

UNITED NATIONS DEVELOPMENT PROGRAMME IN UZBEKISTAN
GLOBAL ENVIRONMENT FACILITY
STATE COMMITTEE FOR NATURE PROTECTION
OF THE REPUBLIC OF UZBEKISTAN



FIFTH NATIONAL REPORT OF THE
REPUBLIC OF UZBEKISTAN
ON CONSERVATION OF BIODIVERSITY

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ON CONSERVATION OF BIODIVERSITY**

2015

Preamble

As a party of the UN Convention on Biological Diversity and in compliance with the article 26 of the Convention and the X/10 decision of the Conference of Parties, the Republic of Uzbekistan has prepared its Fifth National Report on Conservation of Biodiversity.

National reports are important instruments that allow the Conference of Parties to monitor continuously the implementation of the Convention, providing, among other things, materials for preparation of the Global Perspective in the sphere of biodiversity.

The Fifth National Reports are one of the major sources of information for preparation of the intermediate overview of the implementation of the Strategic Plan for conservation and sustainable use of biodiversity in 2011-2020.

The National Report is also an instrument for planning of biodiversity conservation activities at the national level, ensuring the results of the analysis and of the monitoring needed to take timely decisions.

The Fifth National Report of the Republic of Uzbekistan on the conservation of biodiversity is prepared by the State Committee of the Republic of Uzbekistan for Nature Protection along with the assistance of the UNDP/GEF/ Government of the Republic of Uzbekistan Project “National Biodiversity Planning to Support Implementation of the Convention for Biological Diversity 2011-2020 Strategic Plan in Uzbekistan”.

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ACRONYMS AND ABBREVIATIONS

AALS	Aidar-Arnasai lake system
ADB	Asian Development Bank
AS	Academy of Sciences
Biodiversity	Biological diversity
The Bonn Convention	The Convention on the Conservation of Migratory Species of Wild Animals
WB	The World Bank
WWF	World Wildlife Fund
GDP	Gross domestic product
IBA	Important Bird area
Incl.	Including
State biocontrol	State Inspection for protection and rational use of fauna and flora and nature reserves at State Committee for Nature Protection
SCNP	State Committee for Nature Protection
GEF	Global Environmental Facility
PSMNE	The program of state monitoring of natural environments
EC	European Commission
IWWL	Irrigation-waste water lakes
UNCCD	The United Nations Convention to Combat Desertification
CBD	The Convention on Biological Diversity
CM	Cabinet of Ministers of the Republic of Uzbekistan
KO	Key obligations
COP CBD	CBD Conference of Parties
MAWR	Ministry of Agriculture and Water Resources
IUCN	International Union for Conservation of Nature and Natural Resources
NRES	National report on the environment state and use of natural resources in the Republic of Uzbekistan
RI	Research institute
NGO; NFP	Non-governmental organization; non-for-profit organization
NAPCD	National action plan to combat desertification
NAPFEP	National Action Plan for Environmental Protection
NBSAP	National Biodiversity Strategy and Action Plan
UNO	United Nations Organization
PA	Protected area
EAP	Environmental action programme of the Republic of Uzbekistan
PES	Pan-European Biological and Landscape Diversity Strategy
SGP	The GEF Small Grants Program
UNDP	United Nations Development Program
The Ramsar Convention	The Convention on Wetlands of International Importance, especially as Waterfowl Habitat
UN FCCC	UN Framework Convention on Climate Change
RNPF	The republican nature protection fund at State Committee for Nature Protection
CITES	Convention on International Trade in Endangered Species
MM	Mass media
Aichi SGT	Aichi strategic goals and targets
Uzhydromet	Centre of Hydrometeorological Service at Cabinet of Ministers of the Republic of Uzbekistan
MDGs	Millennium Development Goals
ST	(Strategic) Target goal
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNEP	United Nations Environment Programme

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PART I. UPDATED INFORMATION ON THE STATE, TRENDS AND THREATS TO BIODIVERSITY AND CONSEQUENCES FOR THE WELFARE OF PEOPLE

The Republic of Uzbekistan is located in the basin of the Aral Sea, Central Asia (Fig. 1). Uzbekistan covers an area of 447,400 sq. km. The climate is subtropical, sharply continental and arid in most parts of the country.



Figure 1. Uzbekistan on the map of Central Asia

Uzbekistan lies between the two major Central Asian Rivers, the Amudarya and the Syrdarya. According to the criteria of the UNESCO world map of desertification and the UN convention to combat desertification, the country has an aridity index from 0.03 to 0.20, and is situated in the arid region, which is subject to intensive desertification and droughts (Fig. 2).

Due to the reason that the agriculture is one of the most important sectors in the economy of Uzbekistan, the well-being and sustainable development of Uzbekistan depends significantly on the state of its natural resources.

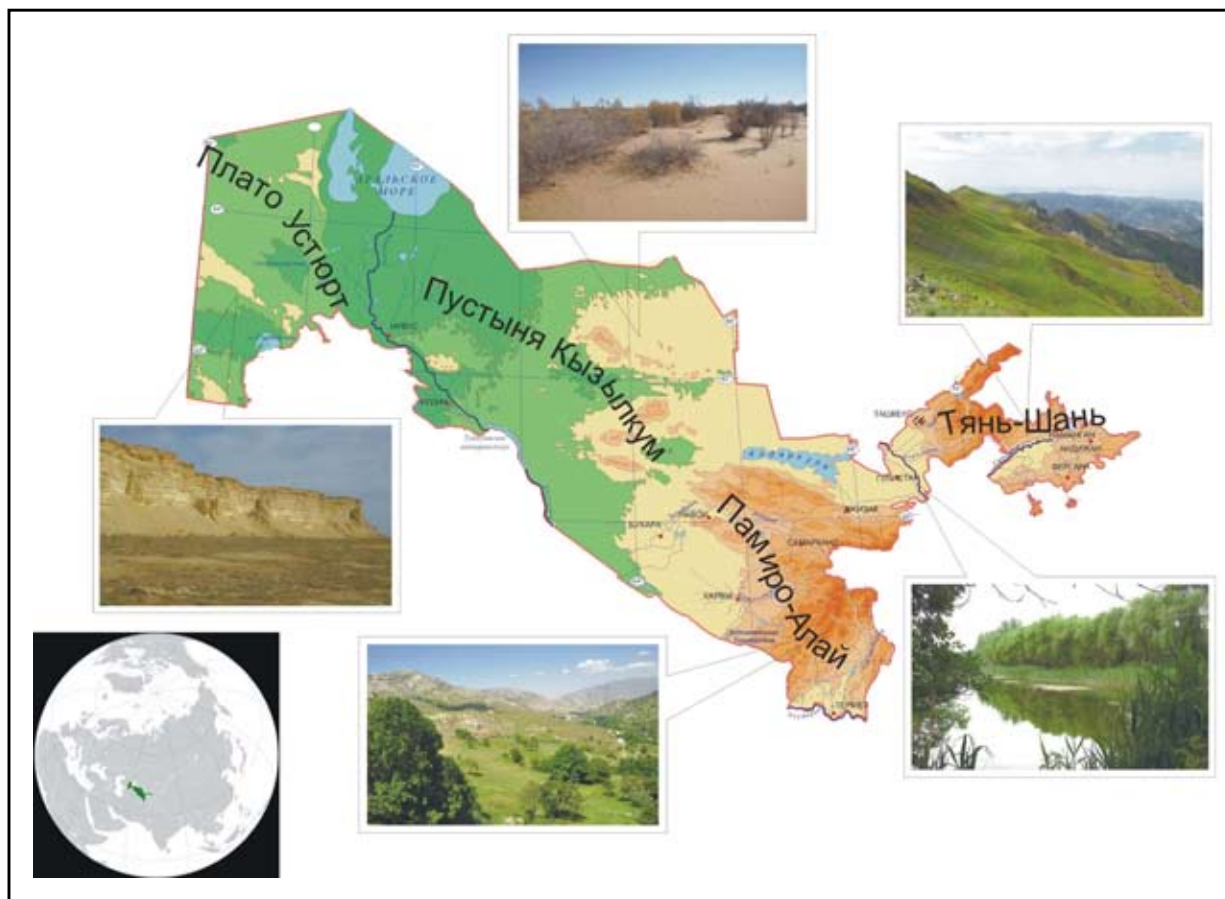


Figure 2. Physiographic map of Uzbekistan

The population of Uzbekistan as of 2013 was 30,492.8 thousand people. Forty-nine percent of the population resides in the rural area, and their prosperity depends directly or indirectly on agriculture, mainly irrigated agriculture. More than 90% of crops are grown on the irrigated lands of Uzbekistan. A peculiarity of the most of natural ecosystems of Uzbekistan is their heightened vulnerability, associated with climate aridity. Thereupon, resistance of the ecosystems to external forces is rather low and any anthropogenic interference serves as an additional factor of degradation of natural systems.

Agricultural activities, transhumance, development of energy and mining industries have an impact on almost all natural ecosystems. Plain, piedmont, water and peri-aqua ecosystems, especially lower streams of main rivers, including the Aral Sea and its surroundings were subject to the greatest changes. Which is more, ecosystems suffer from serious anthropogenic impact load, and ecosystems are also largely affected by changing hydrological and climate conditions.

Disturbed ecosystems are unsuitable for climate regulation and environment stabilization, and have low and unsustainable productivity. Over time, the value of wild nature sites and restored renewable natural ecosystems will repeatedly increase.

Therefore, restoration and conservation of biodiversity in Uzbekistan is a reasonable and reliable way to ensure environmental stability and country's sustainable development, as well as to adapt to current climate change trends and processes.

Conservation and sustainable use of Uzbekistan's biological diversity is one of the priorities of the state environmental policy, and is implemented through different mechanisms, including:

- ✓ Uzbekistan's National Biodiversity Strategy and Action Plan (NBSAP) which include main directions and specific actions in the sphere of biodiversity (Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 139 of April, 1, 1998);
- ✓ Maintenance of national Red Data Book that includes rare and endangered species of wild animals and plants. Currently, national Red Data Book of Uzbekistan (2009) includes 107 species of vertebrates, 77 species of invertebrates, 321 species of plants and 3 species of fungi;
- ✓ Ensuring functioning and development of the system of the protected areas (PAs) of Uzbekistan. At this time, national APs system includes 8 natural reserves (zapovedniks), 2 natural and 1 national parks, 1 biospheric reserve, 3 natural nurseries, 12 species management areas (zakazniks), and 7 natural monuments. Total PAs' areas that ensure sustainable conservation of biodiversity (IUCN I-IV categories) is more than 5% of the area of the country;
- ✓ State regulation of use of flora and fauna entities with regard to the use of tools, ways, terms and volumes of their withdrawal from nature;
- ✓ State ecological examination and evaluation of environmental impact of economic and other activities, that has an adverse impact on biodiversity;
- ✓ Maintenance of flora and fauna cadastre;
- ✓ Other mechanisms in line with the environment protection legislation of Uzbekistan (for instance, economic mechanisms of creating incentives of sustainable natural resource management).

Efforts on conservation and sustainable use of biodiversity, undertaken by Uzbekistan over the last 10 years, have led to certain positive results and achievements:

1. Development of Natural Protected Areas, including: creation of the Lower Amudarya biospheric reserve; development of the Ecological Center «Jeyran»; including new natural sites into the International List of Wetlands under the Ramsar Convention; inventory and description of 51 Important Birds Areas in Uzbekistan, etc.

2. Ex-situ conservation of biodiversity: creation of two nurseries in order to preserve and breed houbara bustard in Bukhara and Navoi regions; creation of Center for conservation of Bukhara deer in Zaravshan reserve, etc.

3. Signing of international and regional Agreements in the area of biodiversity, including the Agreement between the Government of the Republic of Uzbekistan and the Government of the Republic of Kazakhstan on protection, reproduction and sustainable development of saiga for the period 2012-2015.

4. Implementation of several international projects on nature protection, conservation of agro and biological diversity.

5. In the area of education and awareness raising, programme and concept "On the development of environmental education, training and retraining, as well as the prospects for improving the system of training in the Republic of Uzbekistan" was developed.

In spite of the achieved results, the impact of negative factors on natural ecosystems and flora and fauna populations continues. The application of an ecosystem based approach is paramount for

further effective protection of biodiversity components. It is necessary to develop comprehensive measures on protection of species as well as on conservation of their habitat.

Ecosystems are habitats, which were naturally and jointly evolved in the course of evolution, and which include communities of flora and fauna organisms and their unity with non-organic environment. Biodiversity conservation is directly linked with conservation of ecosystems, which are regulating mechanisms that support ecological balance.

Conservation of biological species and communities is possible only when their habitat is preserved, i.e. all ecosystems that include populations of specific species. Ecosystems (wetlands, tugays, deserts, mountains, etc.) must be main objects of research, protection and restoration efforts.

The main strategic directions of planning and development of projects on conservation of biodiversity of Uzbekistan, in line with national and international priorities are:

- Support and restoration of ecosystems and their key components in productive landscapes in order to ensure ecosystem services;
- Integration of actions on conservation and sustainable use of biodiversity into greater efforts of reforming natural resource management practices;
- Assessment approach with regard to the economic values of ecosystem services and biodiversity;
- Expansion of areas and increase of management efficiency of PAs system;
- Raising awareness of stakeholders, including general public, about the significance of biodiversity and ecosystem services, their contribution to the welfare and the development of the country

Uzbekistan's position at the junction of several Central Asian bio-geographical regions predetermines a significant richness of its flora and fauna. At the same time, it is a reflection of the diversity of natural conditions in Uzbekistan, where vast plains occupied by different types of deserts, mountain steppes, forests and alpine meadows, tugai thickets and waterbodies form characteristic ecosystems (Fig. 3).



Figure 3. The main natural ecosystems of Uzbekistan

From scientific and practical points of view, the following ecosystems and habitats are priorities of biodiversity conservation in Uzbekistan:

Tugai and flood-plain ecosystems still exist as small areas along the rivers Amudarya, Syrdarya, Zarafshan, Chirchik and Akhangaran. The areas are being reduced due to agricultural development and use by local residents for the domestic purposes



Dalverzin tugai



Tugais on Kazakhdarya

Foothill plains and adyrs are situated in the foothills of the western Tien Shan and Pamir-Alai. These areas are subject to the most impact due to the agricultural development.



