and for cases in which compliance with those requirements would be seriously detrimental to the foreign policy interests of the United States.

Sec. 118.⁷¹ Tropical Forests.

(a) IMPORTANCE OF FORESTS AND TREE COVER.—In enacting section 103(b)(3) of this Act the Congress recognized the importance of forests and tree cover to the developing countries. The Congress is particularly concerned about the continuing and accelerating alteration, destruction, and loss of tropical forests in developing countries, which pose a serious threat to development and the environment. Tropical forest destruction and loss—

(1) result in shortages of wood, especially wood for fuel; loss of biologically productive wetlands; siltation of lakes, reservoirs, and irrigation systems; floods; destruction of indigenous peoples; extinction of plant and animal species; reduced capacity for food production; and loss of genetic resources; and

(2) can result in desertification and destabilization of the earth's climate.

Properly managed tropical forests provide a sustained flow of resources essential to the economic growth of developing countries, as well as genetic resources of value to developed and developing countries alike.

(b) PRIORITIES.—The concerns expressed in subsection (a) and the recommendations of the United States Interagency Task Force on Tropical Forests shall be given high priority by the President—

(1) in formulating and carrying out programs and policies with respect to developing countries, including those relating to bilateral and multilateral assistance and those relating to private sector activities; and

providing for long-term development in sub-Saharan Africa, and made a conforming amendment to section 103(b)(3) of this Act.

⁷¹ 22 U.S.C. 2151p-1. Sec. 118 was added by sec. 301(3) of Public Law 99-529 (100 Stat. 3014). See also footnote 68.

will prevent forest destruction, loss, or degradation, including research in agroforestry, sustainable management of natural forests, small-scale farms and gardens, small-scale animal husbandry, wider application of adopted traditional practices, and suitable crops and crop combinations.

(10) To the fullest extent feasible, conserve biological diversity in forest areas by—

(A) supporting and cooperating with United States Government agencies, other donors (both bilateral and multilateral), and other appropriate governmental, intergovernmental, and nongovernmental organizations in efforts to identify, establish, and maintain a representative network of protected tropical forest ecosystems on a worldwide basis;

(B) whenever appropriate, making the establishment of protected areas a condition of support for activities involving forest clearance of degradation; and

(C) helping developing countries identify tropical forest ecosystems and species in need of protection and establish and maintain appropriate protected areas.

(11) To the fullest extent feasible, engage in efforts to increase the awareness of United States Government agencies and other donors, both bilateral and multilateral, of the immediate and long-term value of tropical forests.

(12) To the fullest extent feasible, utilize the resources and abilities of all relevant United States Government agencies.

(13) Require that any program or project under this chapter significantly affecting tropical forests (including projects involving the planting of exotic plant species)—

(A) be based upon careful analysis of the alternatives available to achieve the best sustainable use of the land, and

(B) take full account of the environmental impacts of the proposed activities on biological diversity,

as provided for in the environmental procedures of the Agency for International Development.

(14) Deny assistance under this chapter for—

(A) the procurement or use of logging equipment, unless an environmental assessment indicates that all timber harvesting operations involved will be conducted in an environmentally sound manner which minimizes forest destruction and that the proposed activity will produce positive economic benefits and sustainable forest management systems; and

(B) actions which significantly degrade national parks or similar protected areas which contain tropical forests or introduce exotic plants or animals into such areas.

(15) Deny assistance under this chapter for the following activities unless an environmental assessment indicates that the proposed activity will contribute significantly and directly to improving the livelihood of the rural poor and will be conducted in an environmentally sound manner which supports sustainable development:

(2) In seeking opportunities to coordinate public and private development and investment activities which affect forests in developing countries.

(c) ASSISTANCE TO DEVELOPING COUNTRIES.—In providing assistance to developing countries, the President shall do the following:

(1) Place a high priority on conservation and sustainable management of tropical forests.

(2) To the fullest extent feasible, engage in dialogues and exchanges of information with recipient countries—

(A) which stress the importance of conserving and sustainably managing forest resources for the long-term economic benefit of those countries, as well as the irreversible losses associated with forest destruction, and

(B) which identify and focus on policies of those countries which directly or indirectly contribute to deforestation.

(3) To the fullest extent feasible, support projects and activities—

(A) which offer employment and income alternatives to those who otherwise would cause destruction and loss of forests, and

(B) which help developing countries identify and implement alternatives to colonizing forested areas.

(4) To the fullest extent feasible, support training programs, educational efforts, and the establishment or strengthening of institutions which increase the capacity of developing countries to formulate forest policies, engage in relevant land-use planning, and otherwise improve the management of their forests.

(5) To the fullest extent feasible, help end destructive slash-and-burn agriculture by supporting stable and productive farming practices in areas already cleared or degraded and on lands which inevitably will be settled, with special emphasis on demonstrating the feasibility of agroforestry and other techniques which use technologies and methods suited to the local environment and traditional agricultural techniques and feature close consultation with and involvement of local people.

(6) To the fullest extent feasible, help conserve forests, which have not yet been degraded, by helping to increase production on lands already cleared or degraded through support of reforestation, fuelwood, and other sustainable forestry projects and practices, making sure that local people are involved at all stages of project design and implementation.

(7) To the fullest extent feasible, support projects and other activities to conserve forested watersheds and rehabilitate those which have been deforested, making sure that local people are involved at all stages of project design and implementation.

(8) To the fullest extent feasible, support training, research, and other actions which lead to sustainable and more environmentally sound practices for timber harvesting, removal, and processing, including reforestation, soil conservation, and other activities to rehabilitate degraded forest lands.

(9) To the fullest extent feasible, support research to expand knowledge of tropical forests and identify alternatives which

plant conservation programs. Special efforts should be made to establish and maintain wildlife sanctuaries, reserves, and parks; to enact and enforce anti-poaching measures; and to identify, study, and catalog animal and plant species, especially in tropical environments.

(c) ⁷⁶ FUNDING LEVEL.—For fiscal year 1987, not less than \$2,500,000 of the funds available to carry out this part (excluding funds made available to carry out section 104(c)(2), relating to the Child Survival Fund) shall be allocated for assistance pursuant to subsection (b) for activities which were not funded prior to fiscal year 1987. In addition, the Agency for International Development shall, to the fullest extent possible, continue and increase assistance pursuant to subsection (b) for activities for which assistance was provided in fiscal years prior to fiscal year 1987.

(d) ⁷⁶ COUNTRY ANALYSIS REQUIREMENTS.—Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of—

(1) the actions necessary in that country to conserve biological diversity, and

(2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.

(e) ⁷⁶ LOCAL INVOLVEMENT.—To the fullest extent possible, projects supported under this section shall include close consultation with and involvement of local people at all stages of design and implementation.

(f) ⁷⁶ PVOs AND OTHER NONGOVERNMENTAL ORGANIZATIONS.—Whenever feasible, the objectives of this section shall be accomplished through projects managed by appropriate private and voluntary organizations, or international, regional, or national nongovernmental organizations, which are active in the region or country where the project is located.

(g) ⁷⁶ ACTIONS BY AID.—The Administrator of the Agency for International Development shall—

(1) cooperate with appropriate international organizations, both governmental and nongovernmental;

(2) look to the World Conservation Strategy as an overall guide for actions to conserve biological diversity;

(3) engage in dialogues and exchanges of information with recipient countries which stress the importance of conserving biological diversity for the long-term economic benefit of those countries and which identify and focus on policies of those countries which directly or indirectly contribute to loss of biological diversity;

(4) support training and education efforts which improve the capacity of recipient countries to prevent loss of biological diversity;

(5) whenever possible, enter into long-term agreements in which the recipient country agrees to protect ecosystems or other wildlife habitats recommended for protection by relevant governmental or nongovernmental organizations or as a result of activities undertaken pursuant to paragraph (6), and the

⁷⁶ Para. (c) through (h) were added by sec. 302 of Public Law 99-529 (100 Stat. 3017).

(A) Activities which would result in the conversion of forest lands to the rearing of livestock.

(B) The construction, upgrading, or maintenance of roads (including temporary haul roads for logging or other extractive industries) which pass through relatively undegraded forest lands.

(C) The colonization of forest lands.

(D) The construction of dams or other water control structures which flood relatively undegraded forest lands.

(E) PVOs AND OTHER NONGOVERNMENTAL ORGANIZATIONS.—Whenever feasible, the President shall accomplish the objectives of this section through projects managed by private and voluntary organizations or international, regional, or national nongovernmental organizations which are active in the region or country where the project is located.

(f) ⁷⁶ COUNTRY ANALYSIS REQUIREMENTS.—Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of—

(1) the actions necessary in that country to achieve conservation and sustainable management of tropical forests, and

(2) the extent to which the actions proposed for support by the Agency meet the needs thus identified.

(g) ANNUAL REPORT.—Each annual report required by section 634(a) of this Act shall include a report on the implementation of this section.

