Biodiversity Assessment for Kyrgyzstan

Task Order under the Biodiversity & Sustainable Forestry IQC (BIOFOR)

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ACRONYMS

BEO	Bureau Environmental Officer
BIOFOR	Biodiversity and Sustainable Forestry
BSAP	Biodiversity Strategy and Action Plan
CAR	Central Asian Republics
CITES	Convention on International Trade in Endangered Species
CTO	Contracting Technical Officer
DC	District of Columbia
EE	Europe and Eurasia
FAA	Foreign Assistance Act
GEF	Global Environment Fund
GIS	Geographic Information Systems
GTZ	German Agency for Technical Cooperation
ha	hectare
I.A.	illustrative activity
IQC	Indefinite Quantity Contract
IUCN	International Union for the Conservation of Nature
KIRFOR	Kyrgyz Swiss Forestry Sector Support Program
km	kilometer
LOE	level of effort
MEP	Ministry of Environmental Protection
m	meter
NBSAP	National Biodiversity Strategy and Action Plan
NEAP	National Environmental Action Plan
NGO	non-government organization
NIS	Newly Independent States
PC	Programme Components
PVO	private voluntary organization
RFP	Request for Proposal
SFA	State Forestry Agency
UN	United Nations
UNDP	United Nations Development Program
USG	United States Government

SECTION I

Introduction

This biodiversity assessment for the Republic of Kyrgyzstan 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 Kyrgyzstan from May 2 to May 23, 2000. Mr. Daviesson and Dr. Fet collaborated with local biodiversity specialist Dr. Chinara Sadykova in researching and assessing biodiversity in Kyrgyzstan.

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 in Kyrgyzstan and Washington D.C. concerned with biodiversity (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 Kyrgyzstan; 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 Kyrgyzstan.

- To analyze the impacts of current and future USAID activities in Kyrgyzstan on biodiversity conservation, suggest actions USAID could take to support biodiversity conservation in Kyrgyzstan 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

The newly independent state of the Kyrgyz Republic (population 4.6 million) is located in the center of Eurasia. With neighboring countries of Kazakhstan, China, Uzbekistan, and Tajikistan, Kyrgyzstan is a small country (198,500 km^2) dominated by the mountains of the Tien-Shan and Alai ranges. More than 90 percent of the country is above 1,000 m altitude. These fragile mountain ecosystems support a unique assemblage of plants and animals. The mountains of the Kyrgyz Republic also play an important role in providing fresh water to other Central Asian countries.

The Kyrgyz Republic contains a great wealth of biodiversity resources in terms of species, ecosystems and landscapes. Despite its small land mass, the Kyrgyz Republic displays a wide variation in elevations and geology, leading to a broad range of habitats that is reflected in a high diversity of species. The ecosystems represented range from high mountains, to lowland fertile plains and large freshwater systems. A number of rare and valuable ecosystems have nearly disappeared, and forest cover has declined by more than one-half in the last 50 years, putting many of the country's species at risk of extinction.

B. Major Ecoregions

The character of biodiversity in the country reflects the high altitude of much of the land, which is dominated by montane and alpine species. More than 60 percent of the country is occupied by mountains, with an altitude 500-7,000 meters above sea level, and more than 90 percent of the area is above 1,500 meters. About 40 percent is glaciers, rocks, scree, and highland rock deserts. The remaining territory is rich in different natural systems: fruit-walnut, juniper, fir, deciduous forests (3.5 percent), bushes, meadows, steppes, deserts, and swamps. In total, 20 different classes of ecosystem are known in the Kyrgyz Republic. Fourteen of these ecosystems (63.6 percent) are found between 2,000-3,000 m altitude, although only 30.8 percent of the territory lies within this range. Furthermore, the range of ecosystems is not evenly distributed throughout the country. Sixteen ecosystems (72.7 percent) are found in Western and Central Tien-Shan, while the Ferghana valley and Southern Kazakhstan biogeographic region have the fewest variety of ecosystems (three and five respectively). Thirteen ecosystems are represented in Alai, while ten ecosystems are found in other biogeographic regions (Northern Tien-Shan and Issy-Kul).

B1. Deserts

Most desert ecosystems are found in the valleys (Fergana, Naryn) and foothills (Turkestan, Chatkal, and Alai), between 400 and 1,600 m. Dominant plant species are *Salsola spp*., *Suaeda physophora, Ephedra spp.*, and *Sympegma regelii*. Endemic plants include the tulips *Tulipa nitida* and *T. rosea*. Marbled polecat, gray monitor, and sandgrouse are rare species characteristic

of the desert. A very small area of high mountain deserts (35,000 ha) is found in the tablelands (*syrt*) between 2,400 and 3,500 m. Plant species-diversity is low and dominated by cold-adapted "cushion" plants such as *Reaumuria kaschgarica* and *Artemisia rhodantha*.

B2. Semi-Deserts

Semi-deserts occur between 600 and 2,000 m. in the valleys and foothills and have a greater diversity than the deserts. Plant communities are dominated by wormwoods, *Artemisia spp*. Several endemic tulips (*Tulipa greigii, T. kolpakowskiana, T. ostrowskiana*) are found in this zone. Birds of prey and bustards occur here, as does the goitered gazelle.

B3. Steppes

Steppe ecosystems are widely distributed in Kyrgyzstan. Bunchgrass steppes occur from the foothills at 700 m. up to the high mountains at 2,000-3,000 m. These are dominated either by *Stipa spp., Festuca sulcata* or a more herbaceous mixture. Endemism is quite high with several species of *Tulipa* and *Juno* present. Eagles and falcons occur, with several species of marmots at high altitudes. Wild sheep *Ovis ammon* is also found here.

Mid-mountain semi-savanna steppe is more diverse and dominated by tall grasses, such as *Hordeum bulbosum, Elytrigia trichophora,* and *Bothriochloa ischaemum*. Endemism is high.

B4. Forests

Spruce forests, dominated by *Picea schrenkiana*, occur from 1,700-3,200 m. Understory trees include endemic rowans *Sorbus tianschanica, S. persica,* and willow *Salix tianshanica,* mixed with honeysuckle and brambles. The endemic fir *Abies semenovii* occurs here. Typical northern boreal species such as hawk owl *Surnia ulula,* merlin *Falco columbarius,* and black grouse *Lyrurus tetrix* reach their southern limits here. Red and roe deer, wolves, and bears occur in the spruce forests.

Juniper forests occupy a more extensive range, from 900-2,800 m. Dominant species are *Juniperus semiglobosa, J. seravschanica,* and *J. turkestana*. Several endemic plant species occur, as well as bird species typical of the Himalayan fauna.

Relict walnut *Juglans regia* forest, mixed with wild fruit trees occur in southern Kyrgyzstan between 1,000 and 2,200 m. These forests are very diverse with more than 300 plant species. Endemics include the apple *Malus sieversii,* plum *Prunus ferganica,* pear *Pyrus korshinsyi,* and hawthorn species. There is a rich forest bird and mammal community, with brown bear, lynx, and wild boar.

Riparian forest ecosystems, dominated by aspens, willows, and birches, occur along major rivers in the country but have been decimated in recent years. Several willow species are endemic. Important understory plants include *Hippophae rhamnoides* and *Berberis spp*.. Plants and animals from desert, steppe, and wetland habitats find refuge in these forests.

B5. Deciduous shrublands

These habitats are very diverse and widely distributed at altitudes between 1,500 and 3,000 m. *Rosa, Carnage, Cotoneaster,* and *Spiraea* are typical shrubs, mixed with juniper species. A good number of endemics are found, including species of almond and rowan, and the fauna is rich and diverse.

B6. Meadows

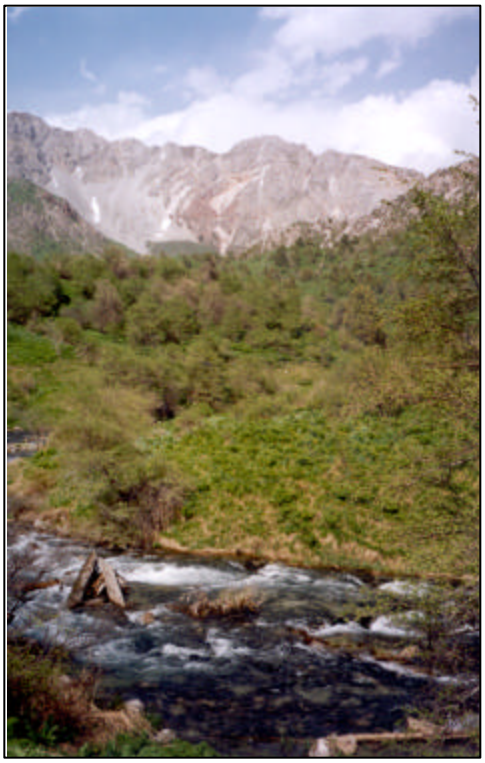
Meadows occur from the forest belt at 1,900-2,500 m., through the subalpine zone at 2,300-3,200 m. to the alpine meadows at 2,800-3,600 m. Plant diversity decreases with increasing altitude. *Alchemilla* and *Geranium* spp. are dominant at higher altitudes. Endemics include *Primula macrocalyx* and *P. eugeniae*. Among mammals, marmots are characteristic. Weasels and martens also occur, and at higher altitudes, snow leopards and Siberian ibex, along with bearded vultures and golden eagles. The rare Central Asian endemic bird, the ibisbill *Ibidorhyncha struthersii*, occurs along rivers in these habitats.