Adyrs of Baysuntau

Degraded low mountains and escarpments of Plateau Ustyurt are located amidst the desert and shelter many rare species. But, at the same time, they are subject to the pressure from animal husbandry as well as from the mining industry (building stone, gypsum raw material, etc.).



The ledge of Ustyrt Plateau

Alpine meadows are located higher than 2700 m above sea level. They are subject to significant pressure from animal husbandry.



Highlands of Chatkal Range



Angren plateau

Wetlands are the type of ecosystems that has been the most widespread in the last fifty years (wastewater lakes, reservoirs, etc.). Wetlands shelter many settled and migratory bird species. Most of the wetlands are not subject to direct threat of extinction; however, under conditions of the arid climate they are under the state of unsustainable water deficit and subject to degradation during the drought period.



Akpetki lake complex



Aydar lake

Forest Ecosystems. Uzbekistan is a country with the low forest cover (about 7% of country's land is covered with forests). However, forests play a significant role both for the economy and environment protection needs.



Walnut forest, The Nurata Range



Archa (Juniper) forest, Chatkal range

Flora

Uzbekistan has rich diversity of flora with a large number of endemic, endangered and globally important species. The diversity of species composition is predetermined by many factors: a significant spread of the territory in latitudinal direction and diversity of physiographic conditions

connected with this spread, a complex geological history, the effect of different biogeographic zones, etc. The most completed description of the flora in Uzbekistan was made and published in 1960s in the reference guide “The Flora of Uzbekistan” (1941-1962). According to this publication, the flora of embryophytes comprised 3663 species (3824 species incl. introduced species). Currently, according to experts, this group of plants in Uzbekistan consists of about 4300 species.

The history of flora formation and the peculiarities of its modern composition are inseparably linked with other Central Asian regions. At the same time, the flora of Uzbekistan has its own peculiarities, which are expressed in a high index of endemism – about 8%. Relict endemics constitute 10-12% of the total number of endemic species.

Among endemic species, a special place is occupied by the representatives of genera *Tulipa* L., *Allium* L., *Gagea* Salisb., *Eremurus* M. Bieb, *Astragalus* L., *Cousinia* Cass., *Iris* L. and many others.

Thematic insert 1. Some endemic species of flora in Uzbekistan

Most of the endemic species in Uzbekistan include relict species that were preserved after the Tethys sea was dried up and the desert climate has established in Central Asia. The mountains of the Pamir-Alai and the western Tien Shan are especially diverse in relicts. Undoubted relicts in the Pamir-Alai flora are (*Otostegia buharica* B. Fedtsch.), (*Allium verticellatum* Regel), (*Astragalus thlaspi* Lipsky), (*Zygophyllum bucharicum* B. Fedtsch.), (*Cleome gordjaginii* Popov) and others that are preserved in the speckled strata of low mountains in Kashkadarya and Surkhandarya provinces. (*Fumariola turkestanica* Korsh.), (*Dionysia hissarica* Lipsky), (*Cephalorhizum oopodum* Popov & Korovin), and (*Ostrovskia magnifica* Regel) are characterized by narrow habitats in different sites of the Pamir-Alai part of Uzbekistan.

A moderate number of endemic relicts have been preserved in the mountains of the western Tien Shan. The western Tien Shan relicts include (*Thesium minkwitzianum* B. Fedtsch.), the relict of an ancient African flora isolated from its nearest congener; (*Kamelinia tianschanica*) is an endemic species of the Akhangaran Valley; (*Nanophyton botschantzevii* U.P. Pratov) is one of the mountain representatives of the desert genus; (*Kuramosciadum corydaliifolium* Pimenov, Kljukov & Tojibaev) is a recently recorded endemic species of the upper reaches of the Chorkesara, etc.

The flora of Uzbekistan is diverse in ancestors and wild relatives of cultured plants (Tab. 1). Of special interest are wild relatives, which are of the greatest importance to cultivation of new and improvement of existing valuable cultivars. This includes the species: *Juglans regia* L., *Amygdalus communis*, *Amygdalus bucharica* Korsch., *Diospyros lotus* L., *Ficus carica* L., *Punica granatum* L., *Pyrus turcomanica* Maleev, *Malus sieversii* (Ledeb.) M. Roem., *Vitis vinifera* L., *Ziziphus jujube* L., *Pistacia vera* L. etc., which are mainly concentrated in the mountainous regions of Uzbekistan.

Table 1.

Useful wild plants in the flora of Uzbekistan

Groups of plants according to their use	Families	Number of species
Food plants	<i>Rosaceae, Amaryllidaceae, Juglandaceae, Rhamnaceae</i>	More than 350
Fodder plants	<i>Poaceae, Fabaceae, Chenopodiaceae, Asteraceae</i>	1700
Medicinal plants	<i>Ranunculaceae, Lamiaceae, Rosaceae, Boraginaceae, Apiaceae u ðp, Astcraceae, Peganaceae</i>	More than 800
Ether-oil plants	<i>Lamiaceae, Apiaceae</i>	650
Dye plants	<i>Malvaceae, Papaveraceae, Asteraceae</i>	150
Ornamental plants	<i>Liliaceae, Asphodelaceae, Iridaceae, Amaryllidaceae, Rosaceae, Asteraceae</i>	270
Culinary herbs and Spices	<i>Lamiaceae</i>	200
Saponin plants	<i>Fabaceae</i>	100

Fauna

According to modern data sources, the basis of fauna of Uzbekistan consists of 14,900 invertebrate species (850 protozoa species, 61 species of annelids, 1179 species of roundworms, 533 species of flatworms, 223 mollusks species, and 12,000 arthropod species) and 714 species of vertebrate animals (84 -species of fish, 3 species of amphibians, 60 species of reptilians, 460 avian species and 107 mammals species). Such a diversity of species is the reflection of different historical ways of formation of the fauna of the country and of diversity of its geographical conditions.

The position of Uzbekistan at the junction of several biogeographic regions determines the differences in origins of many systematic groups and animal species. The fauna of Uzbekistan is characterized by its ancient nature and complex genetic links. The biggest component is represented by native fauna. On the one hand, it includes the species of local (Central Asian) origin, which are Turanian or Turkestan endemics and are not recorded outside the Central Asia.

So far, 53 species and subspecies of terraneous vertebrate animals representing the complex of endemics of Uzbekistan and Central Asia are known. Endemics constitute 8.5% of the entire number of species (subspecies) of terraneous vertebrate animals. The fauna of reptiles is noted for the highest level of endemism: up to 50% of all species of this class. The class of mammals is noted for the lower level of endemism - 14% as well as class of birds is also noted for its low level of endemism - 1.7% (Tab. 2).

Table 2.

The level of endemism in the fauna of the terraneous vertebrate animals

Class	Number of taxa (species, subspecies)		% of the total number
	Total	Endemics	
Reptiles	60	30	50,0
Birds	460	8	1.7
Mammalians	107	15	14,0
Total	627	53	8,5

On the other hand, species that in a natural way penetrated to the territory of Uzbekistan from other regions in different historic time constitute a significant part of the native fauna. As a rule, these include accidental species capable of migration and in sole numbers recorded in this state for a long period of observations.

Alien species previously not recorded in Uzbekistan and representing an introduced fauna make up a separate group. These animals were brought into Uzbekistan intentionally, i.e. for the purpose of acclimatization in the wild and further use (direct introduction), or unintentionally (indirect introduction) from other regions of the world, where their natural historic ranges are situated.

In the fauna of birds and mammalians the share of participation and level of effect of alien species on the native species is insignificant – two alien species or 0,4% in the avian fauna and four species or 3,7% in the mammalian fauna. Of birds, the alien species are the myna (*Acridotheres tristis*) and the collared dove (*Streptopelia decaocto*). These are synanthropic species, which expand their range in a natural way.

Of mammalians, the alien species include the American mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), nutria (*Myocastor coypus*), and common rat (*Rattus norvegicus*). The American mink occupies a free ecological niche and does not produce a significant negative effect on other

species. The muskrat and the nutria are hunted-commercial valuable species, which were directly introduced. The distribution and numbers of the nutria are limited due to severe winter conditions, while those of the muskrat are limited by hunting. The common rat is a synanthropic species, which has significantly expanded its range in the past dozens years due to the anthropogenic transformation of environments, namely, the intensive construction of settlements, development of the railroad, animal husbandry and land reclamation.

The largest part of introduced vertebrate animals in Uzbekistan are fish, namely, the peled (*Coregonus peled*), the rainbow trout (*Oncorhynchus mykiss*), the silver carp (*Hypophthalmichthys molitrix*), the spotted silver carp (*Hypophthalmichthys nobilis*), silver crucian carp (*Carassius auratus gibelio*), grass carp (*Ctenopharyngodon idella*), Balkhasch perch (*Perca schrenki*) and others (up to 50% of the fish fauna of Uzbekistan).

The Protected Areas

The issue of further improvement of the territorial protection of biodiversity has become urgent under the conditions of accelerating economic development of the country and the enhancement of the process of natural resource management. One of the main ways of conservation and restoration of natural landscapes, ecosystems, systems of flora and fauna in Uzbekistan, is the establishment and sustainable functioning of the representative system of the protected areas (PAs) of different levels and purposes depending on their position, goals and state of the PAs.

PAs in Uzbekistan play an important role in the conservation of biodiversity, its separate components, ecosystems and habitats (Annex 1, Fig. 4). These areas also serve as a natural basis for a significant number of scientific studies and observations.

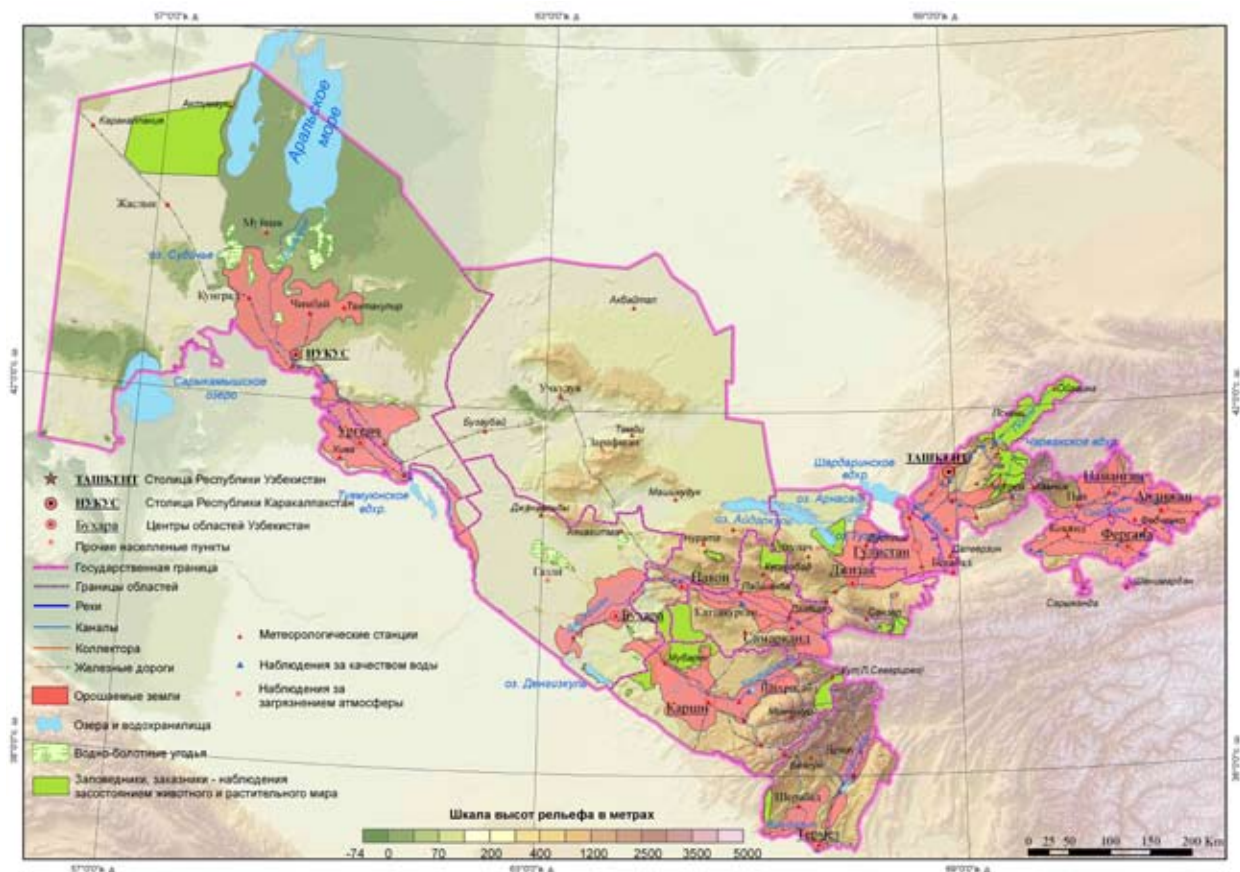


Figure 4. Protected areas of Uzbekistan

Characteristics of distribution of rare plant species having different categories of rareness within the protected areas are given in Table 3. Nature reserves and national parks in Uzbekistan shelter 152 (47,4%) of 321 species of endophytes that are included into the Red Data Book of Uzbekistan. The highest number of rare species is recorded in the territory of the Ugam-Chatkal national park (61) and the Surkhan nature reserve (39).

Table 3.

The number of the Red Data Book plant species of different categories of rareness in nature reserves and nature parks

Name of protected area	Number of plant species included into the Red Data Book of Uzbekistan (2009)				
	Status 0	Status 1	Status 2	Status 3	Total
Nature reserves					
Gissar	-	8	12	4	24
Zaamin	1	4	10	4	19
Zeravshan	-	-	-	1	1
Kitab	-	6	8	5	19
Kyzylkum	-	-	1	-	1
Nurata	-	6	24	3	33
Surkhan	-	9	25	5	39
Chatkal	-	5	19	7	31
Natural parks					
Zaamin	-	1	7	3	11
Ugam-Chatkal	2	17	36	6	61

The integrated protection of biodiversity is carried out mainly in the territories of the Strict Nature Reserves (Ia – IUCN category). Strict Nature Reserves (zapovedniks) shelter about 50% of the species diversity of the vertebrate animals. On average, as many as 22.8% of the vertebrate animal species are protected in the mountain nature reserves. The flatland-tugai nature reserves shelter about 40%. The National Parks (Ugam-Chatkal and Zaamin) support mainly the conservation of biodiversity of mammals species in the mountain nature reserves adjacent to their territories.