Sec. 119. ⁷⁵ Renewable and Unconventional Energy Technologies. * * * [Repealed—1980]

Sec. 119. ⁷⁵ Endangered Species.—(a) ⁷⁴ The Congress finds the survival of many animal and plant species is endangered by overhunting, by the presence of toxic chemicals in water, air and soil, and by the destruction of habitats. The Congress further finds that the extinction of animal and plant species is an irreparable loss with potentially serious environmental and economic consequences for developing and developed countries alike. Accordingly, the preservation of animal and plant species through the regulation of the hunting and trade in endangered species, through limitations on the pollution of natural ecosystems, and through the protection of wildlife habitats should be an important objective of the United States development assistance.

(b) ⁷⁴ In order to preserve biological diversity, the President is authorized to furnish assistance under this part, notwithstanding section 650. ⁷⁵ To assist countries in protecting and maintaining wildlife habitats and in developing sound wildlife management and

⁷⁵ Sec. 119, as added by Public Law 95-68 (81 Stat. 528), amended by sec. 111 of the International Development and Food Assistance Act of 1978 (92 Stat. 948), and by sec. 107 of the International Development and Food Assistance Act of 1976 (93 Stat. 362), was repealed by sec. 302 of the International Security and Development Cooperation Act of 1980 (Public Law 96-523, 94 Stat. 3147). See sec. 106 of this Act for text concerning energy technologies.

⁷⁴ 22 U.S.C. 2151(a) and (b) were added by sec. 702 of the International Environment Protection Act of 1983 (title VII of the Department of State Authorization Act, Fiscal Year 1984 and Public Law 98-164; 97 Stat. 1046).
⁷⁵ Sec. 119, as added by Public Law 95-68 (81 Stat. 528), amended by sec. 107 of the International Security and Development Cooperation Act of 1976 (93 Stat. 362), was repealed by sec. 302 of the International Security and Development Cooperation Act of 1980 (Public Law 96-523, 94 Stat. 3147). See sec. 106 of this Act for text concerning energy technologies.

United States agrees to provide, subject to obtaining the necessary appropriations, additional assistance necessary for the establishment and maintenance of such protected areas;

(6) support, as necessary and in cooperation with the appropriate governmental and nongovernmental organizations, efforts to identify and survey ecosystems in recipient countries worthy of protection;

(7) cooperate with and support the relevant efforts of other agencies of the United States Government, including the United States Fish and Wildlife Service, the National Park Service, the Forest Service, and the Peace Corps;

(8) review the Agency's environmental regulations and revise them as necessary to ensure that ongoing and proposed actions by the Agency do not inadvertently endanger wildlife species or their critical habitats, harm protected areas, or have other adverse impacts on biological diversity (and shall report to the Congress within a year after the date of enactment of this paragraph on the actions taken pursuant to this paragraph);

(9) ensure that environmental profiles sponsored by the Agency include information needed for conservation of biological diversity; and

(10) deny any direct or indirect assistance under this chapter for actions which significantly degrade national parks or similar protected areas or introduce exotic plants or animals into such areas.

(h) ⁷⁶ ANNUAL REPORTS.—Each annual report required by section 634(a) of this Act shall include, in a separate volume, a report on the implementation of this section.

ANNEX B

Scope of Work: Country Biodiversity Assessments Central Asia

I. Objective:

To conduct country-wide assessments of biodiversity resources and their status for the purposes of complying with sections 117 and 119 of the Foreign Assistance of 1961, Agency guidance on country strategy development, and USAID Environmental Procedures described in Title 22 CFR, Section 216.

II. Background:

A. Policies governing Environmental Procedures

The Foreign Assistance Act (FAA) of 1961, Sec. 498C states that funds made available for assistance to the New Independent States (NIS) shall be subject to the provisions of Section 117 relating to Environment and Natural Resources (FAA Sec. 498C, footnote e). Section 117 requires that the President take fully into account the impact of foreign assistance programs and projects on environment and natural resources (Sec 117 (c)(1)). Current USAID Legislation which guides environmental impact and monitoring is Title 22 of the Code of Federal Regulations, Part 216 (“Reg. 216”). In complying with the law, USAID provides its Environmental Procedures under ADS 204.5 to ensure accordance with the requirements of Title 22 CFR 216.

Section 119 of the FAA relates to Endangered Species. It states that “the preservation of animal and plant species through the regulation of the hunting and trade in endangered species, through limitations on the pollution of natural ecosystems and through the protection of wildlife habits should be an important objective of the United States development assistance (FAA, Sec. 119 (a)).” Furthermore it states that “Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of (1) the actions necessary in that country to conserve biological diversity and (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified (FAA, Sec. 119(d)).”

For USAID Missions to be in compliance with the above, and for USAID Missions to effectively determine impact on natural resources and endangered species and incorporate mitigation measures in their programs, a biodiversity assessment is needed to inform Mission planning. The purpose of this Task Order is to provide the USAID/CAR Regional Mission in Central Asia with this critical information.

B. Overview on USAID programs in Central Asia

The USAID Regional Mission for Central Asia (USAID/CAR) manages U.S. assistance in five newly independent states of Kazakhstan, Turkmenistan, Kyrgyzstan, Tajikistan and Uzbekistan.

USAID's assistance focuses on the economic, political, social, and environmental aspects of the transition process to more open, free market, democratic societies. Kazakhstan and Kyrgyzstan have full range of U.S. assistance. In Uzbekistan and Turkmenistan, the range of assistance is more limited by the pace of reform. In Tajikistan, USAID assistance primarily supports the reconciliation process after a civil war. Training, partnerships, and technical assistance are essential elements of all USAID/CAR programs. USAID/CAR provides considerable technical expertise through a network of specialized contractor and grantee partners.

Summary of Energy and Environmental Initiatives

The majority of USAID's work in the energy and environment sectors in Central Asia is regional rather than country-specific. This is because many of the energy and environmental challenges defy resolution at the national level — the associated problems cross national boundaries. Consider, for example, the relationship electricity and water: most of the major hydro-electric dams are in one country, the primary electricity dispatch center is in another, the power purchaser may be in third, agricultural irrigation takes place in a fourth and a fifth nation, and chief river routes thread through all five of the Central Asian countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. Energy, water and environmental officials throughout the region face many of the same problems as they look to market-based solutions for answers.

USAID's energy sector objective has been to establish a more economically sound and environmentally sustainable energy system as an engine of regional economic growth. Energy, covers oil and gas, as well as electricity. Patterns of energy sector investment and energy use in Central Asia will significantly influence the future political and economic independence of the region from Russia. If used strategically, these investment and use patterns could hasten Central Asia's emergence as a major petroleum producer in the 21st century — rivaling the Gulf region in its importance as an internal oil and gas market.

In the broader environment sector, USAID seeks to reduce regional economic and political tensions generated by transboundary environmental issues. These include the many aspects of sustainable water management in the Aral Sea Basin, environmental protection of the Caspian Sea, and reductions in pollution which contribute to global climate change.

Kazakhstan

Resource-rich Kazakhstan, with vast reserves of oil, gas and minerals, stretches from Mongolia to the Caspian Sea yet has a population of merely 16.5 million. Kazakhstan is the most politically and economically stable republic within Central Asia. Although traditionally a nomadic culture, Soviet policies led to a sedentary population that is more ethnically diverse and urban. Since gaining independence in 1991, President Nursultan Nazarbayev has been this constitutional republic's central political figure. Power is centralized within the presidency, although there is a Cabinet of Ministers and a Parliament. Nazarbayev recently relocated the capital to the northern city of Astana (formerly known as Aqmola) even though Almaty remains the cultural and economic center of the country.

In Kazakhstan, USAID promotes the integrated development and economically efficient operation of regional electric power systems, assists the Ministry of Oil and Gas and the state energy companies in oil and gas investment issues, supports region-wide cooperation in sustainable water resource management, and works to improve the capability for environmental management in both pollution mitigation and global climate change areas.

Kyrgyzstan

The small mountainous Kyrgyz Republic situated just south of Kazakhstan hosts the alpine grandeur of the Tien Shan Mountains and the serenity of Issyl-Kul, an inland sea nested between two mountain ranges. Much of the country was closed to foreigners during Soviet times due to the top-secret mining and weapons development facilities located here. Since the declaration of independence in December 1991, Kyrgyzstan has been working closely with international donors and making steady progress in political, social and economic reforms.

USAID support for economic transition initially focused on short-term and later stabilization measures designed to help bring government spending and inflation under control, shifted its focus to key structural reforms. This has included support for privatization of small- and medium-sized enterprises, establishment of financial markets, banking reform, fiscal reform, and development of an appropriate legal infrastructure for commercial activities. In 1998, with significant USAID technical assistance, Kyrgyzstan became the first Central Asian country to accede to the World Trade Organization.

In Kyrgyzstan, USAID promotes the integrated development and economically efficient operation of regional and national electric power systems, supports region-wide cooperation in sustainable water resource management, and works to improve capability for environmental management.

Tajikistan

Although Tajikistan achieved independence in 1991 with the break-up of the Soviet Union, independence brought widespread civil war to the nation. Tajikistan is the sole country among the five Central Asian states where underlying ethnic, regional, economic, and ideological strife led to civil conflict and caused major population displacements. Civil war broke out between rival clans in 1992 – 1993 and continued intermittently even after formal Peace Accords were signed in Moscow in June 1997.