B7. Wetlands

Lake Issy-kul is by far the largest water body in the country and supports ten endemic fish species, as well as being very important for migratory waterfowl. Other water bodies include man-made reservoirs and rivers and streams, but marshlands are not common in Kyrgyzstan due to the steep terrain. Nevertheless, several threatened wetland bird species are known from the country.

C. Species Diversity

Kyrgyzstan's biodiversity has an ancient origin. A number of endemic species are found here, especially among mountain flora and fish species inhabiting mountain rivers and lakes. Its location on the edge of several biogeographic regions and its variety of ecological zones has influenced the developments of its fauna and flora. The high endemism of flora and fauna in Tien-Shan and Alai and the uniqueness of communities and ecosystems, especially relict zones, has resulted in certain ecological systems having the status of distinct biogeographic units.



Montane streams, along with fringing vegetation, are important habitats for many species.

The factors which determine biogeographic complexity and richness of biodiversity in the Kyrgyz Republic are as follows:

- Vertical zonation in the distribution of plants and animals — deserts, steppes, savanna, deciduous scrub, forests, meadows, alpine vegetation occur
- Montane landscapes providing mosaics of habitats, juxtaposing communities normally

separated by substantial distances
- Latitudinal variation in climate (northeast to southwest) resulting in a range of different ecological zones
- The geological history of Tien-Shan resulting in relictt 'fragments' of historical flora and fauna, including endemic species and relictt species and ecosystems, such as the fruit-walnut forests
- Connecting mountain ridges and river systems explaining the colonization of the area by species from different biogeographic zones (including desert, forest, and steppe)
- Representation of species from surrounding regions (Europe, Mediterranean, southern and eastern Asia)

In addition to almost 2,000 species of fungi and hundreds of lower plants, including algae, lichens, and bryophytes, 3,786 higher plants are known from Kyrgyzstan. The highest representation comes from the following families: *Poaceae* (224 species), *Fabaceae* (222), *Asteraceae* (80), *Brassicaceae* (73), *Rosaceae* (50), *Alliaceae* (40). About 200 vascular plant species are endemics of Kyrgyzstan.

Of vertebrates, there are 75 species of fish (12 endemics), four amphibians (two endemics), 33 reptiles, 368 birds, 83 mammals. Of more than 10,000 known invertebrates, over 25 percent are endemic. Up to 60 percent of mollusk species are endemic. Among mammals there are four endemics: Menzbier's marmot (*Marmota menzbieri*), a gopher, the Tien-Shan mouse, and Tien-Shan subspecies of European brown bear (*Ursus arctos isabellinus*).

Table 1. Number of vertebrate animals in the Kyrgyz Republic

Taxa	No. of species in Kyrgyz Republic	No. of species in the Kyrgyz Red Data Book	No. of species in the IUCN Red Data Lists
Fish	75	6	1
Amphibians	4	3	-
Reptiles	33	5	3
Birds	368	35	8
Mammals	83	15	4

Many of the remaining populations of species listed in the national Red Data Book are at the critical lower limit of viability, from which the populations may not be able to recover. The Turnian tiger (*Panthera tigris virgata*) became extinct in the Kyrgyz Republic at the turn of the century, and now the otter (*Lutra lutra seistanica*) faces a similar fate. Even species thought of as common, such as pheasants and wild boar, were completely exterminated in many regions but have since been reintroduced in some areas.

The Red Data Book of Kyrgyzstan (1986) includes 65 species of plants, six species of fish, five reptiles, 35 species of birds, 15 mammals. However, this list needs revisions. An especially dangerous process is the reduction of forests; half of the species in Kyrgyz occur in forests, but the area of forest has halved in the last 50 years.

The list of threatened and endangered species consists of 92 species of animals and 71 species of plants.

In practice, there are no data on the status of many species of vertebrates, which are rare and threatened — Asiatic wild dog (*Cuon alpinus*), Central Asian otter (*Lutra lutra*), goitered gazelle (*Gazella subgutturosa*); such birds as great bustard (*Otis tarda*), imperial eagle (*Aguita heliaca*). A number of tulips (*Tulipa nitida, T. ostrowskiana, T. rosea*) and wild pomegranate (*Punica granatum*) have nearly disappeared. The main reason is destruction of habitats as a result of economic needs.

Other threatened species include grey monitor (*Varanus griseus*), marbled polecat (*Vormela peregusna*), snow leopard (*Uncia uncia*), the Tien-Shan subspecies of European brown bear (*Ursus arctos isabellinus*), ibisbill (*Ibidorhyncha struthersii*), and some relict endemics, such as the mollusk *Siraphoroides moltschanovi,* which exists in Ak-Terek in the Fergana mountain range and a relict plant *Otostegia nikitinae*.

D. Agrobiodiversity

The biological resources of the Kyrgyz Republic play an important role in the economy and traditions of the country. Many species are used directly, either for subsistence or commercial extraction. The country lies within a center of origin for domesticated fruit crops and still possesses a number of wild relatives of these plants (walnuts, apples, apricots, pistachio). Natural habitats are a vital part of many traditional land use practices, such as grazing which relies on the maintenance of mountain meadows. The loss of biodiversity has both a direct and indirect effect on people's welfare and quality of life.

The botanical resources of the Kyrgyz Republic are very rich and varied. Six hundred species of wild plants used by man grow in the country. A number of anthropogenic influences threaten the quality of the gene pool of plants. Both populations and species diversity of plants have been reduced, and a number of species nearly disappeared.

Birdweed (*Couvulvulus sp.*)

There are more than 200 species of medicinal plants in the Kyrgyz Republic. The most valuable among them are: *Thalictrum foetidum, A. karacolicum, Inula macrophylla, Leonurus turkestanicus, Thermopsis turkestanica, Hypericum perforatum, Tussilago farfara, Origanum vulgare, Hippophae rhamnoides, Ephedra equisetina,* and *Veratrum lobelianum.*

The Kyrgyz Republic is rich in wild plants with economic value, including *Polygonum coriarium, Glycyrhiza glabra, Polygonum sp., Berberis sp., Pheum wittrockii, Anabasis aphylla, Ferula sp., Euphorbia ferganica, Onosma sp.,* and *Thymus sp.*.

Fruit-walnut forests in the south of the Kyrgyz Republic are especially valuable and unique. Their importance lies not only in their species diversity, but also the genetic diversity of such economically important species as walnut, apple, almond, pistachio, pear, and plum. These forests represent an important center of origin for cultivated fruit trees and a valuable 'storehouse' of genetic richness.

Wild-growing fruit plants of the Kyrgyz Republic are the ancestors of many cultivated plants, and thus represent valuable genetic material. They include: walnut (*Juglans regia*), Siever's apple (*Malus sieversii*), Kyrgyz apple (*M. kirghisorum*), Sogdian wild prune (*Prunus sogdiana),* common pear (*Pyrus communis*), Korzhinski's pear *(P. korshinskyi*), Regel's pear (*P. regelii*), Tian-Shan cherry (*Cerasus tianschanica*), Magaleb cherry (*C. mahaleb*), barberry (*Berberis oblonga*), almond (*Amygdalus communis*), pistachio (*Pistacia vera*), Jungar hawthorn (*Crataegus songorica*), and Turkestan hawthorn (*C. turkestanica*). All are potential sources of pest- and disease-resistant varieties for cultivated plant species.

Overall mountain forest loss has been dramatic over the last decades — fir and juniper forests have declined by over 35 percent, fruit and walnut forests have declined by 50 percent, and pistachio and almond forests have been reduced to 30,000 ha (hectares) over the last 50 years.

E. Threats to Biodiversity

During the transition to a market economy the Kyrgyz Republic has undergone an economic crisis. Most industries have collapsed, and as a result, many people of working age are unemployed. More than half of the population lives below the poverty level. Because of the lack of funds for purchasing of coal, the rural population (60 percent of the country) uses wood for heating. Many trees are cut along roads and in the forests with low risk of official sanctions.

The box on the following page, from the NBSAP, highlights threats to Kyrgyzstan's biodiversity.

F. Resource Trends

As illustrated in Table 3 below, many ecosystems have been degraded in recent years as a result of human activity. Habitat change and direct collection of plants and animals has resulted in the extinction of one species and a risk of extinction for up to 150 others.

Threats to biodiversity

Threats to species include habitat change, pollution, direct competition with livestock, and the spread of invasive species and diseases. Many of the remaining populations of species listed in the national Red Data Book are at the critical lower limit of viability, from which the populations may not be able to recover. The tiger became extinct in the Kyrgyz Republic at the turn of the century, and now the otter faces a similar fate. Even species thought of as common, such as pheasants and wild boar, were completely exterminated in many regions, but have since been reintroduced in some areas.

Over-hunting has contributed to the decline in a range of ungulate species (mountain sheep, mountain goat, roe deer, and red deer), as well as reductions in marmot populations. Marmots have declined significantly over wide areas as a result of over-hunting and eradication campaigns and have completely disappeared from some areas of their range. During the 1950s and 1960s, a campaign was conducted to eradicate sources of disease, and over one million marmots were exterminated. Losses in prey species have in turn affected predators such as bears, wolves, and snow leopards, as well as large predatory birds such as vultures (including Egyptian, black, and griffon vultures).

Declines are reported from many indigenous fish species in Lake Issyk-Kul, as a result of **over-fishing**. In Lake Issyk-Kul declines have also been linked to the introduction of perch-pike.