The analysis of modern state, distribution across the territory of the country and level of protection of rare and endangered species of vertebrate animals suggests that the territorial form of protection covers about 80% of vertebrate animals included into the Red Data Book of Uzbekistan (Tab. 4).

The total number of rare and endangered species protected in the species management areas zakazniks, which shelter 41,9% of the total number of species in this category. Reptiles inhabiting the sandy massifs of the Ferghana Valley prevail in the territories of the nature monuments.: 31,2% of reptile species included into the Red Data Book of Uzbekistan were recorded in that area.

Table 4.
Distribution of rare and endangered vertebrate species in the PAs system

Class	Number of species included into the Red Data Book of Uzbekistan (2009)	number / % of the total number of species included into the Red Data Book of Uzbekistan		
		Nature reserves*	Natural parks	Total of PA (I-IV categories of IUCN)
Fish	18	12/66,7	3/16,7	13/72,2
Reptiles	16	6/37,5	4/25,0	11/68,8
Birds	48	20/40	13/27	43/90,0
Mammalians	25	16/64,0	9/36,0	18/72,0
Total	107	77/72,0	26/24,5	85/79,4

*Note: taking into account the area of the former nature reserve Badai-Tugai, which was included into the nature reserve zone of the Lower- Amudarya biosphere reserve (Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No, 243 of 26 August, 2011).

The main types of natural ecosystems in PAs are represented disproportionately. The PAs system covers about 3,5% of desert ecosystems, about 3,0% of floodplain forests and 14% of mountain ecosystems.

The PAs system provides a high level of protection to only separate types of natural habitats, namely mountain forests and high mountains. For others, e.g., desert and foothill habitats, and floodplain forests, the areas of nature reserves are insufficient for a normal support of species breeding and communities inhabiting these habitats.

A number of nature protected areas in the country are of international importance for the conservation of biodiversity. Lake Dengizkul (2001) and Aidar-Arnasai lake system (2008) were included into the list of the wetlands of international importance (the Ramsar Convention). Some protected areas were recognized as important for globally endangered avian species. Of fifty-one international bird areas (IBA) in Uzbekistan, 17 (35,4%) completely or partially coincide with the existing PAs.

Since 2006, some changes have taken place in the PA system of Uzbekistan. The total area of the “Djeiran” Ecocenter has increased and reached 16,504 ha today. Currently, the preparation is under way to expand it by another 4,500 ha. A new type of PA, namely, the Lower Amudarya Biosphere Reserve, has been established in Uzbekistan (Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 243 of 26 August, 2011). As a result of the establishment of this biosphere reserve, the total area of PA's in Uzbekistan has increased by more than 62 thousand ha. In 2010, two state wildlife zakazniks (e.g. “Kumsulton” and “Hadicha”) and two nature monuments (e.g. “Paikent” and “Varahsha”) were established in Bukhara province. The “Durmen” National Park has been established in 2014 with total area of 32.4 ha. in order to preserve, reproduce and rationally use unique and valuable flora species (Resolution # 144 of the Cabinet of Ministers of the Republic of Uzbekistan, 5 June, 2014). Currently, a project of the Programme for the development of PAs system in the Republic of Uzbekistan for 2014-2024, that envisages the expansion of the PA area up to 8114140 ha is under consideration (Fig. 5).

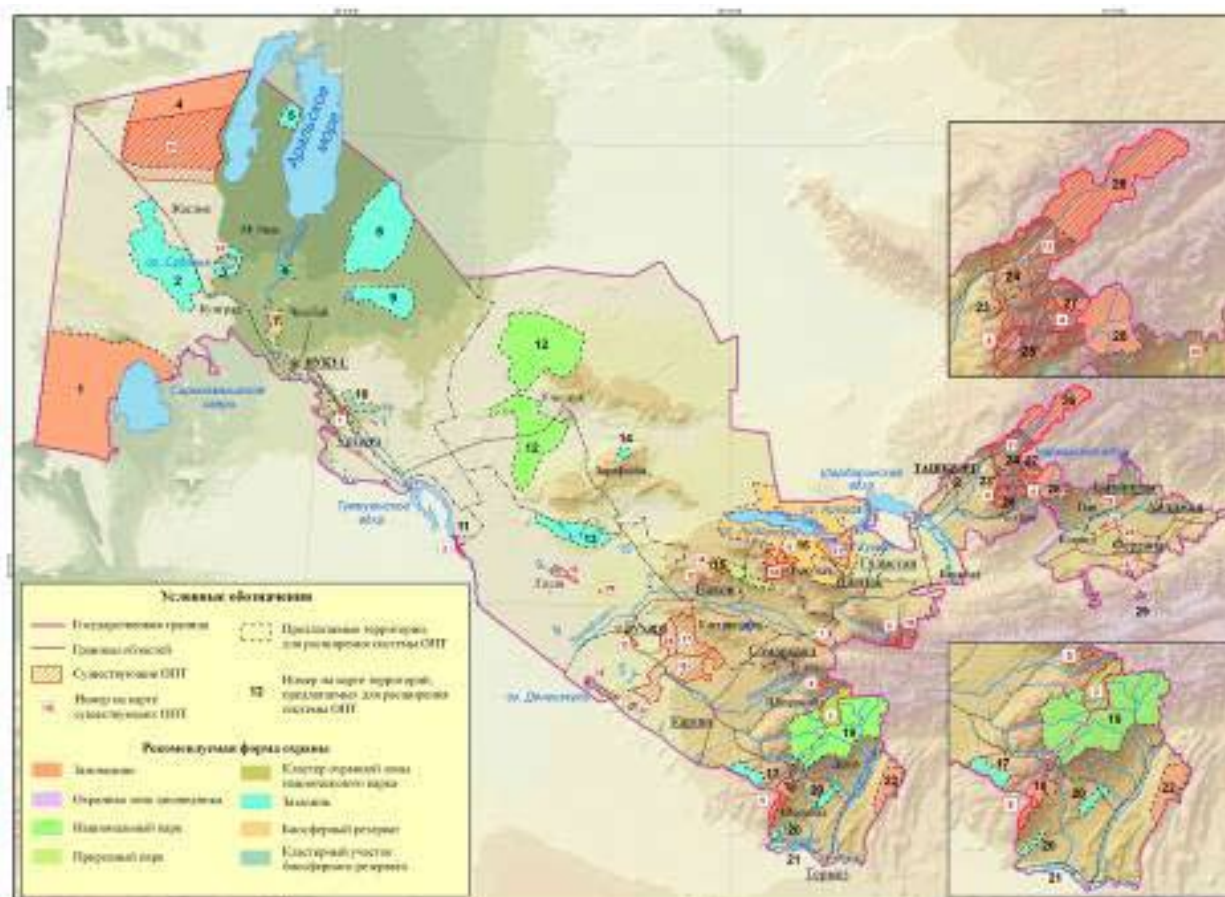


Figure 5. Recommended forms of areas protection proposed for the extension of the PASSystem in Uzbekistan (UNDP / GEF / MAWR Project)

Importance of biological diversity for Uzbekistan

From the viewpoint of the environmental protection, biological diversity is the taxonomical indicator of ecological prosperity of the biosphere. There is an irrefutable evidence that natural ecosystems can regulate habitats and climate, protect natural gene pool and support its diversity in the disturbed ecosystems. The larger the areas of natural ecosystems with a high original biological diversity are, the more successfully this function is realised.

Biological diversity is a vitally important resource for meeting various demands of the society, facilitating sustainable development of the country. It is an integral part of the economic and livelihood activities, and its conservation and sustainable use are paramount to ensure crisis-free development. Biodiversity in Uzbekistan is linked with such sectors of economy that depend on natural ecosystems and their services (e.g., animal husbandry, irrigated agriculture, forestry, fishery, recreation, tourism, etc.); as well as sectors, which adversely affect biodiversity and ecosystems' functioning (e.g., oil and gas extraction, chemical industry, water resources management, waste disposal, transport infrastructure, urban development, etc.).

Geographic position of Uzbekistan, diversity of physiographic conditions determine its rich biological diversity. Vast deserts of Uzbekistan, mountain steppes, forests, alpine meadows, and waterbodies are all characteristic ecosystems with typical ecological and faunistic systems. Remaining natural ecosystems of Uzbekistan help to stabilize the territories, in which the lands have lost their ability to support sustainable favorable environment due to the disturbance caused by human activities.

Esthetic and recreational importance of biodiversity is very high. Attractiveness of the country from this point of view determines the development of the tourism sector. Species and ecosystem diversity make Uzbekistan attractive for scientific research and implementation of educational programmes.

In this connection, it is important to include the issues of biodiversity into the process of national planning, decision-making and awareness raising of a wide range of public. Forest and wetland ecosystems and those used for pastures are worth to note among the ecosystems that are the most intensively used and that are important for social and economic development of the country and conservation of globally important biodiversity.

Ecosystems used for pastures

In Uzbekistan, most of the livestock production, which is an important source of income and foodstuff for people, is produced by dehkan farms. The welfare of population depends directly on the productiveness of the ecosystems used for pastures.

Three most important categories of lands in Uzbekistan are: the lands allocated for agriculture (46,1%); the lands of the forest fund (21,7%), and reserve lands (27,6%). In total, these categories of lands cover more than 42 million ha (95% of the state territory), which include about 11% arable lands (together with personal subsidiary plots)] and approximately 19 million ha of pastures (about 46%). Thus, pastures are the most widespread form of land use for agricultural purposes.

The most part of pastures is situated in the desert belt (78,1%), which is characterized by high aridity and low watering. There are 15,2% of pastures in the belt of foothill plains, where the main oases of the irrigated agriculture are situated. Most pastures in Uzbekistan are subject to degradation. The average rate of decline of pasture productivity is 1,5% per year.

In arid pastures, the main factor of degradation is overgrazing (Fig. 6). The sparseness of the plant cover and low productivity of desert phytocenoses are the consequences of an excessive livestock grazing and plants degradation in vast territories. Low watering of pastures and a very sparse system of wells in deserts considerably intensify the process. As a result of overgrazing, in the radius of 2-3 km from the wells, the native plants undergo significant changes, the humus soil is destroyed, processes of deflation develop and sand dunes are formed. In the areas affected by livestock overgrazing the number of plant species in phytocenoses drops 2-4-fold. The change of habitats as a consequence of overgrazing, is the cause of the reduction in species diversity.

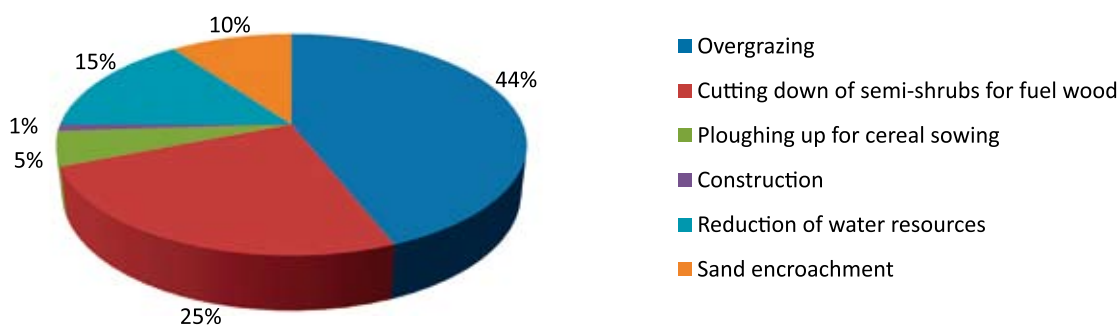


Figure 6. Causes of degradation of desert pastures

The degradation of pastures is also observed in foothills and low mountains. The water erosion is manifested on the mountain slopes with heavily thinned natural vegetation. Currently, areas with eroded soils in foothills and low mountains constitute about 8% of the total area. Measures on pasture balanced use, including seasonable pasture rotation, are being applied to sustainable management of pasture resources.

Forest ecosystems

Uzbekistan is a forest-poor country, the lands of the state forest fund as of 01.01.2013 occupy 9,6 million ha, which is 21,7% of the total country's area, 3 million ha of which are covered with forests (6,7%). The largest areas of the forest fund are situated in the Republic of Karakalpakstan, Bukhara and Navoi provinces, the smallest areas remain in Samarkand and Syrdarya provinces, and in the Ferghana Valley. These lands are situated mainly in the sandy deserts (7,78 million ha), mountains (1,5 million ha), flood-plains (0,10 million ha), and in valleys (0,18 million ha).

Uzbekistan's forests are state-owned property. Protection, use and plantation of forests is supervised by the Cabinet of Ministers, the Main Forestry Department under the Ministry of Agriculture and Water Resources (MAWR), as well as by the local authorities and the other public bodies. The Main Forestry Department is in charge of forests' management at the regional level via its seven subordinated regional forestry centers.

The main forest-forming species in the sandy desert is the black saxaul (*Halóxylon persicum*). The (*Salsola*) of two species (*S. Richteri* and *S. Paletzkiiana*) is widespread there, as well as the (*Caligonum*) and the (*Tamarix sp.*) thickets.

By their composition, mountain forests are divided into juniper (*archa*), pistachio tree, almond tree, walnut tree, apple tree, hawthorn and mixed ones. The main forest-forming species in the valleys are the poplars (*Populus*), the ash trees (*Fraxinus*), the maple (*Acer*), the plane trees (*Platanus*), the elm trees (*Ulmus*) and the other quick-growing, fruit- and nut-bearing species. The forest-forming species in flood-plain tugai forests are the Asiatic poplar (*Pópulus diversifolia*), the Bukhara Dschidda (*Elaeagnus angustifolia*), various species of the willow (*и.*) and the *Tamarix sp.*

The smallest tugai forests in terms of area are located along rivers of Amudarya, Syrdarya, Zaravshan, Chirchik and Akhangaran. They are also considered as the most developed and transformed areas. Most of the tugai forests have degraded due to the change in rivers' hydro regimes.