Civil unrest by rival factions, however, continues to pose a challenge to continuing peace in the republic. Geographic isolation, dependence on food and industrial suppliers from beyond its borders, the elimination of most subsidies from Moscow, and the collapse of former trading relationships have all combined to create instability, with implications for other states in the region.

Currently U.S. government assistance in Tajikistan focuses primarily on humanitarian assistance and promotion of the peace process. Opportunities for longer-term impact are also made when appropriate. Much of the international assistance to Tajikistan has been carried out through U.N.

humanitarian programs, other U.N. agencies, the International Red Cross and other international and American PVOs.

The ultimate challenge in Tajikistan for any development program is to resolve the current security situation. Until this issue is resolved, any progress towards the mission's objectives will be limited.

Turkmenistan

A primarily desert country, Turkmenistan borders the Caspian Sea and has substantial oil and gas reserves. However, getting the oil and gas to market remains a significant obstacle. President Saparmund Niyazov is the highly visible authoritarian leader of Turkmenistan. Even though the constitution provides for a balance of powers, the legislative and juridical branches are in effect powerless. Since gaining independence in 1991, the government has resisted introducing political and economic reforms. As Turkmenistan has not experienced a sharp decline in living standards, the government has had little incentive to undertake the economic reforms necessary to become a market economy.

The USAID portfolio in Turkmenistan focuses on mutually agreed upon activities, wherein the Mission can introduce and implement reforms as well as improve the investment environment for local and international businesses. Specific programs in budgetary reform, trade and investment are currently in operation, as is support for energy sector, with an emphasis on gas and oil. In health programs, USAID introduced modern clinical services, including reproductive health and disease surveillance, and facilitates a medical partnership program. USAID also supports fledging NGOs and community-based organizations in an effort to promote citizen involvement in civic life. Technical training is designed to support the specific activities in which USAID is involved.

Uzbekistan

Uzbekistan, which borders all four other Central Asian republics, boasts many of the historical and architectural highlights of the region. The country has the most diverse economic resources in the region, including agriculture, mining and industry. Officially, Uzbekistan is a secular, democratic presidential republic with a President, cabinet of Ministers and a legislative body.

The USAID portfolio in Uzbekistan focuses on economic, democratic, and social aspects of the transition process, as well as the environment and energy sectors. From a USAID perspective, the goal in Uzbekistan is to engage reform-minded elements in the government and assist as requested in the establishment of the basic building blocks of a market-oriented economic system. Assistance for the market transition involves support or tax reform, budget reform, bank reform, accounting conversion and development of a strong, open and transparent investment climate.

Energy and environment initiatives support specific programs in privatization and development of energy and water resource policies which foster international trade and investment, reduce regional tensions, and increase social stability and environmental sustainability.

III. Statement of Work

The Contractor shall perform the following activities:

A) Hold meetings with the Bureau Environmental Officer (BEO) of USAID's EE Bureau in Washington and the EE Desk Officer and other suggested by the Desk Officer to ensure full understanding of EE's program in Central Asia, USAID environmental procedures and purpose of this assignment. These discussion should include any policy decisions and approaches which the BEO and Agency Environmental Advisor are taking as per their authority under Reg. 216, which may not be explicit in general legal documentation. The Contractor should also meet with a representative of EE's energy division familiar with the CAR program as well as with a representative of the Bureau's democracy and governance office to cover to civil society-related issues. The Contractor should also include meetings with relevant World Bank officials and with appropriate international conversation NGOs .

B) The Contractor should review materials provided by USAID to become familiar with the internationally-funded Caspian Environment Program and especially the activities of its regional thematic centers whose work affects bio-resources in Kazakhstan and Turkmenistan. These are existing host-country institutions, each of which have been provided funding to summarize current understanding of an important Caspian Sea environmental issue. These include sea-level rise (Almaty), desertification around the Caspian (Turkmenistan), biodiversity (Almaty), and commercial bio-resources (Astrakhan, Russia).

C) Field a team to conduct an overview and general analysis of each country's biodiversity and its current status. The documentation should include description of:

- Major ecosystem types highlighting important, unique aspects of the country's biodiversity, including important endemic species and their habitats.
- Natural areas of particular importance to biodiversity conservation, such as key wetlands, remaining old-growth or coastal areas critical for species reproduction, feeding or migration, if relevant.
- Plant and animal species which are endangered or threatened with extinction. Endangered species of particular social, economic or environmental importance (such as the Caspian seal) should be highlighted and described, as should their habitats. An updated list, such as the IUCN red list should be included as an annex.
- Current and potential future threats to biodiversity including a general assessment of overall health of ecosystems and major factors affecting ecosystem health such as land use, pests, and/or contamination, etc. or major institutional or policy failures or transboundary issues as appropriate. Special attention should be given to the potential impacts from future oil and gas development, especially in the Caspian Sea region, and from changing patterns of transboundary water use.

- Conservation efforts including national policies and strategies, the status of financing for conservation, the status of country participation in major international treaties (with particular attention to the Convention on International Trade in Endangered Species – CITES), the country’s protected area system, and botanical gardens/gene banks (if relevant) and their status, and monitoring systems. This section should also include recent, current and planned activities by donor and multilateral lending organizations (IFIs), international conservation NGOs, and agencies of the USG that support biodiversity conservation, including sustainable forestry, soil conservation, and efforts to combat desertification and establishment of parks. Identify NGOs, universities and other local organizations involved in conservation, and a general description of responsible government agencies. A general assessment of the effectiveness of these policies, institutions and activities to achieve biodiversity conservation should be included. Priority conservation needs which lack donor or local support should be highlighted.
- USAID’s program in general and, if relevant, 1) any perceived potential areas of concern related to biodiversity impacts with current or planned program activities, or
- Any potential opportunities for USAID to support biodiversity conservation consistent with Mission program objectives.

D) For the CAR region prepare a report which incorporates the points above on the status of biodiversity and conservation efforts and implications for USAID programming and environmental monitoring to ensure compliance with 22 CFR 216.

IV. Methodology:

The Contractor shall field a two-person team of U.S. specialists for this assignment. One team member should be a natural resource management specialist with significant experience international, regional or Central Asia experience. The second team member should be a natural resources/institutional policy specialist with significant, relevant international, regional or Central Asia experience.

The Team Leader may have either of these specialties; however, he or she must have international experience with USAID and knowledge of USAID environmental regulations and programs. Additionally, the Team Leader must have proven leadership and communication skills (both oral and written), and preferably with relevant experience in USAID’s E&E Bureau. The Team Leader should be a senior-level professional with minimum qualifications of Ph.D. or equivalent education plus 7 years additional relevant experience, or Masters plus 9 years additional relevant experience, or Bachelors plus 11 years additional relevant experience.

The second team member should be mid-level or well-qualified junior level professional. This specialist must have proven technical, analytical, and written communication skills, and have demonstrated his or her ability to work successfully in a team. Minimum requirements for a mid-level professional are Ph.D. or equivalent degree plus 3 years of relevant additional experience, or Masters plus 9 years additional relevant experience, or Bachelors plus 7 years

additional relevant experience. Minimum qualifications for a Junior-level specialist are Ph.D. or equivalent degree or Masters, or Bachelors plus one year additional relevant experience or 5 years experience. Potential contractors are asked to supply USAID/CAR with the names of the proposed U.S. specialists, indicating the Team Leader along with at least one alternate candidate named for each of the two positions.

USAID/CAR strongly encourages the use of qualified local professionals with command of the English language as additional team members for this assignment. With a large and varied geographic region to cover, comprising several independent nations, the addition of knowledgeable local specialists would considerably strengthen the team. In selecting such specialists, the Contractor should consider previous experience working with international donor projects, as well as technical knowledge and English language skills, as a key qualification.

Prior to beginning actual field work in the region, the Contractor shall submit an outline of a model country-wide biodiversity assessment to USAID/CAR to ensure that USAID and the Contractor have a common understanding of the approach to be taken in the preparation of the assessment, the depth of coverage expected, and the treatment of sensitive issues.

V. Deliverables:

The primary deliverable under this task order is a report on the CAR region, with discrete sections for each of the five countries, addressing the points specified in the statement of work. The report will contain country-specific findings and recommendations and also provide a regional context and recommendations. The report will contain at a minimum one map per country that provides a broad picture of key ecosystems, habitats and projected areas, one annex containing IUCN lists for endangered and threatened species, and one annex containing Sections 117 and 119 of the Foreign Assistance Act.

The second sets of deliverables are in-country Mission exit briefings accompanied by two-page written summaries of key findings and recommendations. One electronic copy in Word format of this assessment shall be provided to the USAID/CAR Mission as well CTO (Environmental Officer).

VI. Reporting Requirements:

The Contractor shall report to the USAID/CAR Mission Environmental Officer in Almaty, Kazakhstan for this overall assignment.

Anticipated Level of Effort (LOE) and Schedule:

The LOE for this assignment is a total of 176 expatriate person-days, assuming 2.5 weeks per country for a two-person U.S. team as follows:

- Meetings in Washington with USAID, World Bank, NGOs and other as relevant – to cover all five countries (3 person – days)
- Field assessment, analysis and Mission debriefing (15 person-days in each country, except Tajikistan. For Tajikistan is allocated 5 person-days)

- Report preparation (including incorporating USAID comments (12 person-days)

Additional LOE is provided for local experts (120 days), drivers (65 days) and interpreters (65 days).