In addition, populations and habitats of some plants are at risk due to **over-collection** (including wild flowers and medicinal plants). Over-collection of wild flowers and medicinal plants close to towns and villages have led to substantial declines in these species. In many areas, tulip species (including Greig's tulip), and early crocuses have disappeared.

Many species have been driven to the edge of extinction, not only through direct extermination, but also through **habitat loss**. For example, many steppe species disappeared when these lands were ploughed, and birds such as bustards and steppe eagles stopped nesting. Felling of trees and shrubs has caused the decline and, in some places, the complete loss of areas of mountain forest. Loss of forest, coupled with deterioration in forest quality, means that some once widespread forest species, such as Tien-Shan maral deer and black grouse, are now restricted to isolated areas.

Wetland habitats have been severely affected by drainage of swamps, river pollution, and direct habitat destruction. Such destruction has had severe effects on species that rely on wetlands, including otters and birds. Waterfowl and other wetland birds, such as cormorants, herons, geese, sandpipers, and various duck species, have stopped nesting in a number of areas, including the Chui valley.

Losses of vegetation, as a result of felling and overgrazing, have led to extensive soil loss and degradation of whole communities. Fires have also become more frequent and often result in irreversible damage to ecosystems, particularly forests.

Destruction of natural ecosystems, linked to increases in cultivated lands, poses the greatest threat to biodiversity in the Kyrgyz Republic. Fragmentation of natural communities also results from an extensive road-network, much of which connects seasonal or temporary settlements.

Meanwhile, other ecosystems suffer indirect anthropogenic impacts. **Overgrazing** has restricted regeneration in fruit and nut forests, making their future uncertain. It has led to the degradation of pastures, and to drastic reductions in the numbers of wild ungulates. Reductions in ungulate numbers have had subsequent effects on carnivore and scavenger populations, many of which are listed as threatened in the Red Data Book of the Kyrgyz Republic.

Pollution has significantly affected the flora and fauna of rivers and reservoirs, particularly in agricultural zones. In particular, mining enterprises located within highly vulnerable high mountain ecosystems are of concern, given the sensitivity of these environments to pollutants. Wide application of pesticides in natural ecosystems (used for pest control in forests) has resulted in the extinction of many invertebrates, and the decline of populations and reproductive capacity of birds of prey.

Direct mortality is also linked to anthropogenic changes in the environment. High voltage power lines are a major source of mortality among birds (particularly predatory birds) — e.g., killing more vultures than die through hunting or trapping. Night lighting has been shown to have significant impacts on populations of night-flying insects. Furthermore, roads are a major source of mortality for various species, including hedgehogs, snakes, and birds, particularly during migration seasons.

Table 3. Resource Trends

No	Resources	Trends	Implications
1.	Fir forests	The area has been reduced by a third since 1930	Habitat reduction, soil erosion, landslides, reduction of water regulation function
2.	Fruit and nut forests	Reduction of the area by half, continuing economic activity (harvesting wood, fruit, grazing of livestock)	A loss of unique genetic richness of relict fruit forms, reduction of soil protection and water regulation role
3.	Juniper forests	36 percent of forests have disappeared during the last 50 years, area without planting has increased by 31 percent, leading to progressive devastation of mountain slopes	The number of landslides and mud-flows has increased in the *rayon* of the forests (Alai and Turkestan mountain ranges)
4.	Almond and pistachio brushwoods (Fergana mountain range)	Reduction of the area (now no more than 30,000 ha)	Habitat loss and biodiversity reduction, a loss of water regulation and soil protection function, increase in flooding and mud flows
5.	Riverine forests	Reduction of the area and degradation because of cutting of fuelwood by local population	Habitat destruction
6.	Large and medium vertebrates	3 species are extinct, 15 species are under threat; weakening of the protection system; fragmentation of habitats	Existence in small isolated populations causes the loss of genetic diversity and adaptive capacity resulting in an increased threat of extinction
7.	Birds	4 species are extinct, 26 species are under threat; increase of birds of prey catching and illegal export	Threat of species extinction; violation of natural structures of populations and communities
8.	Grassland	Reduction of grazing in the remote middle size and high mountains; overgrazing near the settlements	Reduced regenerative capacity of natural vegetation communities; increased threat to original vegetation communities
9.	Medicinal and ornamental plants	Over-collecting; 3 species have nearly disappeared (tulips, and wild pomegranate), 54 species are under threat	The loss of valuable plants, most of which are endemic
10.	Water ecosystems (lakes, rivers, reservoirs)	Biological invasions, especially fish; pollution, eutrophication of reservoirs (because of the pollution by organic wastes); regulation of watershed	Extinction threat for fauna and flora, destruction of the structure of fish communities; worsening of physical and chemical elements of water quality; the loss of recreation and attractiveness of lakes; worsening of the habitat for water organisms; disruption of migration and breeding of fish
11.	Aesthetic and recreation resources	Reduction of usage (collapse of the system of summer camps for children; camps for tourism)	Negative consequences for ecological education and awareness
12.	Landscapes in the regions of mining mountain road constructions, electric lines, dams	Increase in areas used for these activities	Degradation of landscapes; the loss of recreational attractiveness; establishment of new habitats
13.	The structure of ecosystems	Increase in invasive and exotic species (grey rat, mynah, squirrel, many species of fish)	Change in the initial structure of communities, threat of extinction for competitive native species

SECTION III

Status of Biodiversity Conservation

A. Protected Areas

The protected area system and categories of protected areas have been largely inherited from the former Soviet system, with the "highest" level of reserves being the strictly protected *zapovedniks.* There has been some evolution in recent years to include more multiple use areas, such as national parks.

The existing network of protected areas in Kyrgyzstan includes six national reserves (*zapovedniks*), six national parks, and more than seventy conservation areas (*zakazniks*). Of these, one has been designated as an international biosphere (Sary Chelek), the first such biosphere in Central Asia, and Issu-Kul which is in the process of becoming one.

Zakazniks include wildlife conservation areas and very small, forest and botanical conservation areas. There are a number of "natural monuments," or natural areas such as waterfalls, valleys, and small areas of natural interest and beauty. The total of 86 protected areas covers 777,300 ha, or 3.9 percent of the land area.

Table 1. *Zapovedniks* and National Parks

Zapovedniks	**National Parks**
1. Issy-kul	7. Ala-Archa
2. Sary Chelek	8. Karakol
3. Naryn	9. Kemin
4. Besh-Aral	10. Besh-Tash
5. Karatal-Japaryk	11. Karashoro
6. Sarychat-Ertash	12. Kyrgyz-Ata

The existing protected area system provides some coverage of representative ecosystems and ecoregions, although many protected areas are too small to effectively protect species with large home ranges or migratory species. In addition, protected areas contain only fragments of several natural ecosystems, while some ecosystems are not included within the network of protected areas at all.

The status of protected areas is tenuous. Since independence, individual protected areas have been operating on vastly reduced budgets and staffing. They have little working equipment, transportation, or communications. Staff have suffered from low and irregular salary payments and are generally demoralized. Unable to properly patrol their areas, there has been a corresponding rise in illegal cutting of timber, hunting, and incidents of man made fires. Staff spend much of their time in other activities to provide food for their families, and this includes the selling of seedlings, timber, and food production within the protected areas. It will require

considerable commitment and investment to reverse the downward spiral of degradation engendered through the past ten or more years of neglect.

While the team was visiting Central Asia's first international biosphere reserve, Sary Chelek, one of the region's most spectacular protected areas, the national newspaper ran a front page story with the headlines "Sary Chelek, the land that no poachers fear." The headline refers to the fact that rangers there have no transport to chase or even locate poachers who hunt wild sheep, a privilege for which a foreign sport hunters would have to pay US$ l6,800 to shoot even one. The story told of the inability of the rangers to patrol, and the fact that they might even be involved with the poachers, since they had gone unpaid for months.

B. Agriculture

Cultivated lands cover 1.2 million ha, mostly for irrigated agriculture. Erosion due to lack of appropriate soil conservation practices is a major problem. There is some salinization due to poor irrigation methods. On the other hand, pesticide and other input use has declined, along with problems of run-off and pollution.

The total pasture area in Kyrgyzstan is estimated at some 8.8 million ha Overgrazing has resulted in a steady decline in the productivity of pastures, most dramatically for lower altitude winter pastures, where plant diversity has declined with the encroachment of woody weeds. This has affected has affected some 5 million ha.

Environmental Effects of Overgrazing

Uncontrolled grazing and excessive livestock numbers has had a severe impact on natural ecosystems. Overgrazing has resulted in serious deterioration of pastures, occurring in the form of loss of productivity, accelerated soil erosion, wind erosion, deforestation, and increased occurrence of land slides. In some regions, this has resulted in serious forms of desertification, while in other areas sedimentation is occurring in the water supply reservoirs. It is not known to what extent hydropower reservoirs are subject to sedimentation. Although livestock numbers have been declining since the transition period, they still exceed the carrying capacity of the land. More livestock are grazed around homesteads, as state farms were abandoned and livestock are concentrated into private ownership, further exacerbating local overgrazing. The issue of uncontrolled grazing will be very difficult to resolve in a nation of traditionally nomadic herdsmen. Nevertheless, tremendous benefits can be gained by restricting grazing animals to designated zones and instituting improved management practices such as rotational grazing. This would also permit more varied land use, such as agroforestry and forest regeneration.

C. Forests

The forests of Kyrgyzstan cover only approximately 4.2 percent of the land area of the country, and include several categories of protection, from forest reserves to national parks. However, forestlands in Kyrgyzstan are under severe threat. Deforestation, forest fires, collection of wild fruit trees, and commercial development of mountain forests have led to the disruption of natural regeneration, reductions in the number of useful insects, and declines in other species of animals and plants. Reduction in forest cover has resulted in soil erosion, devastation of mountain slopes, and an increasing occurrence of landslides.