The largest, isolated in territorial terms, tugai areas, occupying about 30,000 ha, are situated in the Republic of Karakalpakstan. Altogether these sites constitute about 10% of the original territory of tugai forests in the River Amudarya delta. These areas constitute 75% of all remaining tugai forests in Uzbekistan and 20% of such forests of the entire Central Asia. The dwindling area of tugai forests threatens with extinction of rare and vanishing species, associated with them. Currently, massifs of tugai have been conserved as small narrow belts and separate sites along river valleys; they serve as important ecological corridors for the wild life.

The main function of forests in Uzbekistan, which exist under severe arid continental climate, is to provide protection (for instance, for river basins), create protection belts to protect from wind and sands, and preserve biodiversity and wild life. Non-timber forest products and services significantly contribute to livelihood in rural areas (e.g., harvesting walnuts, fruits, cherries, mushrooms and medical herbs).

Commercial use of forest resources in Uzbekistan is prohibited due to their scarcity and importance of protective and ecological functions. The main part of the needed timber is imported. At the same time, there is significant potential for growing local species of wood raw material in suitable sites to meet the demand of the state in wood.

Wetland ecosystems

Wetlands are mainly plain lakes with marshy coastal sites along the perimeter, which are situated in the zones with insufficient watering. Until recently, they were represented by delta, alluvial and oxbow types.

As a result of the withdrawal of the surface runoff for irrigation needs, some lakes that situate in the delta and flood plain of the Amudarya and Syrdarya rivers have decreased significantly in size or ceased to exist, and many of them turned into the irrigation-waste water lakes (IWWL). Almost all oxbows disappeared, while delta waterbodies turned into IWWLs. Thus, most plain lakes acquired a new status due to the change in supply conditions.

The formation of IWWLs should be considered as the emergence of new ecological elements of the landscape, which has a specific social and ecological status. On the one hand, IWWL turned into characteristic ecological oases –zones of biodiversity support; on the other hand, they are involved in the social and economic activity and are used by local residents for recreation, fishing, hunting, reed stocking, etc. Conservation of their social and biosphere importance in many respects depends on their modern ecological state and provision of their further sustainable management.

Some of plain lakes are drainless, while the others have flowing systems of various degree, among which mainly slightly flowing type of lakes with the index of conventional water cycle significantly below 1 prevails. On the contrary, the index of openness for all plain lakes has a high value (> 1) due to their shallowness, which in combination with high evaporability (more than 2000 mm per year) predetermines their significant dependence on climatic factors. This dependence is especially evident in closed lakes, characterized by a higher salt content, and upon reaching and passing a certain threshold of salinity they transform to swamps.

For example, in the delta of the Amudarya River, in low-water crisis years the salinity of lake waters grows extremely in comparison with its values in usual or average water years (Tab. 5). In such periods, water salinity in initial lakes with river waters grows by 2,5 times, while in terminal lake chains - by 6-9 times. In flowing lakes with drain collector waters, water salinity grows by 1,5-5,6 times in initial lakes and 1,7-4,1 times in terminal lakes. In drainless lakes with drain collector waters salinity grows by 1,5-1,7 times.

All the lakes in the Amudarya River delta are potentially unstable systems, as a consequence of the lack of a satisfactory hydrological regime and supporting measures in the low-water years. Thus in low-water years, the biomass of phytoplankton may grow in Mezhdurechensky lake system by 20-400 times, while in a more eutrophic Muynak bay, by 2,3-15 times in comparison with an average water year. For example, in the low-water 1989, the biomass of phytoplankton reached abnormally high values: in Mezhdurechie, 200, while in Muynak bay, 230 g/m³.

Table 5.

Average values of water salinity (g/dm³) in some different-types of lakes in the delta of the Amudarya River in years with different water levels

Lakes	Years			
	1990-1991 1999-2000 average	1993 high-water	1989 low-water	2001 crisis
Feeding with river waters				
Mezhdurechie (the initial chain in system)	0,97-1,03	0,68-1,20	1,62-2,03	2,4-2,6
Muynak bay (terminal chain)	1,55-3,57	0,99-3,50	-	14,6-21,0
Feeding with collector-drainage waters				
Flowing lake system				
Begdulla-Aidyn (initial chain)	3,79-7,00	-	-	5,9-39,2
Karateren (terminal chain)	4,85-12,9	-	-	8,2-54,0
Closed lake system				
Taily (initial chain)	17,5-27,1	-	-	15,0-40,3
Akushpa (terminal chain)	21,3-47,5	-	-	35,6-83,0

In this unfavorable period, most indicator species of phytoplankton were alfa-mesosaprobies; the water was heavily blooming, which was typical of eutrophic waterbodies, with the prevalence of blue-green algae in the plankton, in other words the water quality in these lake systems and their ecological state had sharply deteriorated.

In 2000-2002, a crisis was recorded in all lake systems of the delta, which coincided with the extremely low water year. Under established instability the ecological regress of lake ecosystems was also accompanied by a catastrophic change of aquatic biocenoses (replacement of brackish-freshwater of flora and fauna by brackish-sea water), degradation of main objects of fishing and hunting. During two years, lake systems of the right-bank and of the left bank part of the Amudarya delta almost completely degraded as limnic systems and for an indefinite time had lost all of their ecosystem and socially useful functions and services.

A progressive warming, unsustainable water resources management of transboundary rivers, may further increase the vulnerability of lake ecosystems, lead to the decline of biocenotic diversity and the loss of productivity of aquatic biocenoses, degradation of related objects of avian fauna and fish fauna, and create conditions for the mass breeding of locust (which already took place in the area of wetland Sudochie in 2001-2002 during a low-water crisis period).

Most irrigation wastewater lakes also are centers for biodiversity support, including rare and endangered species. For example, according to the monitoring of waterbodies of the wetland Sudochie (the left-bank part of the Amudarya delta) from 40-50 to 100 thousand hydrophilous birds are aggregated there during seasonal migrations and from 20 to 40 thousand birds stay there in summer. According to the registration of wintering flock of birds conducted in the mid-stream of Amudarya in 2003 to 2007, 19753-23281 waterfowl birds were recorded in Ayakagitma,; 34688 in Deuhona,; 18503-286634 in Dengizkul,; 10293-154466 in Karakyr,; 13864 in Shorkul.

Wetlands are also important for local residents in terms of fishing. The conservation of social and biosphere importance of these lakes in many ways depends on possible technical water conservation and organizational measures and decisions. The latter, depending on the success of their implementation, can predetermine ecological stability of these water objects and, respectively, conservation of their socially useful functions and services, which is especially important due to progressing warming and aridization of climate.

Major changes in the status and trends in the sphere of biodiversity

In Uzbekistan, the status and trends in the sphere of biodiversity are reflected in the National Reports on environmental protection, as well as in scientific reports of experts working in respective state agencies and international projects. The data of the reports show that the process of biodiversity loss is under way, mainly as a result of the destruction of habitats and the excessive exploitation of bioresources.

In the last decades, as a consequence of intensive exploitation of natural resources, some species of animals in Uzbekistan have been subject to anthropogenic influences, which has resulted in the decline of their ranges and population size; certain species are on the brink of extinction or have completely vanished. The population size of many animal species have not reached their critical levels, but continue to decline steadily. Degradation of habitats and direct destruction of animals (large predators and hoofed mammals are affected the most). In some cases, the risk of extinction of some species was successfully reduced by taking special measures, such as establishment of the protected

areas, inclusion of species into the national Red Data Book, development and implementation of Action Plans on conservation and restoration of species and their habitats, etc.

The priority species among terrestrial vertebrate animals that need protection are globally endangered species and subspecies; species, for which the territory of Uzbekistan shelter a significant part of the world population; species that are subject to significant anthropogenic influences in the territory of the country; species that are included in International Memorandums and Agreements, which Uzbekistan has signed.

The priority bird species include Dalmatian pelican (*Pelecanus crispus*), red-breasted goose (*Branta ruficollis*), lesser white-fronted goose (*Anser erythropus*), marbled duck (*Marmaronetta angustirostris*), white-headed duck (*Oxyura leucocephala*), Egyptian vulture (*Neophron percnopterus*), saker falcon (*Falco cherrug*), white crane (*Grus leucogeranus*), Houbara Bustard (*Chlamydotis undulata*), sociable lapwing (*Chettusia gregaria*), and slender-billed curlew (*Numenius tenuirostris*).

The priority mammals' species are Central Asian otter (*Lutra lutra seistanica*), snow leopard (*Uncia uncia*), corsac (*Vulpes corsac*), markhor (*Capra falconeri*), Ustyurt urial (*Ovis vignei arcal*), Bukhara urial (*Ovis vignei bocharensis*), Severtsov's argali (*Ovis ammon severtzovi*), saiga (*Saiga tatarica*), Menzbier's marmot (*Marmota menzbieri*) and others.

In addition, species, which are not globally endangered, but, due to the anthropogenic interference, may vanish from the country, need special attention.

207 species and subspecies of animals are included into different categories of rare and endangered species, including 184 species that are listed in the Red Data Book of the Republic of Uzbekistan (2009): 24 species of mammals (25 with subspecies), 48 avian species, 16 reptile species, 17 fish species (18 with subspecies), 3 species of annelids, 14 mollusk species, and 60 arthropod species. In addition, 73 species and subspecies of animals, whose status causes concerns on a global level, are included into the Red List of IUCN. 88 endangered species and subspecies are included into the Annexes of the CITES Convention (Tab. 6).

Table 6.
The number and percentage of rare and endangered animal species in Uzbekistan

Class	Total number of species in class	Number / % of total number of species in class		
		Rare and endangered species (RDB RUz, 2009)	IUCN species (2013)	CITES
(2013)	CITES	25 / 23,4	24 / 22,4	20 / 18,7
Birds	460	48 / 10,4	31 / 6,7	58 / 12,6
Reptiles	60	16 / 26,7	3 / 5,0	5 / 8,3
Fishes	84	18 / 21,4	11 / 13,1	4 / 4,8
Invertebrates	14900	77 / 0,5	4 / 0,03	1 / 0,007
Total	15611	184 / 1,2	73 / 0,5	88 / 0,6

Insignificant number of rare and endangered animal species are small-numbered naturally. Most species become rare or endangered under the effect of direct driving mechanisms that cause the loss of biodiversity. It is connected with the general degradation of habitats, especially in plains and low mountains, and direct withdrawal of animals from the wild (Tab. 7).

Table 7.**Reduction of habitats and population size of animals under the effect of anthropogenic factors**

(on the basis of species description in the Red Data book of Uzbekistan, 2009)

Animals included into the Red Data Book of the Republic of Uzbekistan (2009)	Number of species, whose habitat and population size has reduced (%)	Causes of habitats and population size reduction
Invertebrates	19,5%	Unstable hydrological regime and contamination of water bodies
	> 58 %	Industrial development of lands
	13%	Reduction of tugai forests
Fishes	> 90%	Change in the hydrological regime in the basin of the Aral Sea, the Amudarya and Syrdarya rivers
Reptiles	94%	Industrial development of virgin lands
Birds	> 33%	Industrial development of territories
	42%	Change in the hydrological regime in the basin of the Aral Sea, the Amudarya and Syrdarya rivers
Mammalians	72%	Degradation of habitats as a result of industrial development of territories

Salinization of soils and water, swamping, soil erosion, overgrazing, deforestation and other reasons cause loss of habitats, decline of population size and dwindling of ranges of a significant number of animal species. Plain, adyr, aquatic and wetland ecosystems, which were affected by the large-scale cultivation of lands with subsequent redistribution of water resources, have been subject to the greatest changes. As a result, 87 animal species inhabiting aquatic and wetland ecosystems, 47 animal species of desert ecosystems, 43 animal species of mountain ecosystems are to a different degree subject to the threat of extinction (the Red Data Book of Uzbekistan, 2009).

The National Red Data Book

The Red Data Book of Uzbekistan is the main document containing the aggregate information on the state of rare, reducing in population size and endangered species of plants and animals in the territory of Uzbekistan.

The first edition of the Red Data Book of the Republic of Uzbekistan (1984) included 163 species of plants; the second edition (1998), 301 species; the third edition (2006), 302 species of higher plants and 3 fungi species; the latest fourth edition (2009), 321 species of higher plants and 3 fungi species.

The first edition of the Red Data Book of the Republic of Uzbekistan (1983) included 63 species; the second edition (2003), 184; the third edition (2006), 184; the fourth edition (2009), 184 animal species and subspecies.

In the last 10-15 years, according to IUCN, the threat of extinction of species in the wild has grown for a number of species and subspecies, which is connected with the reduction of their habitats and decline in population size. This primarily concerns hoofed mammals as the most vulnerable and susceptible to anthropogenic influences of components of fauna.

Thematic insert 2. Endangered Animals

In 1996, the saiga (*Saiga tatarica*) was assessed by IUCN as «vulnerable» (VU). Since 2002 the category of risk was raised to «critically endangered» (CR), which also corresponds to the assessment at the level of subspecies inhabiting Uzbekistan. Such an assessment of the threat category was predetermined by the decline of the size of the world saiga population by more than 80% in the last ten years (95% in the last 20 years). In 2009, the saiga was included into the national Red Data Book. The main reason of the decline in saiga population is predetermined by an intensive illegal hunt. Males were killed for their horns, which in turn resulted in the violation of the sex ratio in the populations of the species. The second significant threat is the destruction of key habitats and traditional migratory routes.

Since 2006, the goitred gazelle (*Gazella subgutturosa*) was assessed by IUCN as «vulnerable» (VU). Before that this species had been assessed as «near threatened» (NT). Despite the fact that this species is quite widely distributed in the world, it is subject to an illegal hunt throughout its distribution. The habitats of this species are being lost due to anthropogenic development of lands, including those in Uzbekistan (IUCN Red List of Threatened Species, 2012).