Schedule: Work under this task order may begin immediately after its signing. Upon signing this task order, the Contractor shall coordinate with USAID/CAR to establish the timing for the field assessments with the USAID Mission.* A final schedule shall be developed for this task order and delivered to the USAID/CAR Mission Environment Officer no later than 2 weeks after the signing of this task order.

Logistics: The Contractor will coordinate logistics with the USAID/CAR Mission (CTO) Environmental Officer or his designated Control Officer in each country. The Regional Mission and its Country Program Offices will assist the contractor by providing key references, documents and contacts available in country as well as advise on local transportation and interpretation services. In planning regional travel, the Contractor should consider that air travel in CAR during the winter months can be adversely affected by inclement weather, causing irregular flight schedules and unforeseen delays and reroutings. An additional logistical consideration is the frequent inability of U.S. personnel to physically visit Tajikistan. Travel to Tajikistan is, at the moment, prohibited due to security issues. The contractor will likely have to rely on a “desk-study” approach, strengthened by input from in-country expertise.

* See tentative itinerary on pages 9

Tentative Itinerary for the Biodiversity Assessment Team

Central Asia, March

Country, city	Amount of time (days)	Comments
II. Kazakhstan		
Almaty	4	
Kokshetau	3	4 flights a week from Almaty
Pavlodar (and/or other city)	3	train /flight from Kokshetau
Almaty	3	
Atyrau	3	4 flights a week from Almaty
Almaty	1	
Kyrgyzstan		
Bishkek (and/or other city plus Tajikistani assessment)	17	by road
Almaty	2	
Uzbekistan		
Tashkent	7	everyday flights from Almaty
Nukus (and/or other city)	4	everyday flights from Tashkent
Tashkent	6	
Turkmenistan		
Ashgabat	8	2 flights a week from Tashkent
Dashhowuz (and/or other city)	5	everyday flights from Ashgabat
Ashgabat	4	
Tashkent	2	
Almaty	1	everyday flights from Tashkent
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ANNEX C

List of Persons Contacted

Name	Occupation	Email (or fax/phone)
Aleksander Kalashnikov	Project Management Specialist, USAID, Uzbekistan	akalashnikov@usiad.com
Elena Mukhina-Kreuzberg	Focal point, SSC/IUCN, In-Country Coordinator for BIOFOR IQC Chemonics Mission, Uzbekistan	
Tatyana M. Lim	Scientific Assistant, Regional Development Office for Central Asia and Caspian Sea Basin, Embassy of the USA, Uzbekistan	limtm@state.gov
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Alexander Filatov	Chief, Gosbiocontrol, State Committee for Nature Protection, Uzbekistan	filatov@physic.uzsci.net
Tatyana Petrova	Specialist, State Committee for Nature Protection, Uzbekistan	
Natalya Kasymova	Specialist, International Cooperation and Programs, State Committee for Nature Protection, Uzbekistan	(008712) 413990 fax
Vitaly Blijensky	Deputy Director, Division of Game, Forestry and Reserves, State Committee of Forestry, Chirchik, Uzbekistan	162-0333 (phone)
Oleg Tsaruk	Chairman, Central Asia Coordinating Committee, International NGO Network on Desertification and Drought, Uzbekistan	tashkent@glasnet.ru , ots@physic.uzsci.net
Alexander V. Esipov	Researcher, Laboratory of Theriology, Institute of Zoology, Uzbek Academy of Sciences, Uzbekistan	esipa@nature.silk.org
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Loretta Land	Country Director, Counterpart Consortium/USAID, Uzbekistan	loretta@cpart.uz
Kenji Nakazawa	Head of Tashkent Office, European Bank for Reconstruction and Development (EBRD), Uzbekistan	nakazawk@tsk.ebrd.com

Theresa A. Ware	Country Representative; USAID Regional Mission for Central Asia, Uzbekistan	theresaware@usaid.gov
Karimsakov Oslan	Wetland restoration, Water resources Environmental Manager GEF	
Tatiana Petrova		
Natalia Kasymova	Biodiversity GEF, UNEP	
Alexi Kobzev	"Ecopolis", information and technical support to NGOs, Uzbekistan	ecopol@silk.org
Vyacheslav Akimov	Manager of Tashkent office, LEEP Monitoring, Conventions and Agreements in Central Asia, Uzbekistan	s_akimov@yahoo.com
	Western Tian-Shan Ugam Chatkal	
	Sustainable Development Policy Specialist, UNDP	
	Director, Baku Botanical Garden, Institute of Botany, Azerbaijan	
	Academy of Sciences (Ornithology)	
	Training Program Coordinator, ISAR	
	Director, Institute of Botany	
	Chief, Department of Arachnology, Institute of Zoology, Azerbaijan	
	Environmental Specialist, ISAR	
	Project Coordinator, Caspian Environmental Program, World Bank	
	Regional Coordinating Officer, TACIS, Caspian Environment Programme	
Yuliy Zaytsev		
	Environmental Officer, BP Amoco Group	

ANNEX D

Lists of Rare and Endangered Animal Species Included in the Red Data Book of Uzbekistan

The last edition of the Red Data Book of Uzbekistan (2000) includes 187 taxa (species and subspecies), among which are 22 mammals, 53 birds, 16 reptiles, and 18 fishes (see Appendix), as well as 80 invertebrate species, three annelids, 14 molluscs and 63 arthropods. The Red Data Book assigns one of the following five categories to each species included:

- 0 (Extinct), for taxa as extinct or probably extinct in the world, wildlife, country, usually (on the national and regional levels) during the last 50 years
- 1 (Vanishing), for threatened taxa with an extremely high and very high risk of extinction in the wild in immediate or near future (these taxa fall under the IUCN category of “Critically Endangered” or “Endangered”); usually, these taxa have low number in few local populations and narrow current ranges
- 2 (Declining), for threatened taxa medium-level risk of extinction in the wild in the medium-term future (2 category). usually, these taxa have low number in few local populations and narrow current ranges; as a rule, have a higher number and relatively wide mosaic ranges (“Vulnerable” taxa by IUCN classification)
- 3 (Rare), taxa with relatively stable but very low number and narrow range, so that they could decrease to the critical level of survival under unfavorable changes of environmental conditions. (“Lower Risk – near threatened” IUCN category)
- 4 (Undetermined), not enough data for classifying into a certain category

Table 1. Fishes

Species	IUCN Category
1. Ship Sturgeon, Aral Sea stock (<i>Acipenser nudiventris</i>)	1
2. Syrdarya shovelnose sturgeon (<i>Pseudoscaphirhynchus fedtschenkoi</i>)	1
3. Small Amudarya shovelnose sturgeon (<i>Pseudoscaphirhynchus hermanni</i>)	1
4. Large Amudarya shovelnose sturgeon (<i>Pseudoscaphirhynchus kaufmanni</i>)	1
5. Aral white-eyed bream (<i>Abramis sapa aralensis</i>)	2
6. Tashkent bystryanka (<i>Alburnoides oblongus</i>)	3
7. Pike asp (<i>Aspiolucius esocinus</i>)	1
8. Aral barbel (<i>Barbus brachycephalus</i>)	1
9. Turkestan barbel (<i>Barbus capito conocephalus</i>)	2
10. Sharpray (<i>Capoetobrama kuschakewitschi</i>)	2
11. Turkestan ide (<i>Leuciscus idus oxianus</i>)	4
12. Aral goldside loach (<i>Sabanejewia aurata aralensis</i>)	4
13. Turkestan catfish (<i>Glyptosternum reticulatum</i>)	2

14. Aral trout (<i>Salmo trutta aralensis</i>)	0
15. Amudarya trout (<i>Salmo trutta oxianus</i>)	2
16. Aral stickleback (<i>Pungitius platygaster aralensis</i>)	4
17. Chatkal sculpin (<i>Cottus jaxartensis</i>)	3
18. Turkestan sculpin (<i>Cottus spinulosus</i>)	3

Table 2. Reptiles

Species	IUCN Category
1. Said-Aliev's toad agama (<i>Phrynocephalus helioscopus saidalievi</i>)	1
2. Moltschanov's toad agama (<i>Phrynocephalus moltschanowi</i>)	4
3. Khentau toad agama (<i>Phrynocephalus rossikowi</i>)	1
4. Strauch's toad agama (<i>Phrynocephalus strauchi</i>)	1
5. Rustamov's plate-tailed gecko (<i>Teratoscincus scincus rustamowi</i>)	2
6. Testaceous gecko (<i>Alsophylax loricatus</i>)	2
7. Sleek gecko (<i>Alsophylax laevis</i>)	3
8. Black-ocellated racerunner (<i>Eremias nigrocellata</i>)	2
9. Sand racerunner (<i>Eremias scripta pherganensis</i>)	2
10. Desert monitor (<i>Varanus griseus</i>)	2
11. Northern wolf snake (<i>Lycodon striatus bicolor</i>)	4
12. Afghan owl-headed snake (<i>Lythorhynchus ridgewayi</i>)	4
13. Four-lined rat snake (<i>Elaphe quatuorlineata sauromates</i>)	4
14. Indian gamma snake (<i>Boiga trigonatum melanocephala</i>)	4
15. Central Asian cobra (<i>Naja oxiana</i>)	2
16. Meadow viper (<i>Vipera ursinii renardi</i>)	2