The difficult economic conditions of the state, local communities, and the private sector have raised the harvesting volumes of timber and fuelwood to unsustainable levels. With regard to fuelwood, the cost of fuel for heating and cooking is prohibitively high for rural communities, leading to more intensive use of forests near villages. The electricity supply network is dilapidated, and electric service to some rural areas, especially in the mountains, is inadequate or non-existent. Because these conditions are unlikely to show improvement in the short- to medium-term, the issue must be addressed by the forestry and energy sectors. The Government of Kyrgyzstan has also emphasized the need to develop plantations for industrial wood production. Currently, the *leskhozes* devote considerable resources to plantation development and the government has indicated its commitment to involve the private sector in further expansion of plantations. A proposed World Bank-led review in July 2000 analyzes problems of fuelwood demand, supply, and pricing and evaluates alternative options to meet energy demands, such as plantation development and alternative energy sources. The review estimates the economic benefits of plantation production and the need for incentives to encourage private sector involvement.

The unique relict walnut forests of the Osh and Djalabad *oblast*s are, and have been for more than ten years, under threat from wind-borne fungal pathogens that are slowly killing these ancient trees (some are 800 years or older). Wind-borne pollutants (including salt), a result of the environmental mismanagement of the Aral Sea and other areas, are also affecting these forests. Together with overgrazing, harvesting for timber and fruit and infrastructure development, these fruit-walnut forests are under considerable threat. However, the Swiss-supported KIRKFOR project (see Section IV) has developed an action plan for walnut forests in Kyrgyzstan.

Montane lakes contain endemic fish species that are increasingly threatened by introduction of exotic species and damming of rivers.

D. Fisheries

Lack of management has led to a substantial reduction of fisheries in lakes and rivers, as controls on the introduction of exotic species have been non-existent. A number of exotics that were accidentally introduced now adversely affect native species by out-competing them and preying on their young. Other species that have been deliberately introduced as game species have displaced native species. Unique communities and species have been destroyed following the introduction of fish to previously unoccupied lakes and reservoirs. These have subsequently spread to other freshwater ecosystems, disrupting the ecology of native fish communities.

SECTION IV

Strategy and Policy Framework

The National Environmental Action Plan (NEAP) produced in 1995 addressed issues of natural resources degradation, including soil conservation, forestry, and biodiversity conservation. For biodiversity, the priority was to "review and expand the protected area network and coordinate management of transboundary reserves with neighboring republics." Specific actions were to:

- Review and expand the protected area network
- Participate in the planning and implementation of a regional biodiversity conservation strategy with Kazakhstan and Uzbekistan
- Review the adequacy of hunting regulations
- Initiate a program to raise public awareness

However, the immediate short-term recommendation was to develop a national biodiversity strategy to integrate ecosystem preservation with local, land-based economic activities.

This led to two activities, the World Bank/GEF-supported Western Tien-Shan transboundary biodiversity project, and the Kyrgyzstan National Biodiversity Strategy and Action Plan (NBSAP), finalized in 1998.

The NBSAP produced a detailed list of 58 activities grouped under 14 programmatic areas (strategic approaches). Activities are assigned to one of three broad categories of budgets and priorities. A resume of proposed NBSAP activities is presented in annex.

A. Institutional Framework

Government agencies

- The **Ministry of Environmental Protection** (MEP) is responsible for all aspects of managing and protecting the environment, particularly managing *zapovedniks* and other protected areas, as well as overseeing activities that affect the environment outside protected areas.

- The **State Forestry Agency** (SFA) is responsible for managing all forestry activities in the country, including forestry and botanical *zakazniks.*

- The recreation department of the **Administration of the President** has management responsibility for Ala-Archa National Park and Tokmok *zakaznik*.

- The **Chief Division of Hunting Enterprises and Hunting Supervision** and the **Republican Society of Hunters and Fishermen** (*'Kyrgyzokhotrybolovsoyuz'*) have management responsibility for a variety of hunting *zakazniks* in the country.

- ***Oblast* and *rayon* administrations** (*'hakimiats'*) have responsibility for various national parks and *zakazniks* (including natural and geological monuments).

The MEP and SFA are central to state-run biodiversity conservation, as they manage the most extensive priority areas for conservation and receive the majority of resources allocated directly to biodiversity conservation. However, other government agencies play a very important role in conserving biodiversity outside these protected areas — a role that will likely become increasingly important.

- The **Ministry of Agriculture and Water Economy** has a variety of national, local and extension departments working throughout the country on all aspects of agriculture and water issues. The importance and extent of agriculture in the country has a considerable influence on biodiversity, directly and indirectly.

- The **State Agency for Geology and Mineral Resources** also influences the biodiversity of the country, being a key agency in mountain environments where work ranges from studying to exploiting mineral resources. Mineral extraction involves blast-hole drilling and other activities that may directly affect biodiversity.

- The **State Agency for Surveying and Land Resources** has an indirect impact on biodiversity. This agency provides registration and distribution of land for agricultural use and other economic purposes.

- The **Kyrgyz Union of Hunters and Fishermen** (*'Kyrgyzokhotrybolovsouz'*) and the **Kyrgyz Medicinal Industry** (*'Kyrgyzlekrasprom'*) also directly affect biodiversity.

In addition to direct threats such as fires, pests, and disease, effective forest management has been severely affected by lack of budgetary support to management agencies. It has gone from a centrally driven management system to a regional one, without a corresponding funding and staffing increase. As a result, it is understaffed and functions in a drastically reduced capacity, if at all, in most areas of forest management. The overall effect is one of management-by-crisis rather than management based on well-researched strategic planning.

This situation pertains not only to the Department of Forestry, but also to protected areas. The reduced staffs have little or no equipment, transport, or communications and go through long periods without pay. Most of them are engaging in similar 'private' activities as those in forestry, trying to survive from one pay gap to the next. It can be said that the greatest negative impact on the remaining forests of Kyrgyzstan is the lack of capacity of the traditional stewards of the forests to properly manage the resource or respond to such natural disasters as forest fires and pathogen infestations. Lack of sufficient funding, staffing, and institutional infrastructure has drastically reduced the capacity to manage the resource and thus the effectiveness in dealing with the escalating impacts of ten years of government and economic transition.

National and local non-governmental organizations

In the Kyrgyz Republic, there is a significant resource of highly qualified specialists working on biodiversity issues. In addition to holding positions within state agencies, academic institutions, and businesses, most of these specialists are also active members of different ecological NGOs. Therefore, most NGOs are run on a voluntary and/or part-time basis. They also tend to very small, consisting of only a few members, with few financial or infrastructural resources available.

Of 160 registered ecological NGOs, 33 deal with biodiversity issues. Most of these are specialist NGOs that focus on particular taxa (e.g., botanical or entomological societies), particular biodiversity resource-use activities (especially hunting and fishing societies), or work in a particular region. Whilst many deal with biodiversity directly or indirectly, very few actively address biodiversity conservation issues, particularly at the national level.

B. Legislative framework

Ecological legislation in the Kyrgyz Republic comprises ten Laws and 70 Acts which regulate activities connected with biodiversity: The following issues are addressed:

- Establishment of provisions for use of natural resources, including plants and animals
- Prohibition of collection of rare and endangered species of animals and plants
- Establishment of quotas for amateur and commercial hunting and fishing
- Identification of licensed activities (hunting, fishing, collection of medicinal plants)
- Creation of protected areas (national parks, *zapovedniks*, *zakazniks*) with different legal regimes
- Mitigation activities required when undertaking economic actions affecting biodiversity
- Identification of different types of ecological violations and crimes and related responsibility and enforcement
- Establishment for recovery of compensation for damage caused by illegal use of nature, including plants and animals

The Kyrgyz Republic also has legislative documents that regulate agriculture, forestry, fishery, and land and water use, including:

- Commercial clear-felling is prohibited in all forests of the Kyrgyz Republic, which protects mountain forests and their role in water regulation and soil protection

- Legislation regulates land use and provides opportunities for protection and sustainable use of land, soil protection, and environmental improvement

- Commercial fisheries are legally obliged to protect habitats, breeding requirements and migration routes of fish

- Water users are legally required to put in place mechanisms to protect fish populations, and ensure minimum water levels in accordance with ecological and environmental standards

Local government and administrations are legally authorized to oversee implementation of legislation on environmental protection and natural resource use. Local administration is also obliged to develop and implement programs for environmental improvement.

Table 1. Legislation Related to Biodiversity Conservation

Legislation	Date
Animal Life Protection and Use	1981
Atmosphere Protection	1981
Administrative Responsibility Code	1984
Environmental Protection Law	1991
Forestry Code	1993 (amended 1997, 2000)
Specially Protected Areas Law	1994
Water Law	1994
Plant Quarantine Law	1996
Ratification of the Convention on Biological Diversity	1996
Civil Code	1996, 1997
Fishing Law	1997
Mineral Resources Law	1997
Licensing Law	1997
Criminal Code (Chap. 26, Articles 265-279)	1997
Land Tenure Code	2000

A revised law on the protection of animals is currently being considered for approval, and a law on protection of plants is being designed. The criminal and administrative codes of the Kyrgyz Republic have been updated to improve accountability and enforcement. However, new laws and codes soon become outdated, and it is necessary to update them annually with additions and changes. For instance, many of the approaches and species identified in the laws are based on old information (such as the Red Data Book) and may need review.