Main threat to biodiversity

All over the world, including Uzbekistan, direct threats are generally derived from social and economic factors. For example, the growth of population leads to the increased demand for food products, and to subsequent expansion of agricultural lands and construction, to intensification of land use, general growth of consumption, and as a result to the intensification of degradation of natural resources. Such economic activities as agriculture, fishery, water use, energetics, mining, transport continue to focus mainly on generation of short-term benefits, instead of a long-term sustainability.

Anthropogenic factors have negative impact on practically all natural ecosystems in Uzbekistan. Plain, foothill, aquatic and waterside ecosystems, particularly those in the lower reaches of the main rivers, including the region of the Priaralie and the Aral Sea, are subject to the greatest changes. Anthropogenic interference accelerates the degradation of ecosystems and habitats. Decline and significant transformation of natural distribution of species are the major threats for biological diversity in Uzbekistan (Fig. 7). Which is more, rare and endangered, settled, autochthonic and endemic species are in the most vulnerable position

Major factors threatening biodiversity of Uzbekistan are the following:

- 1) Loss of habitats and degradation of natural ecosystems;
- 2) Decrease in population size and loss of species (of flora and fauna), including economically valuable species;
- 3) Erosion/loss of genetic diversity and natural resistance of species (to diseases and to climatic changes).

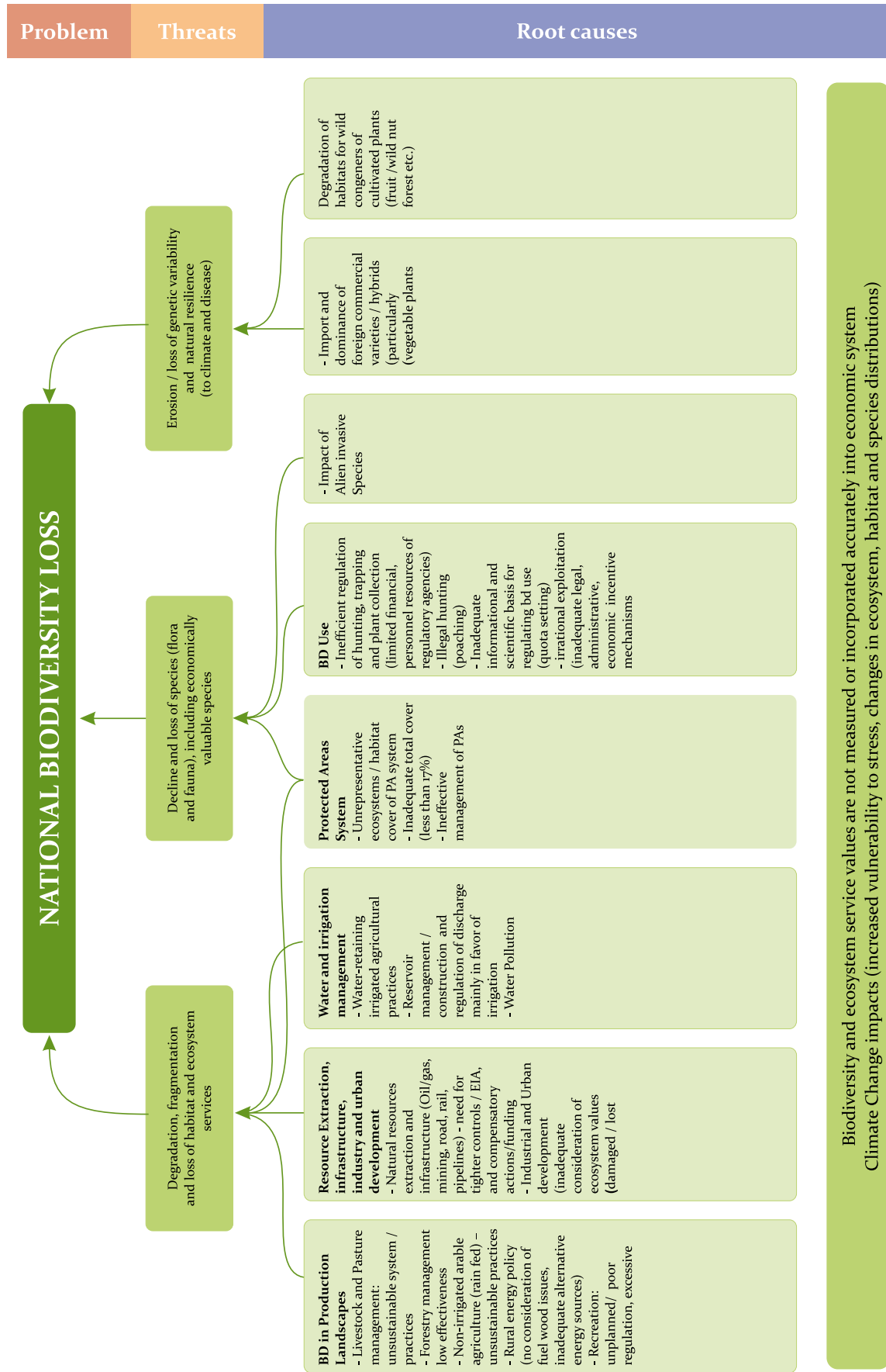


Figure 7. Main threats and key causes of biodiversity loss in Uzbekistan

Loss of habitats and degradation of natural ecosystems

Livestock has a significant impact on natural ecosystems, which plays an important role in the economy of Uzbekistan, and constitutes more than 40% of the gross value of agricultural production in the country. In this connection, pasture lands are subject to a significant load.

Livestock has an intensive impact on biological diversity in many districts of the country. Ecologically plastic animal species are able to get adapted to these changes and even prosper. However, more specialized species are under the threat of extinction. In addition, the higher number of livestock on pastures leads to the competition with the wild ungulates and infection of them with ecto- and endoparasites.

Owing to their accessibility, adyrs and the adjacent mid-mountain belt are subject to the highest pasture load. Unsustainable rotation of alpine pastures leads to their degradation. Unused pastures become overgrown with vegetation. Marmots, ground squirrels and other animal species become vulnerable to terrestrial predators in high grass. Under these conditions, many birds of prey cannot find food. On the other hand, a high pasture load in low mountains in winter and early spring cause deterioration of biodiversity in grassy low-mountain ecosystems.

Overgrazing decreases the projective covering of slopes, and in this connection possibility of erosive processes that contribute to the destruction of ecosystems and drop in population of characteristic species, arise under the effect of precipitations and water from melted snow.

Livestock is fed on young plants, which results in the disturbance of self-reproduction and decrease of the area of forest ecosystems. Livestock grazing in water meadows, riverside floodplains and wetlands leads to trampling down riverside plants, where a large number of waterside bird species are nesting.

Climatic change intensifies processes of land degradation and desertification and therefore affects the state of biodiversity. Especially intensive processes of desertification and biodiversity loss are recorded in the Priaralie (the Aral Sea region), on Ustyurt Plateau, in the Desert Kyzylkum and in foothill regions.

Currently, mechanisms of adaptation of different taxonomic and ecological groups (e.g. ostracoda and gill-footed crustaceans, phyto- and zooplankton, zoobenthos, aquatic and waterside insects) to climate change are studied. And climate changes are presumably the causes of the changes in the distribution of individual species and faunistic systems of vertebrate animals.

For example, permanent or nesting ranges of some species are expanded in the northerly direction, individuals irregularly appear in the territory of Central Asia to the north of their main habitats, areas of habitats of species, connected with low-mountain and mid-mountain landscapes, are reduced in the Central Asian part. Tendencies of transition of some migratory birds to the settled one, emergence of new wintering grounds in a number of waterside birds are noted.

Reduction of forest resources in Uzbekistan leads to the loss of habitats and contributes to the processes of degradation of forest ecosystems. Within the forest fund lands there are cases, when saxaul and other trees and shrubs have been cut down for fuel, which has negative impact on the state of biodiversity.

Tugai ecosystems, growing along the rivers Amudarya, Syrdarya, Zarafshan, Chirchik and Akhangaran, occupy the smallest area in Uzbekistan. However, they are the most developed and transformed. The floodplain forests, which once were impenetrable tugai jungles, were cut down or degraded due to the change in the hydrological regime of the rivers Syrdarya and Amudarya. The absence of the annual flooding of tugai lands, prevents the seed recovery of plants, causes the

drying of young trees and lead to fragmentation of tugai massifs and desertification of the territory. Reduction of areas of floodplain forests and deforestation of forest massifs in mountain territories caused the reduction of the habitats of species, are characteristic to these ecosystems.

The decrease in the area of tugai forests has caused the decline of population of Bukhara deer (*Cervus elaphus bactrianus*), endemic pheasant subspecies, and has led to reduction of distribution and drop in population size of endemic and locally distributed invertebrate species.

Another factor leading to the reduction of biodiversity in Uzbekistan is the use of lands by the agriculture. Despite the decrease in the area of agricultural lands over the last few years, they constitute the largest part of the land fund in Uzbekistan (46%) (Fig. 8).

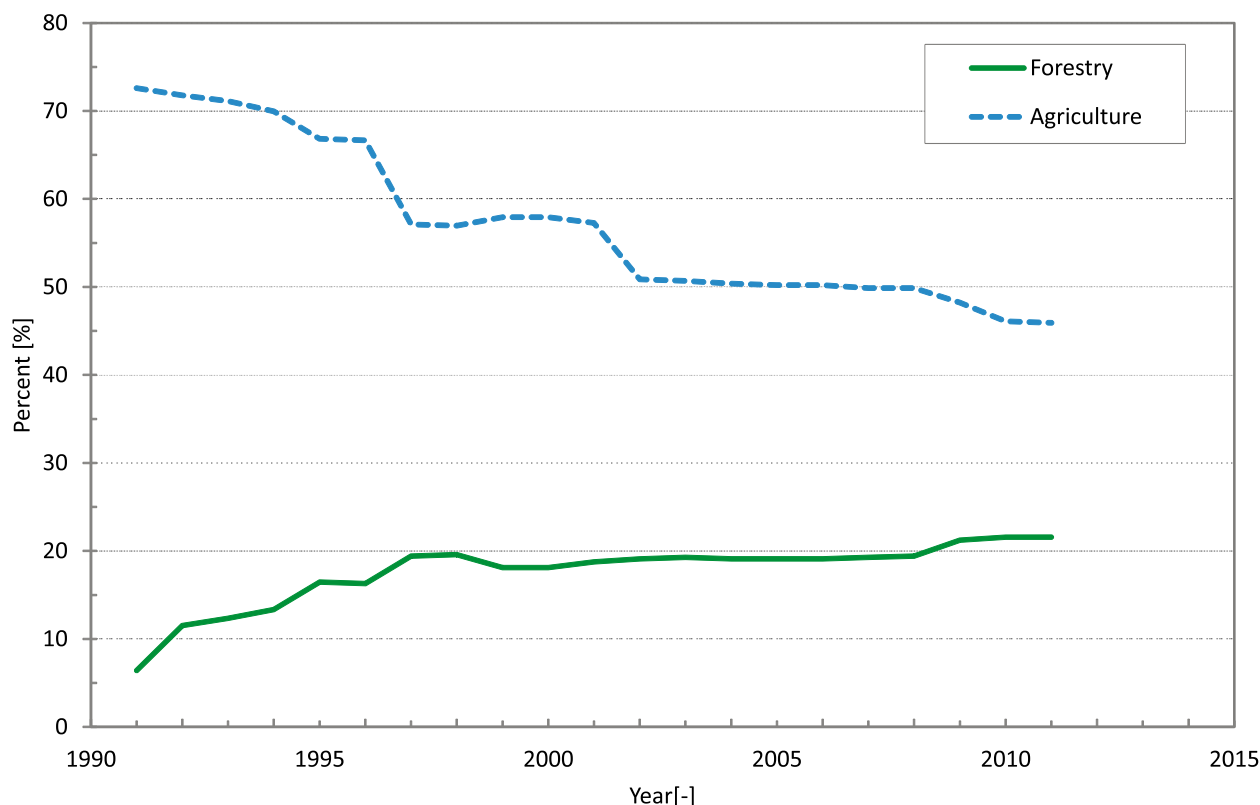


Figure 8. Dynamics of change of the agricultural lands and those of the forest fund

Plain habitats in Uzbekistan were significantly transformed because of the agricultural development. Significant areas of natural ecosystems underwent changes that caused vanishing or reduction of many species of animals and plants. Due to fragmentation and degradation of natural habitats, such animal species as Cheetah (*Acinonix jubatus*) and Turanian tiger (*Panthera tigris*) has vanished; under the threat of extinction are Caracal (*Lynx caracal michaëlis*), Kulan (*Equus hemionus kulan*), Honey badger (*Mellivora capensis*), Saiga antelope (*Saiga tatarica*), etc.

Degradation of ecosystems and absence of strictly protected areas (zapovedniks) in plains, foothills and low mountains have entailed biodiversity of piedmont plains and adyrs to decline. Currently, these areas are exposed to changes of natural ecosystems and their transformation into agrocenosis. For the majority of ecosystems in plains and low mountains, the threshold of ability to recover has been passed, as a consequence, one can observe degradation of natural habitats reduction of ranges and population size of featured species.

When new lands are involved into agricultural rotation, a number of animal species are driven to the borders of habitats and their populations decline dramatically. Currently, many species inhabit

only separate isolated sites. This is attributable to such characteristic species of piedmont steppes as Corsac fox (*Vulpes corsac*), Steppe polecat (*Mustela eversmanni*), African wild cat (*Felis libyca*), Tolai hare (*Lepus tolai*), Yellow ground squirrel (*Spermophilus fulvus*), Small five-toed jerboa (*Allactaga elater*) and Great jerboa (*Allactaga major*).

Many inhabitants of clay deserts and foothills need vast areas of virgin lands that currently are practically unavailable in the adyr zone, which has led to the decline in population of these species. In these landscapes, the introduced muskrat and in some places the nutria have settled widely, and naturalized in the area of lakes and canals, occupied available ecological niches. Such an alien species as common rat which unlike the two previous species causes a significant damage, is also widespread there.

It should be noted that agriculture in the low- and mid-belt of the mountains affects the fauna in two ways. Orchards, vineyards, plantations of legumes, maize, alfalfa and potato fields attract many animals in the period of crop ripening. They become easy preys to poachers there. Thus, agrocenosis are not only the places of the supplementary feeding, but also the places of the death of wild animals.