Table 3. Birds

Species	IUCN Category
1. Dalmatian (grey) pelican (<i>Pelecanus crispus</i>)	1
2. Great white (rosy) pelican (<i>Pelecanus onocrotalus</i>)	2
3. Pygmy cormorant (<i>Phalacrocorax pygmaeus</i>)	2
4. Squacco pond heron (<i>Ardeola ralloides</i>)	2
5. Little egret (<i>Egretta garzetta</i>)	2
6. Asian white stork (<i>Ciconia ciconia asiatica</i>)	2
7. Black stork (<i>Ciconia nigra</i>)	2
8. White spoonbill (<i>Platalea leucorodia</i>)	2
9. Glossy ibis (<i>Plegadis falcinellus</i>)	1
10. Rosy flamingo (<i>Phoenicopterus roseus</i>)	2
11. Mute swan (<i>Cygnus olor</i>)	2
12. Whooper swan (<i>Cygnus cygnus</i>)	4
13. Lesser white-fronted goose (<i>Anser erythropus</i>)	2
14. Red-breasted goose (<i>Rufibrenta ruficollis</i>)	2
15. Marbled teal (<i>Marmaronetta angustirostris</i>)	1
16. Ferruginous duck (White-eyed pochard) (<i>Aythya nyroca</i>)	2
17. White-headed duck (<i>Oxyura leucocephala</i>)	2
18. Osprey (<i>Pandion haliaetus</i>)	3
19. Ring-tailed fish eagle (<i>Haliaeetus leucoryphus</i>)	1

20. White-tailed eagle (<i>Haliaeetus albicilla</i>)	2
21. Lammergeier (<i>Gypaetus barbatus hemahalanus</i>)	2
22. Himalayan griffon vulture (<i>Gyps himalayensis</i>)	2
23. Griffon vulture (<i>Gyps fulvus</i>)	2
24. Eurasian black vulture (<i>Aegypius monachus</i>)	2
25. Short-toed (snake) eagle (<i>Circaetus gallicus heptneri</i>)	2
26. Pallid harrier (<i>Circus macrourus</i>)	4
27. Tawny (steppe) eagle (<i>Aquila rapax</i>)	3
28. Golden eagle (<i>Aquila chrysaetos</i>)	2
29. Imperial eagle (<i>Aquila heliaca</i>)	2
30. Hawk eagle (<i>Hieraetus fasciatus</i>)	1
31. Booted eagle (<i>Hieraetus pennatus</i>)	4
32. Lesser kestrel (<i>Falco naumanni</i>)	2
33. Laggar falcon (<i>Falco jugger</i>)	1
34. Saker falcon (<i>Falco cherrug</i>)	2
35. Peregrine falcon (<i>Falco peregrinus</i>)	2
36. Red-capped (barbary) falcon (<i>Falco pelegrinoides babylonicus</i>)	2
37. Zarafshan common pheasant (<i>Phasianus colchicus zeravschanicus</i>)	2
38. Siberian (great white) crane (<i>Grus leucogeranus</i>)	1
39. Corn crane (<i>Crex crex</i>)	4
40. Great bustard (<i>Otis tarda</i>)	1
41. Little bustard (<i>Otis tetrax</i>)	2
42. Houbara bustard (<i>Chlamydotis undulata</i>)	2
43. Sociable plover (<i>Chettusia gregaria</i>)	4
44. Great snipe (<i>Gallinago media</i>)	2
45. Slender-billed curlew (<i>Numenius tenuirostris</i>)	1
46. Asian dowitcher (<i>Limnodromus semipalmatus</i>)	4
47. Great black-headed gull (<i>Larus ichthyaetus</i>)	2
48. Pin-tailed sandgrouse (<i>Pterocles alchata</i>)	2
49. Pale-baked eastern stock dove (<i>Columba eversmanni</i>)	2
50. Striated scops owl (<i>Otus brucei</i>)	2
51. Reed pendulin tit (<i>Remiz macronyx</i>)	2
52. Paradise flycatcher (<i>Terpsiphone paradisi</i>)	2
53. Little forktail (<i>Enicurus scouleri</i>)	2

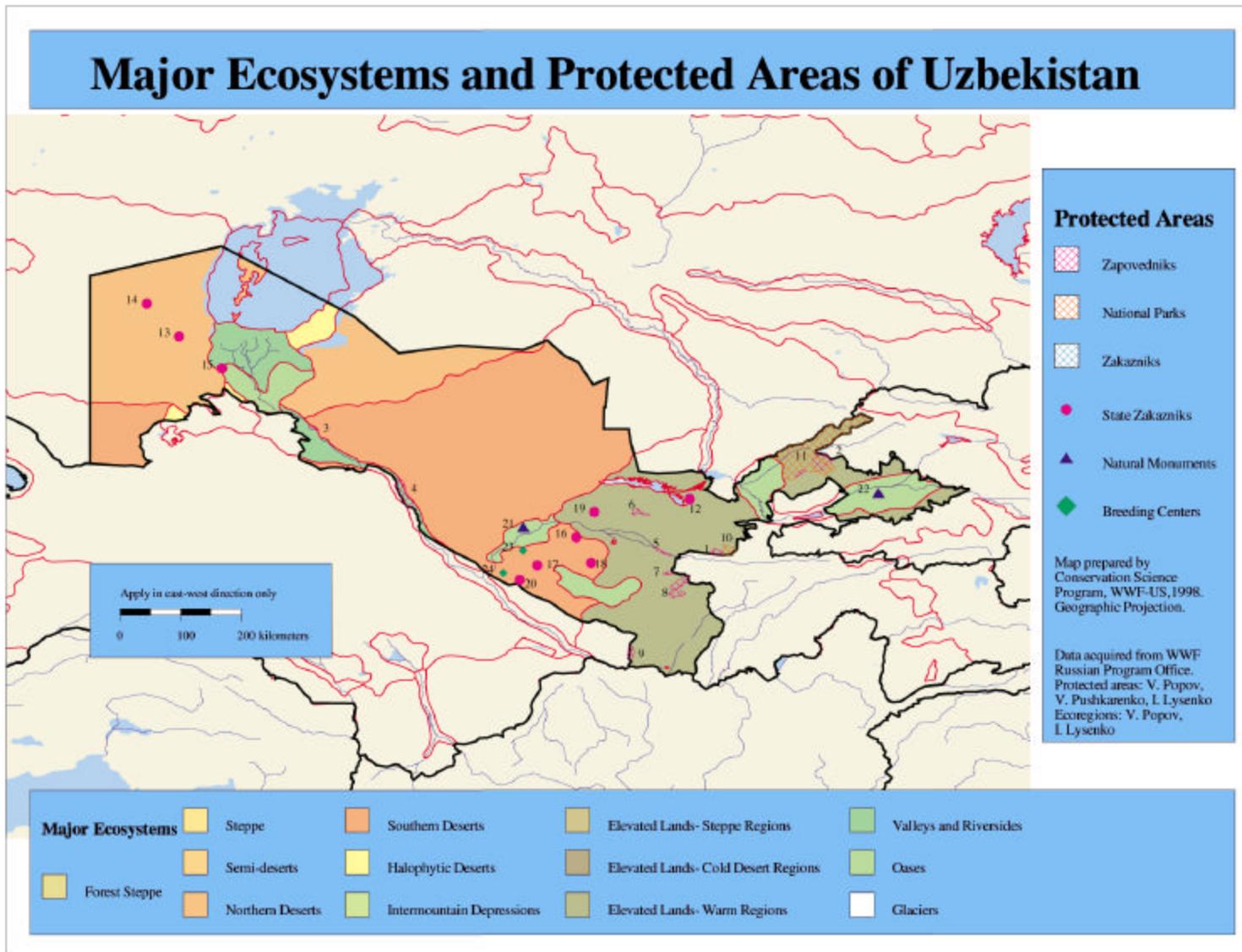
Table 4. Mammals

Species	IUCN Category
1. Brandt's hedgehog (<i>Hemiechinus hypomelas</i>)	2
2. Little horseshoe bat (<i>Rhinolophus hipposideros</i>)	2
3. Free-tailed Bat (<i>Tadarida teniotis</i>)	4
4. Honey badger (<i>Mellivora capensis</i>)	4
5. Central Asian otter (<i>Lutra lutra seistanica</i>)	1
6. Striped hyena (<i>Hyaena hyaena</i>)	1
7. Asian cheetah (<i>Acinonyx jubatus venaticus</i>)	0
8. Turkmen caracal (<i>Caracal caracal</i>)	1
9. Turkestan lynx (<i>Lynx lynx isabellinus</i>)	2