The Government undertook the important steps in 1999 to improve the policy and legislative framework in the forest sector by adopting a Forest Policy Concept and a Forest Code. The Forest Policy Concept sets the overriding goal of *ensuring sustainable forest management* and identifies the key strategies as: expanding tree plantations, granting increased autonomy to *leskhozes*, expanding lease arrangements of forest land, and increasing the involvement of the private sector in productive activities. The modalities of how the goals of improving forest protection and forest production will be achieved, and how changing demand for goods and

services (such as agrotourism and medicinal plants) from the forest sector can be met by government, the private sector, and local communities, remains to be detailed. While interventions such as the establishment of plantations could contribute to both objectives, a number of activities planned or underway mainly address one or the other objective. The Government of Kyrgyzstan drafted a National Forest Program in October 2000 to implement the Forest Code. The review provided a timely opportunity to advise the Government and other stakeholders on these activities, so that resource allocation and development of institutional structures can be made in a consistent and effective manner.

There is a sound legislative base, but not the mechanisms for enforcement of the present laws, and so they have not been applied. Currently, laws provide a clear regulation of environmental protection and pollution, but they do not consider the ecological consequences of the destruction of whole ecosystems. For example, many difficulties in the management and organization of protected areas relate to lack of consideration of natural resources protection within land legislation.

C. International Conventions and Agreements

The first international environmental agreement was the Agreement on Cooperation in Ecology and Environmental Protection between the CIS Countries, ratified in 1992. The next was the Agreement on Joint Actions to Save the Aral Sea. The NEAP was developed in l995 and in l996 Kyrgyzstan signed the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. In l996, the Government ratified the convention on Biological Diversity. The government is also considering a number of conventions, namely the Ramsar Convention, the International Trade in Endangered Species (CITES), and the Bonn Convention on the Protection of Migratory Species.

D. Internationally funded programs

Biodiversity conservation activities in the Kyrgyz Republic have become increasingly reliant on external sources of finance, whether this is via government, non-government or business organizations (the latter are restricted to small grants from foreign resource concessionaires).

Table 2. Examples of Recent Internationally Financed Large-scale Projects Supporting Biodiversity Conservation

Finance Source	Project	Amount
World Bank	NEAP	US$108.000
GEF/World Bank	Preparation of Aral Sea Program	-
GEF/World Bank	W. Tien-Shan Biodiversity Program	-
GTZ	Issy-Kul Biosphere	-
GTZ	Development of Biosphere Reserve	US$2.2 million
Switzerland	Timber Utilization Programme	US$2 million
Switzerland	The Kyrgyz-Swiss Forestry Support	-
Asian Dev. Bank	Environmental Impact Assessment	US$572.000
Asian Dev. Bank	Environmental Monitoring	US$1 million
Netherlands	Cooperative Program	-

Additional Small Grant financing exists from multilateral and bilateral donors such as USAID, Soros Foundation, INTRA, FFI and others.

The Kyrgyz-Swiss Forestry Sector Support program (KIRFOR) was initiated in 1995 to empower actors in the Kyrgyz forest sector to promote forest conservation and sustainable use. The first and second phases, now completed, focused on national-level dialogue on sustainable forest management with the State Forest Agency, and a series of investments at the *leskhoz* level in forest inventory and planning activities, monitoring and silviculture. In addition, pilot activities in forest management and wood processing were carried out in several *leskhozes*, and an action plan for walnut forests in southern Kyrgyzstan was elaborated. In a third phase, the Swiss program is expected to continue with this operational support, especially in the walnut forests of southern Kyrgyz republic and the spruce forest zone of the northeast.

SECTION V

Summary of Findings

1. The institutional and legislative framework for biodiversity conservation was inherited from the Soviet era and follows the rigid and prescriptive Soviet type model that relies on a centralized, state dominated, command and control mechanism. The majority of legislative reforms since l99l relate largely to increased enforcement. However, the capacity and resources for increased enforcement have drastically declined. At the same time, a continued "protectionist" approach has mitigated against a more holistic, incentive-based approach to natural resources management and biodiversity conservation. One of the potentially most important areas affecting natural resources and biodiversity conservation is that of land tenure. It is now legal to lease land for a period of 99 years, with all of the rights of ownership (except resale) and some obligations to protect and manage natural resources. In the case of forested government lands people living in forests communes may lease forest lands for 45 years. People who own the land are more likely to plant trees and other shrubs, and this helps the environment and the biodiversity. It is incidentally the only country in the CAR where this form of land ownership is legal.

2. Government departments remain highly centralized, and they consume the bulk of the budgets at the expense of the regional departments, upon whom the day-to-day management has been thrust. Without additional funding, regional governments are unable to effectively manage resources. They lack the basic equipment and funds to carry out their work in even a reduced capacity

3. Much scientific data from the pre- and post-independence periods has been lost. What remains is often outdated and not easily accessible, due to the lack of computerization and literacy. There is little if any information sharing or integrated database development. Exposure to international methods and organizations is minimal. As elsewhere in the CAR, there is a need in biodiversity and environmental issues to move beyond an 'academic approach' toward a development-oriented style of management. Additionally, more of the specialized NGOs should be employed in the implementation of such projects.

4. Environmental awareness is mainly focused on school children and committed activists, but it is also critical for politicians and decision makers. The peripheral zone populations adjacent to protected areas should also be targeted, since they are among the groups who illegally enter protected areas and collect plants and honey and poach for meat. Efforts should be made to encourage environmental NGOs in these areas.

5. The private sector has had a limited role in biodiversity conservation throughout Central Asia. Indeed, it is perhaps the one area that might hold some promise in forestry and protected areas, as it has in other parts of the world. Clearly the model for this is evidenced throughout northern Europe in forestry concessions, where the private sector

plants and harvests coniferous plantations and runs tourist-related concessions. From the extensive talks the team had with the directors of such protected areas, there is great interest in this type of public-private partnership, to generate revenues and provide employment to local people. USAID might consider these opportunities not only in the protected areas of Kyrgyzstan, but for all of the states within the CAR.

6. Local authorities, communities, and NGOs should be involved in the implementation of more biodiversity conservation programs. Indeed, it is ultimately these groups who will ensure the success or failure of biodiversity conservation in the long term. Governments should be encouraged to adopt a less centralized control over the natural, and incidentally, national resource, and encourage the private sector's role in this area of development.

SECTION VI

Recommendations for Biodiversity Conservation

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

1. There needs to be a more holistic view of the interdependent elements of a sustainable mountain and watershed conservation and development program. Currently, institutional, policy, and management structures and practices lack coherence, both internally and among the linked issues of natural resources, including land use, agriculture, forestry, water, and biodiversity conservation.

2. Institutions and policies need to be reviewed to improve coherence and reduce duplication and contradictions. The effectiveness of institutions and policies in addressing natural resource issues should be assessed, with a view to putting into place implementing regulations that can realistically address issues on the ground. Examples include the new Forest Code and protected area guidelines.

3. Mountain forests are increasingly threatened by unsustainable practices resulting from the continuing deterioration of economic circumstances among local populations, including lack of options for energy provision. Alternative energy sources to fuelwood need to be explored and different options for more sustainable, income-generating activities from natural forests need to be examined, including community-based forest management for timber and non-timber forest products and ecotourism.

4. Protected area management capacity is very low and many exploitative activities occur in protected areas that are inconsistent with protected areas objectives and mandates. Since recreational hunting of large, often keystone, species has become so lucrative, it is highly likely that diminishing populations of these species will become extremely threatened, if they are not so already. Regulation, control, and enforcement are critical to the survival of wildlife populations in Kyrgyzstan.

5. The NEAP and NBSAP contain many recommendations. However, these tend to be rather broad and ambitious in scope and lack realistic goals. There is a need to prioritize proposed actions and activities and to take into account current and planned activities. There should be regular monitoring and updating of plans to highlight priority activities and seek support for these.

SECTION VII

USAID in Kyrgyzstan

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 appears also to apply to models of "integrated" natural resources management.

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

USAID is also supporting the promotion of civil society under its democracy strategic objective. In Kyrgyzstan, 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 some discussion of other SOs that offer opportunities 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

USAID should be aware of ongoing and planned donor-supported activities in Kyrgyzstan that support improved natural resources management and biodiversity conservation, with a view to

complementing these activities and potentially leveraging donor funds in support of environmental objectives. Examples include the KIRKFOR forestry project, the Transboundary Biodiversity project, and the World Bank proposed natural resources review.

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. Because water rights and water resource-sharing are of particular concern for regional stability, establishing appropriate categories of protected areas with the express purpose of watershed management could prove an effective tool for involving more scientists and professional resource managers in this important regional priority. 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 to “twinning” relationships between U.S. and Kyrgyz 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, notably mountain parks. A further example concerns universities and other academic institutions with expertise in montane ecology and wildlife management. This can perhaps be best achieved within the framework of the Transboundary Biodiversity project, which has its headquarters in Bishkek.

2. Bringing together government agencies, NGOs, and private sector organizations to discuss and examine alternative methods and approaches that emphasize partnership, co-management of resources and which 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, 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 sustainable forestry, integrated watershed management, ecotourism development, protected area management, and improved grazing practices.

3. Establishing improved links between institutions and ministries involved in conservation and the scientific community. The current state of 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. There are opportunities for USAID to become further involved with facilitating these linkages through the USIS and small grants programs.