Significant **recreation loads** in places of mass recreation of people have a considerable influence on the biodiversity structure, especially on local natural communities. The zones of recreation have become the very centers of distribution of trivial synanthropic animal species. The development of infrastructure in places of recreation contributes to the expansion of the distribution and settlement of different synanthropic species (mice, common rat, laughing and collared dove, myna, etc.) in natural ecosystems, which results in the violation of their ecological sustainability.

Violation of ecosystems in connection with -technical and industrial activities is caused by the construction of industrial objects and associated infrastructure, mining activities, hydrologic construction, etc.

Aboriginal fish fauna has practically become completely extinct, many fish species and mollusks are on the brink of extinction as a result of the drop in the level of the Aral Sea and subsequent increase in water salinity. The change in the water regime in the basin of the Aral Sea and the rivers Amudarya and Syrdarya is a significant limiting factor for many aquatic and waterside birds, causing the decline of their population size in wintering and nesting grounds.

The major natural pollutant of the plain part in Uzbekistan is the Aral Sea region (the Priaralie) and the desiccated part of the Aral Sea bed, from the surface of which the wind carries large masses of saline dust from the west eastwards (over 75 tons annually).

The oil and gas industry is one of the actively developing economic sectors in Uzbekistan. In territorial terms, this activity covers mainly the Ustyurt Plateau and the region of the delta of the Amudarya River. Separate types of activities, in particular those connected with the construction of the main infrastructure, such as pipes and roads, have a significant impact on migratory routes of saiga antelopes and vulnerable arid ecosystems.

Other sectors of industries that negatively affect the habitats include the chemical and mining industries, as well as the power industry.

Lack of the coordinated management of the protected areas and insufficient ecosystem representativeness of the PA system are indirect causes of the loss of habitats and degradation of ecosystems.

The state management in the sphere of organization, protection and use of PAs is carried out by the Cabinet of Ministers of the Republic of Uzbekistan, local administrations, special authorized state bodies – the State Committee for Nature Protection of the Republic of Uzbekistan, the Department

of Reserves, National Nature Parks and Hunting Economies of Main Forestry Department under the Ministry of Agriculture and Water Resources, the State Committee for Geology and Mineral Resources of the Republic of Uzbekistan and the local authorities. As there is no single state body, which could carry out the functions of coordination of protected areas' management, the implementation of a coordinated policy in the sphere of biodiversity conservation and the effective management of protected areas is complicated.

The level of coverage of the main types of natural ecosystems and habitats by protected areas is one of the important criteria of evaluation of the representativeness of the existing system of PAs. The national PAs system provides conservation of the main part of the ecosystem diversity of the country.

In the national system of PAs, desert ecosystems, the area of which in Uzbekistan reaches about 38 million ha are represented by a small site in 1 nature reserve (zapovednik), 4 nature monuments, 6 species management area (zakazniks) and 1 natural nursery. Tugai ecosystems are represented by 2 nature reserves, 1 biosphere reserve and 1 species management area (zakanik). Mountain ecosystems are protected by 6 nature reserves, 2 national parks, 1 nature monument and 5 species management area (zakazniks), but for all that there are practically no nature reserves in foothills and low mountains.

In order to prevent the risks of reduction of biodiversity, further expansion and improvement of management of the existing system of the protected areas is needed.

Slowing down of loss of species, including economically valuable species

Improvement in planning of biodiversity use, development of scientific ground for establishing of quotas, and of relevant legislative and economic stimulation mechanisms of of sustainable use of natural resources are needed to slowdown biodiversity components' loss.

Resolution # 299 of the Cabinet of Ministers of the Republic of Uzbekistan dated 27 October, 2014 «On regulating biological resources use and realization of licenses procedures for use of flora and fauna sites» is aimed at improving the system of biological resources management. Under the Resolution, issuance of licenses on withdrawal of the wild animals, listed in the Red Data Book, from the natural habitat, is executed in several stages: permission document is issued by the State Committee for Nature Protection in accord with the Cabinet of Ministers, and only on the basis of scientific justification provided by the Academy of Sciences of the Republic of Uzbekistan (AS RUz).

This new legal act also determines poaching tools and bans on importation of such tools into the country. All royalties received from licenses and payments under CITES Convention are mainly used to support nurseries and other PAs.

Impact of invasive species. The growth of international trade and other factors have influenced the number of alien species and had an impact on the ecosystems and native species. For example, the introduced species of fish have a competitive influence on as many as 50% of rare and endangered species of fish in the native fauna in Uzbekistan. However, some commercial fish species (.g. *Hypophthalmichthys molitrix*, *Aristichthys nobilis*, *Ctenopharyngodon idella* and *Mylopharyngodon piceus*) that have settled and naturalized in hydrographic network of the Aral Sea basin constitute the largest part of commercial fishing catches in natural waterbodies of Uzbekistan and are of economic value.

Natural settlement and effect of alien bird species, such as myna and collared dove, on aboriginal species is also noted in anthropogenic plain and foothill landscapes. The total number of invasive plants is estimated at 20-25 species, which have to a varying degree adapted to the conditions of natural landscapes. For them there is no data on dynamics, population size and area of distribution is available.

Erosion/loss of genetic diversity and natural resistance of species (to diseases and to climate changes)

The state of wild relatives of cultured plants in protected areas is quite satisfactory. However, in spite of measures undertaken by the government, the reduction of areas and genetic erosion is noted in some places of their growth. Fruit harvesting is carried out without considering the reproduction of population.

The most valuable forms with high quality fruits are exposed to non-regulated harvesting: pistachio (*Pistacia vera* L.), walnut (*Juglans regia* L.), apple-tree (*Malus sieversii* M.Roem.), and almond tree (*Amygdalus bucharica* Korch.) and others. Unregulated harvesting of medicinal herbs, wild growing onion and garlic, is also noted. Besides, overgrazing of livestock destroys the emerging self-sown plants. Local inhabitants are poorly informed about the value of wild crops and their role in food security.

Local communities use everywhere non-arboreal forest products. There are companies stocking wild plant raw materials for both pharmaceutical industry production and food.

Impact of changes in biodiversity on ecosystem services and their social, economic and cultural consequences

The degradation of lands is observed on the entire territory of Uzbekistan, particularly in Bukhara, Navoi and Kashkadarya provinces, in the lowlands of the basin of the River Amudarya, the Ferghana Valley and the Golodnaya Steppe. The growing soils and water salinity (especially in the lower reaches of rivers), wind and water erosion, overgrazing, deforestation and reduction of biodiversity, and the decrease in the productivity of arable lands are the main ecological problems.

Currently, there is no integrated assessment of economic consequences of land degradation in respect to the decrease in productivity and reduction of ecosystem services.

The violation of ecosystems in Uzbekistan has occurred as a result of desiccation of the Aral Sea and the delta of Amudarya. The area of the exposed bed continues to grow, remaining the source of the transfer of sand-salt particles. The consequences of the Aral crisis in the region are: (i) – deterioration of the quality of surface and underground waters; (ii) salinization and swamping of soils; (iii) desertification of territories and degradation of irrigated lands; (iv) instability of water and salt regime in water bodies; (v) decrease in bio-productivity and biodiversity.

The Aral crisis continues to have a negative impact on the health and life span of population, as well as their standard of living. In the region, an outflow of labor resources to zones with more favorable climatic conditions is observed.

Forest resources provide numerous ecosystem services, execute protective, water-protection, sanitary-hygienic and health-improving functions; they are also natural long-term absorbers of carbon dioxide (greenhouse gas). The potential of absorption of carbon dioxide discharges in

Uzbekistan is estimated at 2,53 million tons per year, including 0,58 million tons per year of that is absorbed as a result of forestation in the grounds of the state forest fund, and 1,95 million tons per year in agricultural lands by means of potential deposition of carbon dioxide by protective forest plantations. There is a certain potential for forestation in Uzbekistan by creating industrial plantations; but currently, it is limited because of the absence of quotas on water for forest industry.

Efforts are made to conserve tugai ecosystems in the country, particularly those situated in the delta of the Amudarya River. In 2011, the Lower Amudarya Biosphere reserve was established, enabling the combination of nature conserving and economic activities. For example, this biosphere reserve not only conserves globally important species, but also has a high potential for development of ecotourism.

Ecological tourism is a developing and a promising sector in Uzbekistan, which can generate a high economic profit. Currently, the programmes on ecotourism include visits to the mountain villages in the Nuratau Mountains, Zaamin Nature Park, Zarafshan Nature Reserve, Ecological Center “Djeiran”, and Lake Tudakul. The rich biodiversity of these and of many other nature territories attract tourists from all over the world.

There is a large number of water bodies in Uzbekistan, where fish industry can be developed. According to the official data, fishing catch reaches approximately 4000 tons per year, and in 2011, it exceeded 5700 tons. One of the main suppliers of fresh fish is the Aidar-Arnasai lake system (AALS), where such fish species as the carp (*Cyprinus carpio*), pikeperch (*Stizostedion lucioperca*), roach (*Rutilus rutilus*), crucian carp (*Carassius auratus*), asp (*Aspius aspius*), phytophagous fish species and silurus (*Silurus glanis*) are caught (Tab. 8). From 2006 to 2011, in comparison with the previous years the fishing catch has annually grown from 1,5% to 35,2% .

Table 8.

Fish catch in AALS in the period from 2007 to 2010.

Years	Total (centners)	Fish species						
		Carp	Roach	Pikeperch	Crucian carp	Asp	Snakehead	Others
2007	12990	13,4	41	3,1	19,3	-	-	23,2
2008	17262	11,42	46,38	6,11	16,39	-	-	19,67
2009	17765	15,80	20,68	17,94		1,1	-	2,36
2010	20394	17,73	47,78	23,71	8,58	-	0,93	1,26

The control of the state and the use of fish resources is carried out by State Inspectorate for protection and rational use of flora and fauna. After the adoption of the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 350 of 13.08.2003 “On measures on the strengthening of demonopolization and privatization in fishing industry”, fishing industry was given to leaseholders, and the quota for fish catch was cancelled.

The Government of the Republic of Uzbekistan pays significant attention to the development of fishing industry. As a result of implementation of the “Programme of measures on developing the fishing industry in years 2009-2011”, certain positive results were achieved: fishing catches in natural waterbodies has increased, as did the volume of fish stocking in natural waterbodies. It is necessary to strengthen this positive trend and continue regular measures on conservation and reproduction of fish resources, introduce practices of fish catching at leased waterbodies based on quota and scientifically proved assessment of their preproduction.

Hunting grounds include lands in Uzbekistan that have commercial value, except those pertaining in protected natural areas, industries, transport, recreation zones, etc.

Hunting resources of Uzbekistan are mainly concentrated in the lands of the forest fund and hunting grounds. In 2011, the area of grounds allocated to hunters (Uzbekohotrybolovsoyuz, the Department of Reserves, National Parks and Hunting Economies of the Main Forestry Department under MAWR) for management of hunting and fishing activities has reached 3776,4 ha. In order to organize activities aimed at maintaining of population size of hunted animals, their registrations are carried out annually on the entire territory of the forest fund and hunting groundings.

The populations of main hunted species: waterbirds, chukar partridges (or chukars), pigeons, hares and other animals are stable in the allocated hunting grounds within the following range: waterbirds - 2-2,5 million; chukar partridges (or chukars) - 250-400 thousand; pigeons - 600-1000 thousand; hares - 50-150 thousand individuals (Tab. 9).

Hunting quotas are approved on a yearly basis by the State Committee for Nature Protection in accordance with the Academy of Sciences of the Republic of Uzbekistan (under decision of the Interdepartmental commission on annual quotas for biological resources use). Determination of quotas for hunting of different animals is the most effective mechanism directly affecting the level of poaching. However, the use of hunting resources is not homogenous throughout the country. The determined hunting quota is used annually for only 20% on average.

Development of this activity requires conservation of populations of hunted species, as well as a comprehensive approach to the organization of amateur and licensed hunting that generates profit for local residents too.

Table 9.

Hunting for main species of animals in hunting grounds of Uzbekistan (numbers/hunted)

Years	Wild boars (thousand heads)	Chukars (thousand heads)	Ducks (thousand heads)	Pheasants (thousand heads)
2008	2,3 / 20	206,1 / 2,54	2144,1 / 29,6	174,7 / 1,5
2009	1,6 / 20	278,2 / 6,5	1691,0 / 27,4	168,8 / 1,0
2010	1,7 / 28	316,0 / 5,52	1701,7 / 31,5	150,0 / 1,4
2011	1,7 / 32	354,1 / 4859	2394,1 / 37,2	144,6 / 1,1

There is a high demand for medicinal and food raw materials of wild plants in Uzbekistan. The main procurer of the raw materials is the Industrial Union "Shifobakhsh" under the Main Forestry Department of the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan. The norms of procurement of wild medicinal and food plants, as well as the technical raw materials made from plants, are approved annually by the State Committee for Nature Protection of the Republic of Uzbekistan on the basis of opinion of the Academy of Sciences of the Republic of Uzbekistan. Data on the procurement volumes of plant raw materials are presented in Table 10.

Table 10.

Comparative data on volumes of procurement of plant raw materials (tons) in 2006-2010

Name of procurement	2006	2007	2008	2009	2010
Normative procurement (quota)	1052,92	1930,47	2626,02	3369,1	4355,36
Actual procurement	819,13	894,6	1109,3	845,48	1927,9

Possible changes in the sphere of biodiversity and their consequences

Conservation of biological diversity in Uzbekistan and assurance of its sustainable use are of the priority directions in the state environmental policy.

In order to achieve a significant reduction of current rate of biodiversity loss at the national level, it is necessary to: a) develop a legislative framework and mechanisms of its implementation; b) improve the system of coordination, cooperation, resource support and measures of incentives; c) develop biodiversity monitoring system and introduce approaches of sustainable use of biodiversity; d) conduct economic assessment of biodiversity and ecosystem services.