10. North Persian leopard (<i>Panthera pardus tullianus</i>)	1
11. Caspian tiger (<i>Panthera tigris virgata</i>)	0
12. Snow leopard (<i>Uncia uncia</i>)	2
13. Turkmen kulan (wild ass) (<i>Equus hemionus</i>)	1
14. Bukhara deer (<i>Cervus elaphus bactrianus</i>)	1
15. Goitered gazelle (<i>Gazella subgutturosa</i>)	2
16. Markhor (<i>Capra falconeri heptneri</i>)	1
17. Ustyurt wild sheep (<i>Ovis vignei arkal</i>)	1
18. Bukhara wild sheep (<i>Ovis vignei bucharensis</i>)	1
19. Severtsov's wild sheep (<i>Ovis ammon severtzovi</i>)	2
20. Tien-Shan wild sheep (<i>Ovis ammon karelini</i>)	1
21. Menzbier's marmot (<i>Marmota menzbieri</i>)	1
22. Thick-tailed pygmy jerboa (<i>Salpingotus heptneri</i>)	3

ANNEX E

Map of Ecosystems and Protected Areas of Uzbekistan



ANNEX F

Summary of Protected Areas

Table 1. Nature Reserves (*Zapovedniks*)

No.	Name and year of foundation	Location	Area, ha	IUCN category	Management authority
1	Zaamin, 1926, 1960	Djizak Region, Zaamin and Bakhmal Districts	26,847	I	Goskomles
2	Chatkal Biosphere Reserve, 1947	Tashkent Region, Parkent and Akhangaran Districts	35,686	I	Goskompriroda
3	Badai-Tugai, 1971	Republic of Karakalpakstan, Beruni and Kegeli Districts	6,462	I	Goskomles
4	Kyzylkum, 1971	Bukhara Region, Romitan District, Khorezm Region, Druzhbin District	10,141	I	Goskomles
5	Zerafshan, 1975	Samarkand Region, Bulungur and Jambay Districts	2,352	I	Goskomles
6	Nurata, 1975	Jizak Region, Parish District	17,752	I	Goskomles
7	Kitab Geological Reserve, 1979	Kashkadarya Region, Kitab District	5,378	I	Goskomgeologia
8	Gissar, 1983	Kashkadarya Region, Yakkabag and Shakrisabz Districts	81,438	I	Goskompriroda
9	Surkhan, 1987 (including two sites: Kugitang, 1987 and Aral-Paigambar, 1971)	Surkhandarya Region, Sherabad and Termez Districts	27,676 (incl. 24,583 + 3,093)	I	Goskomles
Total area			213,690		

Zaamin Reserve

Organized in 1960, and is located on the northern slope of Turkestan mountain range, in Zaamin District of Djizak Region. Area is 15,323 hectares, of which 6,763 are covered by forest. The objective is to protect mountain ecosystems. Three vegetation belts are included: mountain steppe, forest, and alpine zone. Three species of archa (*Juniperus*) dominate in the forest, found on the altitudes of 1,760 to 3,500 m. Has 694 species of plants, 130 species of birds, 37 species of mammals including bear (*Ursus arctos*) and lynx (*Felis lynx isabellina*). The protection personnel includes 22 inspectors. The reserve is contiguous with Djizak (Zaamin) National Park.

Chatkal Biosphere Reserve

Organized in 1947 and located in Tashkent Region on western spurs of the Chatkal mountain range. Area is 45,739 ha, of which 6,586 ha is covered by forest, 7,047 hay meadows, and 81 ha reservoirs. Has 1,060 species of plants, 168 species of birds, and 32 of mammals, including bear (*Ursus arctos*) and Menzbier's marmot (*Marmota menzbieri*). The staff of reserve has 69 employees, including 34 inspectors and 14 researchers. The objective is to protect mountain ecosystems of Western Tian-Shan and implement ecological monitoring. In 1995, the Chatkal Reserve was included in the global system of biosphere reserves. It is a strictly protected area.

Baday-Tugai Reserve

Organized in 1971 in Karakalpakstan. Area is 6,462 ha. Located downstream on the right bank of the Amu-Darya river on territory of Beruni and Kegeli districts. The reserve was created with the purpose of saving *tugai* woods and fauna in conditions of regulated drain of the Amu-Darya river. *Tugai* forests comprise 70 percent of its area. The reserve has 167 species of plants. Fauna is represented by 136 species of birds, 21 species of mammals, 15 species of fishes. In 1975, three rare Bukhara deer (*Cervus elaphus bactrianus*) were brought to the reserve, and in 1995 their number reached 18, of which six in 1996 were moved to Zerafshan reserve.

Kyzylkum Reserve

Organized in 1971 in Bukhara Region. Area of reserve is 10,141 ha, of which 6,964 ha are sands, and 3,177 lie in the Amudarya valley. The reserve has 102 species of plants. Fauna is represented by 197 species of birds and 37 species of mammals. Special attention here is paid to the Bukhara deer (*Cervus elaphus bactrianus*), the number of which has grown from 20 animals in 1971 to 200 head. Protection staff is ten inspectors.

Zerafshan State Reserve

Organized in 1975 in Samarkand Region. Area is 2,352 ha, 868 of them covered by forest. The reserve is a narrow strip stretching along the Zerafshan River for 45 km. The reserve has 308 species of plants, 172 species of birds, and 19 species of mammals. Objective of the reserve is the protection and restoration of the riparian desert forest (*tugai*) ecosystem, and in particular saving the rare subspecies of Zerafshan pheasant (*Phasianus colchicus*), which numbered 4,000 in 1995. Protection staff is eight inspectors.

Nurata State Reserve

Organized in 1975. Area is 17,752 ha. Located on the northern slope of Nuratau mountain range in Parish District of Djizak Region. Objective of the reserve is to protect valuable walnut forest (*Juglans regia*) and a unique population of Severtzev wild sheep (*Ovis ammon severtzovi*), included in the IUCN Red Book. The reserve has a rich flora of 664 species of plants, 150 species of birds, and 33 species of mammals. Relict species include rare forms of Zerafshan juniper (*Juniperus serawschanica*) and Regel's pear (*Pyrus regelii*). Personnel is 29 state inspectors.

Gissar State Reserve

Organised in 1983, Gissar is located in the Kashkadarya Region, on western spurs of the Gissar mountain range. Its objective is to save natural complexes and ecosystems of the Gissar range. The reserve's area is 80,986 ha of which 12,203 ha are covered by forest, 27,450 ha by meadows, and 171 ha of reservoirs. There are 870 species of plants, 116 species of birds, and 30 species of mammals inhabiting its territory, among these snow leopard (*Uncia uncia*), bear (*Ursus arctos*), and lynx (*Felis lynx isabellina*). The reserve has 56 employees, of which 35 are state inspection staff, and eight are researchers.

Surkhan Reserve

Consists of two independent sites:

1. Aral-Paigambar (at the moment the activity is stopped because of complex political conditions), organized in 1971, typical riparian (*tugai*) ecosystems of Amudarya river. Area is 3,093 ha, of these 964 forested. The reserve was created for protection of typical *tugai* forest with its characteristic fauna. Has 165 species of plants, 254 species of birds, and 37 species of mammals.
2. Kugitang, organized in 1987, covering mountain and forest ecosystems. Area is 24,583 ha. Typical mountain ecosystems of Kugitang range. Has 808 species of plants, 290 species of birds, and 20 species of mammals. Under special protection are markhur (*Capra falconeri*, 280 animals), wild sheep (*Ovis ammon*, 36 animals), and other rare species. Protection staff is 25 inspectors.

The reserve is located mainly in Surkhan-Darya Region and is typical of natural environment of the south of Uzbekistan.

National Parks – Category II

Djizak (Zaamin) National Park

Organized in 1978 in Djizak Region on the northern slope of Turkestan mountain range. The park is organized with the purpose of saving, restoring and recreational use of unique mountain juniper ecosystems. It has 750 species of plants, 145 species of birds, and 33 species of mammals. The overall area of the park is 30,522 ha. Two zones are defined: recreational and buffer zones. Protection: 15 inspectors. The National Park is contiguous with Zaamin Reserve.

Ugam-Chatkal National Park

Created in 1990 in Tashkent region in mountain area in spurs of western Tien-Shan with an area of 574,600 ha; of these, 56,400 ha covered by forest; 177,300 ha are pastures and hay meadows; 1,610 ha of irrigated land; and 329,400 ha rock and bare slopes. It is currently still not given full legal status. The park has 200 species of birds and 50 species of mammals. The park was organized with the purposes of saving unique landscapes, their use for recreational purposes, and also to regulate economic activity of land-owners and land-users located there. Protection personnel is 53 inspectors.

The whole territory of the park is divided into functional zones (in ha): agropark zone (59,100); active recreational zone (30,700); regulated recreational zone (13,600); reserved zone (35,800); reserved zone (109,100); zone of natural landscapes (326,100). The forest reserve lands are 322,600 ha, and forest plantations, 620 ha.