4. Kyrgyzstan has signed on to relatively few international conventions, but these do have obligations. These usually involve monitoring as part of a regional and global system. Until now, they have not had the funds to spend on an integrated monitoring system, or training. It is recommended that USAID consider funding these reasonably low cost, and high profile opportunities, in providing this type of component within the framework of the international convention monitoring system. This will also promote transboundary cooperation, and there may be specific activities, such as regional workshops, that can effectively support such an initiative.

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
    - Including biodiversity in training and awareness programs
    - Including biodiversity in policy and legislative development and application
    - Including 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 (illustrative activity #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 catchment (I.A. #3).

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.

5. Study the implications of recently developed land tenure reform on natural resources and biodiversity, to take advantage of opportunities to promote improved conservation.

6. Develop integrated wetland management initiatives that promote the sustainability of ecological functions, including the continued provision of ecological goods and services,

including biodiversity conservation (I.A. # 8). Community based projects that promote sustainable management can provide opportunities to develop regional and local partnerships between communities, local government, and private sector interests. Specific activities could include improved management of riparian vegetation for pasture and haymaking, as well as reeds for local construction and water quality improvement, fisheries and hunting, and possibly ecotourism enterprises.

7. Promote the prevention and rehabilitation of salinized soil through improved vegetation management and conservation, improved irrigation practices, 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

The role of the private sector will be critical in supporting Kyrgyzstan's transition to a market economy. Supporting small and medium enterprises that promote a more diversified approach to mountain resources development can be valuable in promoting and supporting a more sustainable development approach. Such enterprises can focus on energy alternatives or improved energy supply to reduce the pressure on remaining mountain forest, or promote alternative activities such as ecotourism, sustainable forestry operations that include both fuelwood production, and the development and marketing of non-timber products (mushrooms, nuts, bulb flowers). It is important that enterprise development does not potentially negatively affect the environment and biodiversity. One means to mitigate these 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 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 assist the government to 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. 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

This SO points specifically to Kyrgyzstan and Kazakhstan as the only two countries within the region where the enabling environment (for local government improvement) is promising. Part of this SO's proposed program is to have NGOs be responsible for managing some services, with local government oversight. As USAID states in its SO 2.3, NGOs are often better at managing

services. With local government oversight, NGOs could take on management of selected ecosystems or protected areas.

There is a significant policy implementation failure as a result of problems with government capacity. USAID can become involved and offer assistance to strengthen enforcement capacity for environmental regulations. Such an activity could be one component of improving the country's protected area management system and developing a substantial environmental agency. It is conceivable that some of these capacity problems can be addressed by SO 2.3.

Sec. 117.[68] Assistance for Disadvantaged South Africans.—* * * [Repealed—1993]

Sec. 117.[69] 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 projects under this chapter and chapter 10 of this part,[70] shall take fully into 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

[68] Formerly at 22 U.S.C. 2151o. Sec. 117 was repealed by sec. 4(a)(3)(B) of the South African Democratic Transition Support Act of 1993 (Public Law 103–149; 107 Stat. 1505). It had been added originally by sec. 201(b) of Public Law 99–440 (100 Stat. 1094). Sec. 117 provided assistance for disadvantaged South Africans through South African nongovernmental organizations, such as the Educational Opportunities Council, the South African Institute of Race Relations, READ, professional teachers' unions, the Outreach Program of the University of the Western Cape, the Funda Center in Soweto, SACHED, UPP Trust, TOPS, the Wilgespruit 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 1978.

[69] 22 U.S.C. 2151p. Sec. 117 was redesignated from being sec. 118 by sec. 301(1) of Public Law 99–529, resulting in the creation of two sections 117. Sec. 301(2) of Public Law 99–529 (100 Stat. 3014) further deleted subsec. (d) of that section, which dealt with tropical forests, and then sec. 301(3) of Public Law 99–529 added a new section 118 entitled "Tropical Forests". This section, as added by sec. 113 of Public Law 95–88 (91 Stat. 537) and amended by sec. 110 of Public Law 95–424 (92 Stat. 948) and sec. 122 of Public Law 96–53 (93 Stat. 949), was further amended and restated by sec. 307 of the International Security and Development Cooperation Act of 1981 (Public Law 97–113; 95 Stat. 1533). This section previously read as follows:

"Sec. 118. Environment and Natural Resources.—(a) The President is authorized to furnish assistance 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 that of the poor.

"(b) In carrying out programs under this chapter, the President shall take into consideration the environmental consequence of development actions.".

See also sec. 534 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1990 (Public Law 101–167; 103 Stat. 1228), as amended, relating to "Global Warming Initiative".

See also sec. 533 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".

See also sec. 532 of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1993 (Public Law 102–391; 106 Stat. 1666), relating to "Environment".

[70] Sec. 562 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 I of this Act, providing for long-term development in sub-Saharan Africa, and made a conforming amendment by inserting "and chapter 10 of this part" here.

[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 69.

ANNEX A

Sections 117 and 119 of the Foreign Assistance Act

(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

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:

(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.

(d) 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.

(e) 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.

(f) 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.[72] Renewable and Unconventional Energy Technologies. * * * [Repealed—1980]

Sec. 119.[73] 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 660,[75] to assist countries in protecting and maintaining wildlife habitats and in developing sound wildlife management and

[72] Sec. 119, as added by Public Law 95–88 (91 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 Cooperation Act of 1979 (93 Stat. 362), was repealed by sec. 304(g) of the International Security and Development Cooperation Act of 1980 (Public Law 96–533; 94 Stat. 3147). See sec. 106 of this Act for text concerning energy technologies.

[73] 22 U.S.C. 2151q.

[74] Sec. 119, para. (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 Years 1984 and 1985, Public Law 98–164; 97 Stat. 1045).

[75] Section 533(d)(4)(A) of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 1990 (Public Law 101–167; 103 Stat. 1227), added "notwithstanding section 660" at this point.

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).

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 combines 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 mulitlateral 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.

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* 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 Contacts

Name	Occupation	Email (or fax/phone)
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APPENDIX D

Lists of Rare and Endangered Species of Kyrgyzstan

Table 1. A list of threatened plants of the Kyrgyz Republic

1	*Allium pskemense*
2	*Kosopoljanskia turkestanica*
3	*Acorus calamus*
4	*Eminium regelii*
5	*Inula helenium*
6	*Lamyropappus schakaptaricus*
7	*Lepidolopha komarowii*
8	*Rhaponticum aulieatense*
9	*Saussurea involucrata*
10	*Trichanthemis aulieatensis*
11	*Trichanthemis aurea*
12	*Berberis kaschgarica*
13	*Incarvillea olgae*
14	*Tienschaniella umbellifera*
15	*Iskandera alaica*
16	*Lonicera paradoxa*
17	*Iridodictyum kolpakowskianum*
18	*Ammopiptanthus nanus*
19	*Chesniella villosa*
20	*Colutea brachyptera*
21	*Hedysarum chaitocarpum*
22	*Hedysarum kirghisorum*
23	*Sophora griffithii (incl. S.mollis, S.korolkovii)*
24	*Eremostachys cephalariifolia*
25	*Erianthera anomala*
26	*Otostegia nikitinae*
27	*Otostegia schennikovii*
28	*Salvia korolkovii*
29	*Salvia vvedenskii*
30	*Scutellaria andrachnoides*
31	*Scutellaria nepetoides*
32	*Tulipa anadroma*
33	*Tulipa affinis*
34	*Tulipa greigii*
35	*Tulipa kaufmanniana*

Table 2. A list of rare and endangered vertebrate animals included in the Red Data Book of the Kyrgyz Republic (1986)