Currently, the following measures on resolution of the existing issues for conservation and sustainable use of biodiversity are undertaken in the Republic of Uzbekistan:

1. Several legislative acts have been adopted in 2014, including:
 - Amendments and additions to the Laws of the Republic of Uzbekistan on «Nature Protection» and «Protected Areas» stipulating inclusion of biospheric reserves into PAs list, determining legal grounds for organizing works and activities in such areas. Amendments have been also made to Laws of the Republic of Uzbekistan on «Protection and Use of Flora» and «Protection and Use of Fauna», providing improved measures on using flora and fauna;
 - Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 137 of June 2, 2014 on «Certification procedure of the Protected Areas», stipulating a unified form of passports of the Protected Areas and establishing the unified standard of passports. In addition to this, Protected Areas' register and database have been created;
 - Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 144 of June 6, 2014 on «Creation of “Durmen” National Park», providing legal basis for conservation, reproduction and rational use of unique and valuable plants of this area;
 - Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 211 of June 8, 2014 on «Concept of Development of Botanical Garden under the Institute for Flora and Fauna Gene Pool of the Academy of Sciences of the Republic of Uzbekistan in 2014-2017», that aim at enhancing research activities in the domain of conservation of flora in the Botanical Garden;
 - Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 299 of October 27, 2014 on «Regulation of biological resources use and licensing procedures to use flora and fauna sites», which revise and improve procedures on flora and fauna use, licensing procedures in the sphere of international trade of wild flora and fauna species, in line with the CITES Convention;
 - Joint Resolution of the State Committee for Nature Protection and the Ministry of Agriculture and Water Resources # 92/1 of May 8, 2014 on «Rules of regulations of distribution and population size of certain wild plant species», allowing a unified approach to regulate distribution and population size of some poisonous, narcotic, quarantine, weeds and other wild plants, facilitating natural regeneration of plough lands, hayfields and pastures. List of such plants was created and used as a basis to develop measures to combat them by means that exclude harming other plants and other natural entities, and ensure security of natural flora communities and their habitats;

2. Proposals for amendments and additions to some legal acts of the Republic of Uzbekistan on conservation of biological diversity, stipulating enhanced measures on conservation, reproduction and restoration of flora and fauna, introduction of principles of flora and fauna sustainable use in line with the Convention on Biological Diversity, and specification of forms of involvement of civil society and NGOs, as well as assurance of assessment of impact of any planned or carried out activities on flora and fauna in process of the state environmental inspection;
3. The process of adaptation of the CBD Strategic plan for the years 2011-2020 to national conditions and development of national targets and objectives in the sphere of conservation and sustainable use of biodiversity as the conceptual basis for the new version of the National Biodiversity Strategies and Action Plans (NBSAPs) is being completed.
4. Scientifically grounded methodological and conceptual basis for the development of the system of PAs was developed. A Project of “Programme on establishment of PAs system”, which envisages the expansion of the PAs areas from 2,3 mln ha to 8,1 mln ha (which is about 17% of the territory of Uzbekistan) and creation of new and expansion of existing PAs (in total, 29 protected areas), which will provide the coverage of all natural systems of Uzbekistan with PAs, has been submitted.
5. Actions are carried out in order to mainstream the principles of biodiversity conservation into the oil-and-gas sector in Uzbekistan. This initiative is unique in Central Asia. Specific steps include: (i) assurance of political, legislative and institutional conditions for integration of the system of biodiversity conservation into oil-and-gas sector; and (ii) demonstration of technologies of implementation of a system of biodiversity conservation during the exploration of oil-and-gas deposits on Ustyurt Plateau. Implementation of these measures will ensure stability of population sizes of a number of rare and endangered animal species, including the Houbara bustard, the Caracal, the Gazelle (*Gazella subgutturosa*), Ustyurt urial and Saiga antelope.
6. Since the development of the Third National Report on Conservation of Biodiversity (2006), political and legal frameworks on nature protection, organizational mechanisms and mechanisms of cooperation are being improved continuously in the country.

PART II. NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (NBSAP), THEIR IMPLEMENTATION AND PROVISION WITH REGARD TO BIODIVERSITY ISSUES

The Republic of Uzbekistan has been a Party of the UN Convention on Biological Diversity (CBD) since July 7, 1995. As a first step towards implementation of the CBD obligations, the “National Strategy and Action Plan on conservation of biodiversity” was developed and approved by the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 139 of March₁, 1998.

The goal of the National Strategy on conservation of biodiversity was to ensure the development of the integrated guidelines and planning framework on biological resources management in Uzbekistan. In order to provide the practical implementation of the National Strategy, the National Action Plan on Biodiversity Conservation, which envisages the connection with sectoral, intersectoral and territorial (regional and local) management plans, has been developed.

According to the First NBSAP, the priority (strategic) national targets (ST) in the sphere of biodiversity management were

ST 1: Improvement of the system of the protected areas (PAs), including organization of ecologically sustainable and diverse PAs system, which covers at least 10% of the territory of Uzbekistan;

ST 2: Awareness of society, public participation and education to achieve adequate understanding and recognition of the importance of biodiversity for the sustainable development of Uzbekistan;

ST 3: Sustainable use of biodiversity resources to achieve the maximal meeting of economic, scientific, recreational and cultural demands of all people in Uzbekistan, providing simultaneous conservation of biological diversity and viability of ecosystems in the long-term perspective;

ST 4: Implementation of regional and local Action Plans on biodiversity in the context of the general framework of the Action Plan development; development of regional and the republican (in Karakalpakstan) Action Plans, which reflect more specifically regional and local demands and problems;

ST 5: Coordination of international relations and assistance in the sphere of biological diversity by way of the development of an organizational structure on professional and managerial issues compatible with international and regional legislation and agreements on biodiversity (CBD, the Ramsar Convention, the Bonn Convention, CITES, etc.).

Following the development and implementation of the First NBSAP, a significant progress has been achieved in conservation and sustainable use of biological diversity in the Republic of Uzbekistan.

As a result of measures, undertaken by the government, a legal framework, which includes over 30 legislative acts and about 100 subordinate legislative acts on environment protection, conservation of biodiversity and use of natural resources has been developed.

Since then, a progress has been achieved in the sphere of PAs’ expansion and development, total area of which has been expanded to almost 70 thousand ha., material and technical capacities of 10 main PAs have been enhanced. Ex-situ nurseries for rare and endangered species have been created. Several areas have been included into the List of Wetlands of the Ramsar Convention.

Medium-term National Environmental Action Programmes (EAP). The EAP has become an important tool for environment protection policy of Uzbekistan. The Programmes are aimed at ensuring benign environmental conditions, stability and security of environment, sustainable use of natural resources, and introduction of ecological basis of sustainable development into sectors of economy. If the total budget that was allocated on the EAP in 2008-2012 has amounted to 640 mln. USD, then on implementation of the recently adopted EAP 2013-2017, the Government has allocated an amount of about 2 billion USD.

Education and public awareness activities have been carried out; Programme and Concept on «the Development of environmental education, training and retraining of environmental specialists, as well as perspectives of improvement of professional development system of the Republic of Uzbekistan» have been prepared.

Special focus is made on scientific research activities. Over the last five years, scientific research was carried out to define globally significant and unique landscapes and natural systems of Uzbekistan with the purpose of their protection.

International projects (GEF, WB, UNDP, WWF, etc.) that have been carried out in Uzbekistan, contributed to the implementation of the first NBSAP targets, addressing specific objectives in the sphere of biodiversity conservation and its sustainable use (Thematic insert 7).

Currently, in the context of to the CBD obligations, namely in compliance with the article 6 of the Convention and the decision X/2 of the Conference of Parties (COP), the Government of the Republic of Uzbekistan with support of GEF and UNDP is updating the National Biodiversity Strategy and Action Plan.

The basis of the renewed Strategy will be the development of the national strategic targets (ST) and objectives aimed at conserving and sustainable using of biodiversity, supporting ecosystem products and services, integrating biodiversity aspects into sectoral planning.

Achievements

Political frames

Ecological policy of the Republic of Uzbekistan is aimed at the transition from protection of the selected nature entities to the overall protection of natural ecosystems and guarantee of optimal parameters of human habitat. The implementation of such a transition is one of the conditions of the sustainable development of the economic and commercial systems of the country and of the society in general.

Provisions of the First National Biodiversity Strategy has been included in the national policy documents. Measures that are envisaged under the Action Plan were included into the other national documents on planning and actions, including the Environment Action Programme Task Force (EAP Task Force) and plans of activities of implementation of the EAP Task Force (Thematic Insert 3).

Thematic insert 3. Policy documents

The regulations of NBSAP were reflected in the following program documents:

- ✓ The Programme on Development of School Education (2004-2009);
- ✓ The National Programme for Personnel Training (1998-2009);
- ✓ The Investment Programme of the Republic of Uzbekistan (2006-2008);
- ✓ The Welfare Improvement Strategy (2008-2010);
- ✓ The Action Plan for Environment Protection of the Republic of Uzbekistan (2007-2012);
- ✓ The State Programme for the Amelioration and Improvement of Irrigated Lands (2008 to 2012);
- ✓ The State Programme on Measurements of Fisheries Sector Development in the Republic of Uzbekistan (2009 - 2011);
- ✓ The Investment Programme of the Republic of Uzbekistan 2009-2011;
- ✓ The State Programme for the National Environment Monitoring in the Republic of Uzbekistan (2011-2015);
- ✓ The Programme for Science and Technology Development (2012 – 2014);
- ✓ The Investment Programme of the Republic of Uzbekistan (2012-2014);
- ✓ The Action Plan for Environment Protection in the Republic of Uzbekistan (2013-2017);
- ✓ The Welfare Improvement Strategy of the Republic of Uzbekistan (2013-2015);
- ✓ The State Programme for the Amelioration and Improvement of Irrigated Lands 2013-2017;

and other sectoral programmes, which serves as the mechanisms of implementation of national planning strategies

Currently, a long-term Strategy of National Development “Vision 2030”, National Programme for Combating Desertification, Land Degradation and Drought, and Programme for Forestry Development are being developed in the Republic of Uzbekistan. In these documents, it is noted that one of the key objectives for the development of the country is the provision of sustainable use of environment and natural resources in Uzbekistan, and their effective protection to ensure the economic prosperity of the country. The conservation of biodiversity and provision of sustainable use of biological resources is recognized as one of the most important conditions of ecological sustainability.

It is important to note that the conservation of biodiversity and restoration of biological resources, along with others, have been included in the official document of the sixty eight’s session of the UN General Assembly «Programme of measures on eliminating the consequences of the drying up of the Aral Sea and averting the catastrophe of the ecological systems in the Aral Sea region» (17 September 2013, New York).

Legislative framework

Juridical and legislative basis of activities in the sphere of nature management include more than 130 laws and legal acts, most of which are directly or indirectly connected with biodiversity issues.

Thematic insert 4. Legislative framework

In 1992, the Law of the Republic of Uzbekistan «On nature protection», which stipulated legal, economic and organizational grounds for environmental conservation and rational use of natural resources, has been adopted. It also provided guiding lines for the development of environmentalist legislation in Uzbekistan. In the years that followed, a number of laws were adopted, which regulate directly the relations in the sphere of environmental protection activity and rational use of natural resources (i.e. «On state sanitary inspection» (1992), «On water and water use» (1993), «On protection of the atmospheric air» (1996), «On protection and use of flora» (1997), « On protection and use of fauna» (1997), «Land code» (1998), «On state land cadastre» (1998), «On forest» (1999), «On safety of hydrotechnical facilities» (1999), «On protection of population and territories from natural and technogenic emergency situations» (1999), «On state cadastres» (2000), «On ecological expertise» (2000), «On waste products» (2002), «On subsoil» (2002), «On protected areas» (2004), «On ecological control» (2013), etc.).

The national legislative system in the sphere of environmental management continuously improve. Many important aspects of the state management, use and protection of environmental components are regulated by subordinate legislative and normative acts.

In the last few years, the following Resolutions have been passed:

- ✓ Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 203 of September 9, 2008 “The forest protection regulation” determines the main objectives for the protection of forest resources;
- ✓ Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 276 of December 20, 2008 “On measures of increasing the effectiveness of Houbara bustard breeding in the territory of the Republic of Uzbekistan” is aimed at creation of artificial conditions for breeding of rare endangered bird species included into the Red Data Book, conservation of gene pool and increase of their population;
- ✓ Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 243 of August 26, 2011 “On creation of Lower Amudarya biosphere reserve” regulates the creation of a new type of the protected areas, which enables to combine nature objectives for conservation of nature with those aimed at enhancing of living standards of the local population.
- ✓ Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 137 of June 2, 2014 on «Certification procedure of the Protected Areas» has been passed, prescribing a unified form of PAs passports administration with a unified standard of passports. In addition to this, PAs register and database have been created;
- ✓ Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 144 of June 5, 2014 on «Creation of “Durmen” National Park» has been adopted, providing legal basis for conservation, reproduction and rational use of unique and valuable plants of this area;
- ✓ Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 211 of August 1, 2014 on «Concept of Development of Botanical Garden under the Institute for Flora and Fauna Gene Pool of the Academy of Sciences of the Republic of Uzbekistan in 2014-2017» has been passed, that aimed at enhancing research activities in the domain of conservation of flora in the Botanical Garden Resolution of the Cabinet of Ministers # 299 of October 27, 2014 on «Regulation of biological resources use and licensing procedures to use flora and fauna sites», which revise and improve procedures on flora and fauna use, licensing procedures in the sphere of international trade of wild flora and fauna species, in line with the CITES Convention;
- ✓ One of the recently adopted laws is the law “On ecological control” (2013). The objects of the ecological control are land, its subsoil, waters, flora and fauna, atmospheric air, natural and technogenic sources of the environmental impacts, as well as activity, actions or omissions that can lead to the environmental pollution and unsustainable use of natural resources, or can endanger the life and health of humans. The regulations of this law will enable the increase in the effectiveness of ecological control, coordination of activities of state agencies and civil institutions in this sphere, as well as promotion of the role of self-governance bodies of citizens, NGOs and other public organizations by involving them in the implementation of the effective ecological control and decision-making on the most important state programmes in the sphere of environment protection and public health;
- ✓ Besides, amendments and additions that have been made to laws on «Environment Protection» and «Protected Areas» prescribe inclusion of biospheric reserves into PAs List, provide legal grounds for organizing activities in such areas. The changes have also been introduced to laws on «Protection and Use of Flora» and «Protection and Use of Fauna», that provide improvement of measures on use of flora and fauna;

- ✓ The State Committee for Nature Protection of the Republic of Uzbekistan jointly with the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan have developed the “Programme on creation and expansion of the network of protected areas (PA) in the Republic of Uzbekistan 2014-2023”, which is in the process of coordination and approval;
- ✓ A normative document “Provision of the procedure of development of PA management plans” was approved by the Resolution of the State Committee for Nature Protection and registered at the Ministry of Justice in February 2012. This document took effect in 2013 and is mandatory for the departments responsible for PAs management. The development of management plans contributes to the identification of short-term and long-term priorities for each PA and a better coordination of actions among all PAs in the country.