Table 1. Summary Data of Protected Areas

No.	Name and year of foundation	Location	Area, ha	IUCN category	Management authority
Nature Reserves (Zapovedniks)					
1	Zaamin, 1926, 1960	Djizak Region, Zaamin and Bakhmal Districts	26,847	I	Goskomles
2	Chatkal Biosphere Reserve, 1947	Tashkent Region, Parkent and Akhangaran Districts	35,686	I	Goskompriroda
3	Badai-Tugai, 1971	Republic of Karakalpakstan, Beruni and Kegeli Districts	6,462	I	Goskomles
4	Kyzylkum, 1971	Bukhara Region, Romitan District, Khorezm Region, Druzhbin District	10,141	I	Goskomles
5	Zerafshan, 1975	Samarkand Region, Bulungur and Jambay Districts	2,352	I	Goskomles
6	Nurata, 1975	Jizak Region, Parish District	17,752	I	Goskomles
7	Kitab Geological Reserve, 1979	Kashkadarya Region, Kitab District	5,378	I	Goskomgeologiya
8	Gissar, 1983	Kashkadarya Region, Yakkabag and Shakrisabz Districts	81,438	I	Goskompriroda
9	Surkhan, 1987 (including two sites: Kugitang, 1987 and Aral-Paigambar, 1971)	Surkhandarya Region, Sherabad and Termez Districts	27,676 (incl. 24,583 + 3,093)	I	Goskomles
Total area			213,690		
National Parks					
1	Zaamin People's Park, 1976	Djizak Region, Zaamin District	24,110	II	Goskomles
2	Ugam-Chatkal Natural National Park, 1990	Tashkent Region, Bostanlyk, Parkent and Akhangaran Districts	574,595	II	Goskomles
Total area			598,705		

Table 3. Rare Animal Breeding Centres

No.	Name and year of foundation	Location	Area, ha	IUCN category	Management authority
1	Ecocentre Djeiran, 1976	Bukhara Region	5,145	III	Goskomprroda

Table 4. Conservation Areas (Zakazniks)

No.	Name and year of foundation	Location	Area, ha	IUCN category	Management authority
Conservation Areas (Zakazniks)					
1	Arnasay, 1983	Djizak Region	63,300	IV	Uzryba
2	Karakul, 1990	Bukhara Region	10,000	IV	Goskomprroda
3	Saygachy, 1991	Republic of Karakalpakstan	1,000,000	IV	Goskomprroda
4	Sudochye, 1991	Republic of Karakalpakstan	50,000	IV	Goskomprroda
5	Sarmysh, 1991	Navoi Region	2,520	IV	Goskomprroda
6	Karakir, 1992	Bukhara Region	30,000	IV	Goskomprroda
7	Karnabchul, 1992	Samarkand Region	40,000	IV	Goskomprroda
8	Koshrabad, 1992	Samarkand Region	16,500	IV	Goskomprroda
9	Dengizkul, 1992	Bukhara Region	8,600	IV	Goskomprroda
Total area			1,223,920		
Natural Monuments					
1	Vardanzi (1975), 1983	Bukhara Region	300	IV	Goskomles
2	Yazyavan, 1991	Fergana and Namangan Regions	3,186	IV	Goskomprroda
Total area			3,486		

ANNEX G

2000 BIOFOR C.A.R. Regional Biodiversity Assessment

Day, Date		Location	Schedule	Appointments	Notes
April					
TU	4	Washington DC	Early AM flight for D.C. PM arrival at Dulles International.		Booking at Wyndham City Center Hotel.
WD	5	Washington DC	AM appointment with Spike Millington, Nicole Beaumont.		
TH	6	Washington DC	AM meeting with Chemonics. PM briefing by project managers.		
FR	7	Washington DC			
SA	8	Washington DC			
SU	9	Frankfurt	Day in Frankfurt enroute to Almaty, Kazakhstan.		Flight delay.
May					
TU	23	Bishkek – Tashkent	Change of itinerary since we flew out of Bishkek directly to Tashkent. AM last minute meetings with members of the Institute of Biology.		PM flight to Tashkent. Met our counterpart facilitator and went over country itinerary.
WD	24	Tashkent	AM meetings with State Committee for Biocontrol, Adiljan K. Atadjanov, and HQ staff. Meeting with Anatoly Blijinski, the Deputy Chief. PM meeting with Alexander Kalashnikov, USAID/CAR/Tashkent, and presented our working program for the country.		Tajikistan counterpart arrived to write her report.
TH	25	Tashkent	Tajikistan 'Desk Exercise.'		
FR	26	Tashkent	Downloading maps, NEAP plans, documents in connection with our mission. Preparation of 'official letters' by Mission to all of the state agencies visited during our stay.		
SAT	27	Ugam-Chatkal National Park, & Chatkal Reserve.	Field visit to Ugam-Chatkal National Park, and Chatkal Nature Reserve. Talks with the national park director and staff.		Within easy driving distance of Tashkent, both the National Park and Nature Reserves are places of important biodiversity in the region, being the habitats and diverse ecological and botanical importance.
SUN	28	Ugam-Chatkal, and return to Tashkent PM.	The Chatkal reserve is quite small in area, but with an extraordinary large and diverse flora of endemic and endangered species.		By road at park and return to Tashkent early PM.

2000 BIOFOR C.A.R. Regional Biodiversity Assessment

Day, Date		Location	Schedule	Appointments	Notes
MO	29	Samakand	Started longer field trip to the Samakand-Bukhara region. Enroute, stopped at the Zeravshan Nature Reserve where Bukara deer are raised and released. Meeting with director and senior staff.	With a small group of eleven deer, they get two young each season. This does not appear to be money well spent, since the deer's natural habitat (riparian forests) are almost all gone, only fragments remain. This is true for almost all of the Red Book species.	By road.
TU	30	Bukhara	AM meetings at Samakand Uni, and held meetings with the departments of biological Science Dept. Continued on to Bukara, arriving early AM next day.		By road.
WD	31	Zaamin Nature Reserve	On the far side of the range is the Zaamin Nature Reserve that has a valley that contains a vast cave complex, and where the foot prints of early dinosaurs can be seen on the face of rocks (ancient sedimentary layers thrust up by the vast earth movements a few million years ago). The prints are thought to be from the first birdlike dinosaurs. Base for the great National Park and Biosphere nature reserve. An important Snow Leopard habitat.		Truly a wonderful place, full of wildlife, high mountains and semi-nomadic herders who live far from the motor roads, in a way of life little changed over thousands of years. There are great possibilities for eco-tourism here.
June					
TH	1	Nuratau Nature Res. Djizak Region.	Wildlife habitat, long-term nature reserve (wild sheep).		There are great possibilities for eco-tourism here as well.
FR	2	Bukhara	AM and PM returning to Bukhara.		Returning to Bukhara late PM.
SAT	3	Tashkent	AM Bukhara – PM return to Tashkent (10 hr. drive).		Freeway travel quite good.
SUN	4	Tashkent	AM spent on E-mail contacting Turkmen counterpart and obtaining program outline. Met USDA scientist regarding his work in biological weed control in the region, and his field monitoring plots results.		From USDA lab in Montpellier, France.
MO	5	Tashkent	Report writing.		
TU	6	Tashkent	Report writing.		
WD	7	Tashkent	Took day off instead of Sunday. Late PM to airport for flight to Ashgabad.		
TH	22	Ashgabad – Tashkent	Kazakh Visas AM. PM flight to Tashkent.		
FR	23	Tashkent	Arrived Tashkent 03.30. (No direct flight available to Almaty, had to fly to Tashkent and to Almaty from there.)		
SAT	24	Tashkent – Almaty	Travel to Almaty.		

2000 BIOFOR C.A.R. Regional Biodiversity Assessment

Day, Date		Location	Schedule	Appointments	Notes
July					
WD	5	Enroute to USA	Early AM flight to Frankfurt.		
TH	6	Enroute	No bookings made by UA to Lufthansa, standby for two flights. Ended up spending day 06:30 – 19:30 in Frankfurt. Baggage was left in Almaty.		
FR	7	Washington DC	Arrived Washington without bags.		
SAT	8	Washington DC	Bags delivered in late PM.		
SUN	9	Washington DC	Day off.		
MO	10	Washington DC	Project expense report.		
TU	11	Washington DC	Report writing/expenses.		
WD	12	Washington DC	Financial report.		
TH	13	Washington DC	Financial report.		
FR	14	Washington/SFO	Travel.		

ANNEX H

Environmentally Sustainable Use of Natural Resources

Environmental policy and institutional framework	Improve management of natural resources and environmental protection policies	Develop a strategy of transition to a model of sustainable development
		Develop and modernize a system of environment and natural resources management monitoring
		Prepare proposals on management reform; introduce environmental auditing practices
Participation of public organizations.	Ensure public participation in the process of decision-making on environmental issues at national, regional, and local levels.	Pass a law or regulation on the role of public organizations in protecting the environment; encourage public participation in supervision over environmental programs and projects implementation.
Environmental law and standards.	Improve legislation, standards, rules, and regulations related to environmental protection and management of natural resources	Prepare legislation on environmental protection and management of natural resources, taking steps to improve their enforcement.
		Develop new industry-specific pollution standards.
Development of economic tools to manage protection of the environment.	Improve environmental protection and natural resource management policies	Phase in and improve a system of natural resource users' fees.
		Introduce incentives for a more efficient use of water resources
		Differentiate the land tax base
		Improve economic incentives for enterprises to produce environmentally clean goods; Create incentives for consumers to protect the environment
Water resource management	Eliminate water shortages	Develop efficient concepts of water resource management in the basins of larger and smaller rivers
	More efficient use of water	Improve system of water consumption monitoring
		Develop and implement measures to prevent grazing lands depression; protective forestation and irrigation of pastures
Protection of biodiversity	Increase the numbers of protected animal and plant species	Implement the national strategy and action plan to protect biodiversity
Informational support	Operational monitoring of environmental impact of industrial enterprises' activities; Setting up databases on natural resources and environmental protection; Public awareness on environmental issues.	Modernize and streamline the system of monitoring of major sources of pollution; Set up cadasters of certain natural resources, protected territories, industrial waste, etc. Disseminate information on the environmental situation and measures to protect the environment in the mass media

Environmental education	Dissemination of environmental protection information and knowledge; Advanced training of specialists; Integration of environmental concerns into decision-making process	Implementing a system of continuous environmental education; Introducing special courses in schools on basic sanitary hygiene; Retraining the personnel of the State Committee on Natural Resources; Training the decision-makers in basics of the environmental science
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Adapted from the Uzbekistan National Environmental Action Plan, 1998.