Fish

1 Pike asp (*Aspiolucius esocinus*)
2 Turkestan catfish (*Glyptosternum reticulatum*)

Reptiles

1 Desert monitor (*Varanus griseus*)
2 Karelin's grass snake (*Coluber karelini*)

3 Red-bellied grass snake (*Coluber rhodorhachis*)

Birds

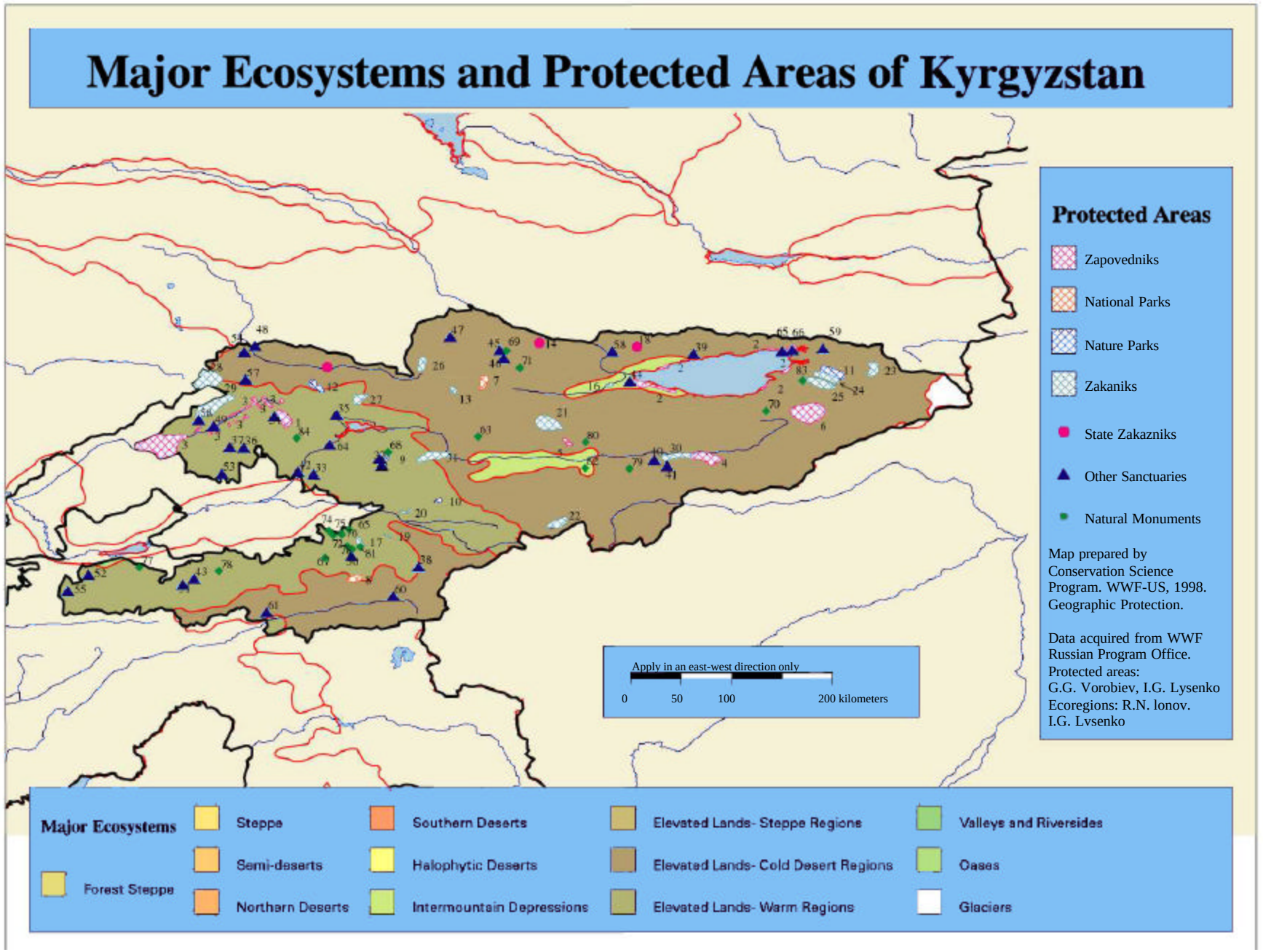
1 Great white (rosy) pelican (*Pelecanus onocrotalus*)
2 Dalmatian (grey) pelican (*Pelecanus crispus*)
3 White spoonbill (*Platalea leucorodia*)
4 White stork (*Ciconia ciconia*)
5 Black stork (*Ciconia nigra*)
6 Rosy flamingo (*Phoenicopterus roseus*)
7 Mountain goose (*Anser indicus*)
8 White-headed duck (*Oxyura leucocephala*)
9 Osprey (*Pandion haliaetus*)
10 Short-toed (snake) eagle *(Circaetus gallicus ferox)*
11 Tawny (steppe) eagle (*Aquila rapax)*
12 Imperial eagle *(Aquila heliaca)*
13 Golden eagle (*Aquila chrysaetos*)
14 Pallas Fish eagle (*Haliaeetus leucoryphus)*
15 White-tailed eagle *(Haliaeetus albicilla)*
16 Lammergeier (*Gypaetus barbatus*)
17 Himalayan vulture (*Gyps himalayensis*)
18 Gyrfalcon (*Falco rusticolus*)
19 Saker falcon *(Falco cherrug)*
20 Barbary falcon (*Falco pelegrinoides)*
21 Peregrine falcon (*Falco peregrinus*)
22 Tien-Shan black grouse (*Lyrurus tetrix tienshanicus)*
23 Demoiselle crane (*Anthropoides virgo*)
24 Great bustard (*Otis tarda*)
25 Little bustard (*Otis tetrax*)
26 Houbara bustard (*Chlamidotis undulata*)
27 Sociable plover (*Chettusia gregaria*)
28 Ibisbill (*Ibidorhyncha struthersii*)
29 Great black-headed gull (*Larus ichtyaetus*)
30 Pallas sandgrouse (*Syrrhaptes paradoxus*)
31 White-backed dove (*Columba leuconota*)
32 Asian paradise flycatcher (*Terpsiphone paradisi*)

Mammals

1 Little horseshoe bat *(Rhinolophus hipposideros)*
2 Free-tailed bat (*Tadarida teniotis)*
3 Menzbier's marmot *(Marmota menzbieri)*
4 Dhole or Asian wild dog (*Cuon alpinus*)
5 Tien-Shan brown bear (*Ursus arctos isabellinus*)
6 Semirechye marbled polecat (*Vormela peregusna pallidor*)
7 Central Asian otter (*Lutra lutra seistanica)*
8 Manul cat (*Felis manul)*
9 Turkestan lynx *(Lynx lynx isabellinus)*

10 Snow leopard (*Uncia uncia)*
11 Siberian red deer (*Cervus elaphus sibiricus*)
12 Goitered gazelle *(Gazella subgutturosa)*
13 Tien-Shan wild sheep (*Ovis ammon karelini)*

ANNEX E


Major Ecosystems and Protected Areas of Kyrgyzstan
Protected Areas
Zapovedniks
National Parks
Nature Parks
Zakaniks
State Zakazniks
Other Sanctuaries
Natural Monuments
Map prepared by Conservation Science Program. WWF-US, 1998. Geographic Protection.
Data acquired from WWF Russian Program Office.
Protected areas:
G.G. Vorobiev, I.G. Lysenko
Ecoregions: R.N. lonov.
I.G. Lvsenko
Apply in an east-west direction only
0
50
100
200 kilometers
Major Ecosystems
Forest Steppe
Steppe
Semi-deserts
Northern Deserts
Southern Deserts
Halophytic Deserts
Intermountain Depressions
Elevated Lands- Steppe Regions
Elevated Lands- Cold Desert Regions
Elevated Lands- Warm Regions
Valleys and Riversides
Oases
Glaciers

ANNEX F

Location of Threatened Critical Ecosystems ('Hot Spots')

Within the Kyrgyz Republic, critical ecosystems are represented by 'hotspots', which include unique representatives of flora and fauna that are under threat as a result of intensive anthropogenic impact.

1. The south slope of Baubash-Ata in Fergana mountain range, the valley of the Arslan-Bob and the Larodar Rivers. The habitat of fruit and nut forests, which includes rich botanical communities with relict forms and representatives of Ancient Mediterranean, Turan and Euro-Siberian regions, 49 endemic species of invertebrates and 12 species of plants at risk of intensive recreation pressure.

2. Kungei Ala-Too, natural boundary Cholpon-Ata. Ecosystem which consists of steppe, meadow, and forest communities and mountain slopes and includes vegetation typical of North Tien-Shan and 34 species of endemic insects. *Rayon* under intensive recreation pressure and from pasture livestock. In future, the problem of pure river water, which is used for needs of Cholpon-Ata city, needs consideration.

3. Sary-Djaz, natural boundary Kaindy with the slopes of Inylchek mountain range. Ecosystem which consists of mountain-forest communities and typical Central Tien-Shan flora and fauna, with a large number of endemics: 31 species of endemic insects and 11 species of plants. The ecosystem is fragile to anthropogenic pressure and difficult to recreate.

4. Chui valley, southern suburbs of Bishkek city, slopes of Boz-Boltok mountains. The ecosystem which consists of steppe communities with bushes including rare and endemic species of flora and fauna, including 36 species of insects (17 endemics and 2 species included in the Red Data Book of the Kyrgyz Republic), 14 unique species of legumes. *Rayon* under intensive recreation pressure.

5. Alai valley, southwest section up to the border with Tajikistan including Kok-Suu. Steppe and meadow, high mountain communities of flora and fauna, the only 'hot spot' of the country with Gissaro-Darvaz species and the only place where otter exists. Threat from non-regulation of grazing by livestock and uncontrolled hunting.

6. Terskei Ala-Too, natural boundary Borskaun. A small (5-8 ha) section of fir forests which is located near the river, where regionally rare species of colonial red forest ants (*Formica truncorum)* exists. The colony might represent a settlement in fir forests to escape from insect pests. Threatened by livestock which graze this section of the forest. Possibility of fires set by tourists.

7. Terskei Ala-Too, natural boundary Djylandy; Kyrgyz mountain range, valley of Ala-Archa river, Kashka-Suu; canyons at Alai and Turkestan mountain range. Complexes of animals

nesting at the clay precipices. 'Hotspots' of bird and invertebrate diversity. Recreation pressure.

8. Atainok mountain range, natural boundary Karasuu, Kyzyljar, Kurison. Semi-desert and dry steppe ecosystems with xerophytic bushes. A great number of representatives of turan flora (endemics, relict and rare species of plants for the Kyrgyz Republic). Intensive anthropogenic pressure, destruction of the areas containing the aforementioned plants.

All the above mentioned 'hot spots' (it is not the full list because of the lack of the necessary research) of critical ecosystems need to be protected; it is necessary to organize complex and special *zakazniks* under the control of *leskhozes* and local government.