ANNEX I

Action Plan Workplan Summary (for period 1998 to 2008) (From the GEF-UNDP Republic of Uzbekistan Biodiversity Conservation National Strategy and Action Plan, 1998)

1. The System of Protected Areas

1.1 Institutional and Legal Provisions

- 1.1.1 Review suitability and adequacy of existing institutional arrangements for administration and management of protected areas, and make any required changes.
- 1.1.2 Review of the legal provisions for protected areas.

1.2 Protected Areas System Reorganization and Expansion

- 1.2.1 Develop and formalize a new conceptual approach to protected areas design and management which will best meet the biodiversity conservation and development needs of the country under new political and socioeconomic conditions.
- 1.2.2 Protected areas categories and selection criteria
- 1.2.3 Ecological and land use mapping for national protected areas planning
- 1.2.4 Development of a national ecological network program (protected areas of various categories/ status), its approval and realization.
- 1.2.5 Implementation of plan of action for realizing the national program of ecological network.

1.3 Protected Areas Management

- 1.3.1 Protected areas management structure
- 1.3.2 Protected areas personnel: assessment of personnel expertise and sufficiency of numbers to implement the reorganized protected areas system and recommendations for action
- 1.3.3 Scientific research and monitoring for protected areas management
- 1.3.4 Determination of the levels of existing equipment and supplies for protected areas management and identify needs in the context of the reorganized protected areas system
- 1.3.5 Determination of financial resources required for development of a reorganized protected areas system and identify sources for these financial resources.
- 1.3.6 Development and adoption of a single program of management of protected areas at the governmental level.
- 1.3.7 Implementation of the approved unified protected area management program.

1.4 Biodiversity Information System

- 1.4.1 To develop and approve an appropriate information system for storage and processing of relevant biological resource information applicable for effective decision making.

1.5 Captive Breeding and Ex-Situ Conservation

- 1.5.1 Captive breeding: build upon existing experience in captive breeding through further development within special sites and protected areas of captive breeding programs for

seriously endangered species considered important in achieving the overall conservation needs of the Republic.

1.5.2 Zoological and botanical gardens: management and development guidelines

2. Public Awareness and Education

2.1 Strengthening of Awareness and Information Base of Officials Responsible for Decision-Making

2.1.1 To work out biodiversity information packages and guidelines on “best practices” for government bodies and public organizations, particularly for those working in the production sectors utilizing natural resources

2.1.2 Provide easily accessible and utilizable information on biodiversity issues to decision makers from all sectors.

2.2 Increasing Public Awareness Level

2.2.1 To develop a national program of mass media (press, radio and TV) for a wide demonstration of biodiversity and its role in the sustainable development of Uzbekistan

2.2.2 Gain public support for major biodiversity conservation and sustainable use activities prior and during their implementation via the full dissemination of information to the general public and local authorities and communities affected.

2.2.3 To develop guidelines and a framework for creation of specific local and community biodiversity awareness programs for areas of particular high value/ importance to biodiversity conservation and sustainable use.

2.3 Education

2.3.1 Identify other ongoing activities and initiatives in the field of environmental education

2.3.2 Organize a group of experts and consultants for revealing the gaps and problems in higher, secondary and specialized secondary education

2.3.3 Identify the actions required and develop a National Program for Biodiversity Education.

2.4 Public Participation

2.4.1 NGO and “Environmental Information” legislation

2.4.2 Public participation in planning and management of protected areas

2.4.3 Local biodiversity and protected areas support groups/ associations

3. Sustainable Use of Biodiversity

3.1 Sustainable Economic Use

3.1.1 Development of sustainable use mechanisms within protected areas system: in the framework of the system of protected areas to work out and test methods and mechanisms of achieving sustainable use of biological resources while ensuring adequate biodiversity preservation

- 3.1.2 Through an expert consultative group, identify and review the current economic use and regulation of biodiversity resources and the adequacy of current regulatory mechanisms
 - 3.1.3 Identify potential new means and mechanisms for sustainable utilizing Uzbekistan's biodiversity resources and the equitable sharing of benefits
 - 3.1.4 Identify priority areas requiring increased research, regulation or development
 - 3.1.5 Development and adoption of overall program for optimal sustainable use of biological resources and equitable sharing of benefits
- 3.2 Scientific and Educational Use
- 3.2.1 Establish an expert consultative group to review the current scientific and educational use of biodiversity, particularly within protected areas, identify principle problems and limitations, and make recommendations for maximizing benefits of such use
 - 3.2.2 Establish an expert group to assess the importance of agro-biodiversity and on this basis develop a program for its conservation and use
 - 3.2.3 Establish an expert group to assess the status of bio-technology and bio-pharmaceutical development and make recommendations concerning their further development
- 3.3 Cultural and Recreational Use
- 3.3.1 Identify the current and future recreational needs of and role protected areas and other areas of biodiversity and landscape value will play in meeting those needs
 - 3.3.2 Assess the biodiversity implications of current and future recreational needs and identify methods and mechanisms for maximizing benefits while mitigating impacts
 - 3.3.3 Identify ecosystems and species of particular cultural significance and develop approaches that conserve features important to the national cultural heritage

4. Regional and Local Level Biodiversity Action Plans

- 4.1 Establishing Required Organizational Structure at Regional/Local Level
- 4.2 Biodiversity Assessment: Preparing Assessment of Biodiversity Situation in Region/ Oblast, Including Biodiversity Status, Importance, and Actions Required.
- 4.3 Preparation and Adoption of Regional/ Oblast Biodiversity Action Plan: On Basis of Assessment, and Within the Framework of the National Biodiversity Strategy and Action Plan. To Prepare Realistic Regional/ Oblast Biodiversity Action Plans, Indicating the Actions to be Taken, Responsible Institutions/ Organizations, Approximate Financing, and Timetable.

5. Biodiversity International Affairs and Aid Coordination

- 5.1 Establishment of International Biodiversity Affairs Unit
- 5.2 International Legislation and Agreements
- 5.3 Donor Support and Coordination for Biodiversity Strategy and Action Plan

ANNEX J

Non-Government Organizations in Uzbekistan

Problems	Strengths	Recommended Priority Areas
<p>Lack of adequate or appropriate legislation to accommodate legal and financial status of NGOs. This is probably the greatest practical obstacle to NGO development in the Republic.</p> <p>Lack of overall support to NGOs in the country, with the exception of a limited number of government sponsored organizations.</p> <p>Lack of access provided to NGOs in terms of information, decision-making processes and participation.</p> <p>Narrow membership bases within country and a high dependence on support and financial resources from outside the country.</p> <p>General lack of organizational and managerial experience and an absence of democratic traditions.</p> <p>Generally a lack of clear-cut focal areas and overall unity of organization.</p>	<p>NGOs have developed a high level of regional and international contacts/ support and gained experience of working relations with international organizations.</p> <p>NGOs have developed an effective regional and international communication network.</p> <p>Environmental NGOs have a much greater awareness than most state personnel or the general public of up-to-date development concepts, international instruments/ legislation and international experience in trying to address environmental issues.</p> <p>NGOs, generally, have a much higher level of computer literacy and technical capacity than state personnel in terms of utilizing computers for communications and information processing/ distribution.</p> <p>Environmental NGOs have a membership with a solid core of qualified scientific and education specialists.</p>	<p>The development and implementation of awareness and education programs and activities.</p> <p>The development/ catalyzing of participation by people both at general public and local levels.</p> <p>Accessing, collection, analysis, and distribution of traditional knowledge and customs which have biodiversity conservation and sustainable use benefits.</p> <p>Provision of an independent environmental monitoring and "watchdog" function in the Republic to help ensure the compliance of the state and private sector to environmental and biodiversity related laws and regulations.</p> <p>Provide essential communication and networking capacity to assist local and regional cooperation and integration of activities.</p> <p>Assist in developing the awareness, cooperation, and the assistance of international organizations on biodiversity issues in Uzbekistan/ Central Asia.</p> <p>Provide essential technical inputs and assistance to relevant biodiversity state organizations in the field of computer based information management and communications.</p> <p>Provide inputs/ review for policy, program and project development in the protected areas and sustainable use sector utilizing their awareness of international development.</p>

Adapted from the GEF-UNDP Biodiversity Conservation National Strategy and Action Plan for Uzbekistan. 1998