ANNEX G

Schedule of Team Visits

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	2	Almaty – Bishkek Note*** Revised Kyrgyz itinerary	By road to Bishkek, 07:00. Appointment at USAID Mission at 16:30, approx. Minister has agreed to see us after his official meetings with the President.	Met Chinara PM and went over our program in Kyrgyzstan. Have an appointment with Minister of Environ. Affairs in PM. Overnight hotel.	Confirmed hotel reservations, and program with Chinara and travel plans. Met Vice Minister. Met Nina from Almaty Mission at USAID/Bishkek.
WD	3	AM Ministry calls. PM travel Issy-Kul.	Kyrgyz program review. Called on Ministry of Ecological Affairs, met with Director. Called on Department of Forestry met with Director Dr. Korlofv. By road with Nina Kavetskaya of Almaty Mission.		Traveling along northern shore. Overnight at hotel Astoria in Cholpon.
TH	4	Issy-Kul north shore.	Issy-Kul field trip. Saw wide range of agroforestry and an area where no activities or human habitation exists due to heavy radiation fall out from Chinese nuclear testing? This area between Anan Yevo and Ak Bulat on the northeasten shore of Issy-Kul. Visited small but interesting museum and endangered species restocking project of snow geese. Touring south Issy-Kul. Overnight at Karakol.		Continued traveling to eastern end of lake. Overnight at the town Karykol.

2000 BIOFOR C.A.R. Regional Biodiversity Assessment

Day, Date		Location	Schedule	Appointments	Notes
FR	5	Touring south Issy-Kul.	Overnight at Dzhergalan Valley.		By road along south shore of Issy-Kul and drove to National Recreation Area at Dzhergalan. Overnighted at the Sanatorium.
SAT	6	Touring south Issy-Kul. Returned to Bishkek PM	Issy-Kul – Bishkek south shore. Interviewed local NGO and other activist concerning Kumtor Mining Company's cyanide spill and ongoing leeching from the mine's tailings. This abandoned uranium mine operations and refining center are still radioactive. Heavy rains in the past five years have caused radioactive runoff to flow into Issy-Kul. Local authorities have attempted to hush up the impacts on the environment and local populations.	AM drove to the Canadian-Kyrgis Kumtor Mining site at the headwaters of the Barskoone River, where an accidental release of cyanide spilled into the river, killed a number of people, injured many. Considerable local protest continues as a result. Great doubts still persist about safety, cleanup, and compensation. Visited Forest Dept. nursery. Very impressive, but selling seedlings to survive, no pay. Also visited an abandoned uranium mine site still active from enriched ore. Place an environmental hazard, Kyrgis doing nothing near Kadzhy Sai.	Arranged transportation and air tickets to Djal-abad.
SUN	7	Bishkek	Dir. Forestry Dr. Korlof and Terek NGO AM at house.		Was at hospital, but came to meet us. Met with NGO AK TEREK (forestry).
MO	8	Bishkek	Interviews, Institute of Biology Ministry of Ecological Affairs. (Full list of scientists in appendix.)		C
TU	9	Bishkek-Djal-abad to Sary-Chelek Biosphere area	Early AM meeting, midday fight to Djal-abad, drove to protected area 5.5 hrs. Met the director in late PM Met local NGOs who were exceptional, doing all the right things on very little money they get from Counterpart Consortium, and self generated efforts. Exceptional effort, worth funding.		Flight to Djal-abad, met driver, drove to Sary-Chelek protected area. Truly magnificent! Same story on pay gaps and funding and staff cut-backs.
WD	10	Sary-Chelek Protected Area	Full day in protected area visiting sites, local NGOs.		

2000 BIOFOR C.A.R. Regional Biodiversity Assessment

Day, Date		Location	Schedule	Appointments	Notes
TH	11	Sary-Chelek-Djal-abad, over night. Sanitorium Hotel (ex KGB country club).	AM return visit to Karavan, met with local NGOs.	Director of Sary-Chelek is driving force behind NGOs within area.	By road to Karavan and on to Djal-abad.
FR	12	Djal-abad – Bishkek	Visited local NGOs and Peace Corps volunteers in AM. Late PM flight back to Bishkek.		Counterpart Consortium doing good job with local NGOs and Peace Corps very much appreciated by locals.
SAT	13	Day visit to Chon-Kemen National Park	Same story at Chon-Kemen. Has 140 km of roads, 17 bridges, 130 workers, only $8,000 per year budget. Barely holding on by growing vegetables, selling tree seedlings.	Met with park director.	
SUN	14	Bishkek	**Day off** (the first since we arrived in region).		
MO	15	Bishkek	Report writing.		
TU	16	Bishkek	Meetings, Flora/Fauna Forum.		
WD	17	Bishkek	Meetings, WB Western Tien Shan Trans-boundary Biodiversity Project meeting.		
TH	18	Bishkek	Report writing.		
FR	19	Bishkek	Institute of Biological Sciences department heads, and Vice Chancellor.		Cards in appendix.
SAT	20	Bishkek	Forestry & Ecological Affairs meetings at Ministry.		
SUN	21	Bishkek	Met Counterpart Consortium, and UNDP Coordinator re: in-country programs.		
MO	22	Bishkek	Report writing.		
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.
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 – l9:30 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.		

2000 BIOFOR C.A.R. Regional Biodiversity Assessment

Day, Date		Location	Schedule	Appointments	Notes
FR	14	Washington/SFO	Travel.		

ANNEX H

Institutional Constraints and Opportunities (from NBSAP)

	Constraints and limitations	Strengths and opportunities
Organizational capacity for biodiversity management	• Reduced financial resources and budgets have resulted in a reduction of the capacity of government agencies • Organizational inertia and historical legacy have led to delays in adaptation to the new economic and social situation	• Strong organizational base for biodiversity management still exists. • There is high potential for attracting external investment into capacity building and training programs to raise the skills and develop new technologies.
Human resources for biodiversity management	• Low morale has resulted from salary reductions in real terms across government agencies, local administration and scientific institutions • A reduction in the availability of professional staff for biodiversity management has resulted from the limitations in training and professional development in this field	• A core of well-qualified and committed people exists, despite low salaries and difficult working conditions
Equipment and physical resources	• Very limited investment in equipment and physical resources has resulted in current resourcing being insufficient to meet current and future commitments	• Clear opportunities exist to substantially improve the resource base even with limited investment
Experience of international projects	• A general lack of experience exists in implementing activities in a 'market economy' or international style (e.g. financial accountability, participation, project cycle management, etc**.).**	• Ongoing training programmes are rapidly increasing capacity to meet the needs of international projects, which will be hastened by increasing exposure to such methods of working
Information transfer	• Limited information transfer has led to inefficiency and lack of co-operation	• Availability of new technologies is increasing opportunities for information sharing and transfer between individuals and organisations
Research	• Research has generally been academically based with little application directly to management of biodiversity	• A strong research base exists, which can be applied more effectively as part of directed research programmes.
Co-ordination and partnership	• Limited co-ordination and communication exists between government agencies and the developing NGO community, particularly in the light of changing roles and responsibilities of these institutions • Few case studies exist demonstrating an experience of inter-sectoral collaboration (e.g. government-NGO, or business-NGO partnerships).	• The increasing recognition of the need to involve stakeholders in the management of biodiversity will result in greater co-ordination between government agencies and NGOs. • Opportunities are developing to work in partnership with the growing private sector, and promote direct involvement in biodiversity management .

	Constraints and limitations	Strengths and opportunities
Participation	• There has been a lack of wide stakeholder participation in the planning, management and sustainable use of natural resources.	• Pilot models of participatory planning and management of biodiversity are attracting external funding • Participatory techniques are now being developed as part of sustainable development programmes
Public awareness	• Low levels of awareness of the importance of biodiversity and its links with sustainable development exist among rural communities, the general public and decision makers.	• Increasing opportunities for enhanced public awareness, supported by more widely accessible communication systems. • Raising awareness of the importance of Kyrgyz biodiversity and ecosystem functions (such as watersheds) among decision makers, donors and the international community is likely to encourage further investment.
Legislation	• Enforcement of legislation has been limited or inconsistent as a result of limited enforcement mechanisms.	• A strong and well developed legislative base represents an important strength for further legislative development

ANNEX I

Central Asia Transboundary Biodiversity Project

Objective

To support the protection of vulnerable and unique biological communities within the West Tien-Shan and to assist the Republics of Kazakhstan, Kyrgyzstan and Uzbekistan to strengthen and coordinate national polices, regulations, and institutional arrangements for biodiversity protection.

Associated objectives are to:

(a) Strengthen and expand the zapovednik (strict nature reserves) network in the West Tien-Shan to conserve unique plant and animal communities, including wild relatives of domesticated species

(b) Identify alternative and sustainable income-generating activities for local communities and other stakeholders to reduce pressure on the *zapovedniks* and their biological resources

(c) Strengthen local and national capacity through education and training

(d) Raise public awareness of biodiversity values and increase participation in biodiversity conservation

(e) Establish regional (transnational) coordination and cooperation mechanisms for biodiversity conservation activities to strengthen zapovednik management and wildlife protection and prevent the fragmentation of habitat corridors

The global environmental objective is to ensure the conservation of the globally important biodiversity within the West Tien-Shan. Specific objectives are to:

(a) Conserve biodiversity through the implementation of an ecosystem-based management approach that involves the strengthening of *zapovednik* management systems and the integration of a coordinated management concept across regional, national and local programs

(b) Improve knowledge of the distribution and status of rare, endangered, and endemic species through targeted surveys to better focus conservation measures

(c) Enhance biodiversity conservation within mountain ecosystems by developing cross-sectoral multi-use management systems to preserve critical ecosystems

(d) Promote the protection of ecosystems, natural habitats, landscapes, and the *in-situ* maintenance of viable populations of species by developing sustainable land-use which integrates conservation management between *zapovedniks* and adjacent forest production units (*leskhoz*) and farming communities

(e) Increase the awareness of biodiversity conservation and endangered species by the development of training programs and dissemination of information