In the context of preparation of national and sectoral programs on development, national reports as well as in the course of implementation of international projects in the sphere of environment protection, the analysis of legislation is made and recommendations for its improvement are developed.

Currently, the State Committee for Nature Protection, supported by GEF and UNDP, has developed amendments and supplements to 12 laws in order to include the principles of biodiversity conservation and a more specific reflection of principles “avoid-mitigate-restore-compensate” into the mining sectors of economy, including the development of norms and methodology for identification of an indirect negative impact on flora and fauna

Organizational mechanisms

One of the priority actions of Parties of the CBD Convention is a creation, development and involvement of organizational, institutional and human resources capacities.

The established institutional structure for implementation of the CBD in Uzbekistan is improved in the course of implementation of the assumed obligations. At the same time, mechanisms of interaction with other ecological conventions are improved. The Oliy Majlis, the Cabinet of Ministers, the State Committee for Nature Protection, the Ministry of Economy, the Ministry of Finance, the Ministry of Agriculture and Water Resources, the Goskomzemgeodezkadastr, the Uzhydromet, the Academy of Sciences, the Ecological movement and other environmental NGOs are among the main partners, which form the institutional framework for implementation of obligations to the CBD.

State Committee for Nature Protection is responsible for keeping a unified database on environment monitoring based on 91 ecological indicators, six of which relate to the biodiversity issues. The established information data bank is regularly updated with the data coming from the relevant ministries and agencies.

A number of ministries and agencies are involved in the monitoring studies, in particular in the studies on the counts of population sizes and peculiarities of distribution of biodiversity components in Uzbekistan. The existing structures of biodiversity monitoring in Uzbekistan are given in the Annex 2.

In compliance with the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan # 343 of September 5, 2000 “On Procedures of maintenance of the state cadastre of flora and Procedure of maintenance of the state cadastre of fauna in the Republic of Uzbekistan”, the State Committee for Nature Protection has been appointed as responsible for the development and update of these two cadastres.

In 2006, Department for Monitoring and Cadastre was established under the State inspection for protection and rational use of flora and fauna and nature reserves of the State Committee for Nature Protection. The employees of this department prepared maps of plant communities of Jizzak

and Navoi provinces, conducted the inventory of the wild life in two territories of the Republic of Karakalpakstan and made reports on the fauna of Kashkadarya and Surkhandarya provinces.

The counts of populations of hunted animals are conducted by the main users of fauna – the society of hunters and fishers of Uzbekohotrybolovsoyuz and by Hunting Board of the Department of nature reserves, national parks and hunting of the Main Forestry Department under the Ministry of Agriculture and Water Resources, etc.

For the purpose of sustainable use of flora and fauna resources, the Academy of Sciences of the Republic of Uzbekistan provides recommendations on the volumes of quotas of annual withdrawal of hunted, commercial and rare (for scientific purposes) species. The quotas for yield are established for (i) licensed animal species, (ii) animals hunted in significant numbers, (iii) for particular rare and not numerous species. Based on these recommendations, the State Committee for Nature Protection prepares proposals on quotas for hunting the wild animals and harvesting wild plants, distribute the approved quotas by regions and nature users, and control their use.

There is a specific institutional and legal basis of development of protected areas in Uzbekistan. The management of protected areas is carried out by several agencies: the Ministry of Agriculture and Water Resources, the State Committee for Nature Protection, the State Committee for Geology and Mineral Resources and Tashkent regional municipality. The existing system of the protected areas plays an important role in conservation of biodiversity, its separate components, ecosystems and habitats.

Protected areas serve as a natural basis for a significant number of scientific studies and observations. In a number of nature reserves (zapovedniks) and national parks there are scientific departments, the main objectives of which is to carry out a set of observations mainly included in the Chronicle of Nature, which regulates objects, amount and methods of scientific observations.

In order to increase forest lands, the Main Forestry Department takes measures on conservation of available biological diversity (Tab. 11).

Table 11.

Main indicators of development of the Main Forestry Department in the period from 2007 to 2011 (actually achieved indices)

Indicators	Units	2007	2008	2009	2010	2011
Reforestation and protective forest-growing (sowing, planting, assisting in natural reforestation)	Thousand ha	42,3	42,4	42,4	42,5	42,8
Including in the exposed bed of the Aral Sea	Thousand ha	14,5	14,9	15,2	15,3	16,7
Growing of planting stock (seedlings, young plants)	Million pieces	47,1	49,8	50	50,1	50,2
Procurement of forest seeds	Tons	297,8	155	141	139	143
Procurement of medicinal and food plants	Tons	272,2	292,5	318,9	314,6	280,5
Terrestrial annihilating measures of control	Thousand ha	23,4	23,5	23,5	24,4	24,8
Sanitary felling	m ³	5371	5308	5427	5450	3662
Reforestation and forestry felling	m ³	23315	19727	19934	20315	16850

Currently, forestry farms of the Republic carry out sowing (in the area of about 43 thousand ha), planting of forest (in the area of 20 thousand ha) and assist in natural rehabilitation of forests (in the area of 16 thousand ha).

Raising public awareness

In Uzbekistan massive campaign on raising public awareness about biodiversity is conducted by means of information campaigns, mass media, publications, organization of workshops, distribution of thematic information, etc.

Important national information documents published periodically by the State Committee for Nature Protection are “National Reports on the state of natural environment and use of natural resources in the Republic of Uzbekistan (NRSNE) (1991, 1995, 1998, 2002, 2005, 2008, and 2011). These reports are prepared using summarized data provided by structural departments of the State Committee for Nature Protection, ecological information from relevant ministries and agencies, international projects and organizations. The materials of reports are available to a wider range of committed stakeholders. They play an important role in the processes of informing, educating, and training as well as planning and sustainable management of biological resources included in the NBSAP targets.

At the same time, legislative documents adopted over the past years, for instance, laws of the Republic of Uzbekistan «on Environmental Control» and «on Social Partnership» ensure wide access for public to environment protection activities, access to information about public administration activities that ensure transparency of their activities.

In Uzbekistan, different information materials are published. The State Committee for Nature Protection of the Republic of Uzbekistan is the founder of the ecological publishing company “Chinor ENK”. The journal *Ecologicheskyy Vestnik* (Ecological Bulletin) is published on a regular basis. 3 thousand copies of the journal are printed out bimonthly since 1995 and every month since 2006. More than 70 publishing titles with the overall circulation of over 100 thousand copies have been printed out.

In order to create a sustainable basis for ecological knowledge, in Uzbekistan work is carried out on introduction of ecological aspects, including biodiversity, into educational programs.

Thematic insert 5. Raising public awareness

The State Committee for Nature Protection prepared and published a number of editions on the ecological subject: «Educational aid for school children of 5th and 6th forms», «Uzbek-Russian-English ecological dictionary», «The Red Data Book « (volumes 1 and 2), «Report on the state of natural environment and use of natural resources in the Republic of Uzbekistan in 2005-2006», booklets «Sarmishsai», «Gissar nature reserve», photo-album within the series of «Protected natural areas in Uzbekistan», the book «Nature reserves (zapovedniks) and national parks», «A popular ecological encyclopedia» (volumes 1 and 2), «A brief reference guide of waterfowl Gallinaceae and Columbidae birds», posters «The Deer Day», «Save the trees», «The Earth, the bread winner of people», «Education for the benefit of sustainable development».

A monthly TV program “Odam va Olam” (Man and World) that was devoted to ecological problems of Uzbekistan was opened on the First TV Channel of in Uzbekistan; . Contacts were made with information programs of television, such as “Akhborot”, “Davr” and “Poytakht”, which highlight workshops, presentations and conferences organized by the State Committee for Nature Protection. Besides, raids organized by the Administration for protection of fauna and flora of this Committee, received an extensive media coverage, which highlight detainments of poachers catching fish during the spawning and illegal felling of trees.

Radio channels “Dustlik”, “Masha” and “Yoshlar”, and private radio channel “Poytakht” broadcast monthly radio programs “Human and Nature”, “Youth in nature protection”, “Ecology news”, etc. Business contacts are made with the journalists of the newspapers “Narodnoe slovo”, “Khalk suzi”, “Uzbekiston ovozi”, “Pravda Vostoka” and “Mohiyat”.

In the context of the Republican contest of articles «Koplon-2012», a nomination «The best article on protected areas» was established.

The State Committee for Nature Protection and other interested organizations organize annually celebrations with broad participation of general public dedicated to international ecology holidays, such as the Earth Day, the Water Day, the Day of Nature Reserves and National Parks, the World Wetlands Day, the World Environment Day, the World Biodiversity Day, the World day to Combat Desertification, etc.

Mechanisms of cooperation

Uzbekistan is an active participant in regional and international nature conserving processes. Cooperation is carried out through implementation of multilateral environment protection agreements (i.e. global ecological conventions, bilateral and multilateral agreements and memorandums), and by participation in regional and international projects and programs.

Thematic insert 6. International agreements

The Republic of Uzbekistan is a Party in a number of Conventions that directly relate to biodiversity:

1. Convention on Biological Diversity – (17.10.1995 – adhesion);
2. Convention on International Trade in Endangered Species of Wild Fauna and Flora (01.07.1997 – adhesion);
3. Convention on the Conservation of Migratory Species of Wild Animals (01.05.1998 – adhesion);
4. The Ramsar Convention on Wetlands of International Importance, especially as Waterfowl Habitat (30.08.2001-adhesion).

A list of objects of nature heritage of the Republic of Uzbekistan was developed and submitted to the UNESCO Committee. The list included six nature objects: the Mountainous Gissar, Chatkal Biosphere Reserve, Zaamin Mountains (Zaamin Nature Reserve and Zaamin Nature Park), Shakhimardan, Baisun district, and Sarmyshsai. Chatkal State Biosphere Reserve (as part of trans-boundary nomination Western Tien Shan) is also included into the Preliminary list of UNESCO for consideration of the question on nomination.

Thematic insert 7. Main goals and results of the international projects in the period from 2007 to 2014:

1. International program «Important Bird Areas» (IBA, 2005-2007). The goal of the program is conservation of the entire complex of natural habitats by using birds as indicators of the state of environments. In the context of the project, field studies were conducted and detailed descriptions of 48 important bird areas of Uzbekistan were made. The information of thirty areas of them was entered into the international data base Bird Life – World Biodiversity Data Base;
2. UNDP/GEF project «Conservation of Tugai Forest and Strengthening Protected Areas System in the Amu Darya Delta of Karakalpakstan» (2005-2012). The goal of the project was to strengthen the system of the protected areas in Karakalpakstan by improving favorable environment, management and creation of a multi-zonal protected area, which will help to demonstrate conservation and sustainable use of biodiversity in the delta of the Amudarya River with participation of all committed stakeholders. The Lower Amudarya biosphere reserve with different functional zones was established (Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No 243 of 26 August 2011), which enables the combination of environmental protection with the development of local economy;
3. Second National Communication of the Republic of Uzbekistan under the UN Framework Convention on Climate Change (2NC- UNFCCC, 2008). The goal of national communications on climate change is the assessment of these changes at the national level and measures that Uzbekistan undertakes to implement the obligations of UNFCCC. It was revealed that bird and mammals species from steppe and semi-desert faunistic systems that showed the southernmost border of distribution in the region has significantly moved northwards to the point of withdrawal from the fauna;
4. UNDP/GEF project «Strengthening Sustainability of the National Protected Area System by Focusing on Strictly Protected Areas» (2008-2014). The goal of the project is to strengthen the system of protected areas in Uzbekistan through the demonstration of new management approaches. The project developed a “Master Plan” in order to increase the effectiveness of PAs system including mid- and long-term prospects in this sphere. Twenty-nine areas were recommended for creation of new and expansion of existing PAs;
5. The Biodiversity International/UNEP/GEF project: «In situ conservation of crop wild relatives through enhanced information management and field application». The goal of the project is conservation of wild relatives of agricultural crops in Uzbekistan through the strengthening of information management and its practical application. In the context of the project national information data base was created and the «National strategy and action plan on conservation of regional agricultural biodiversity and wild relatives of cultured plants» was developed;

6. Project «In Situ/On-Farm Conservation and Use of Agricultural Biodiversity (Horticultural Crops and Wild Fruit Species) in Central Asia» (2006-2012). The goal of the project is to conserve the rich diversity of fruit cultures and their wild relatives in the countries of Central Asian, as well as the conservation of the gene pool, which is a valuable source of genetic resources of plants for breeders, scientists and local residents, whose income depend on these cultures. As a result of the project, s, the norms and tools for the transfer of germplasm and planting stock, which serve as the basis for the exchange of knowledge and resources for regulation of cooperation between people giving knowledge and genetic resources with their recipients, were developed;
7. UNDP/GEF project «Mainstreaming Biodiversity into Uzbekistan’s Oil and Gas Sector Policies and Operations» (2010-2015). The goal of the project consists in mitigation of the negative effect of the existing and future explorations of oil-and-gas deposits on biodiversity for the purpose of improvement of prospects to conserve the disturbed ecosystems. The territory to which the scheme of compensation for damage is applicable has been identified in the project; the establishment of a protected area to conserve the saiga population is planned;
8. European Union «Forest and Biodiversity Governance, Including Environmental Monitoring: FLERMONECA» (2014-2015). The goal of the project is to assist legal and sustainable methods of forestry management and find solutions of problems in the sphere of forestry in order to increase the living standards of local residents;
9. GEF/UNEP project «Conservation and sustainable use of agricultural biodiversity to improve regulating and supporting ecosystem services in agriculture production in Uzbekistan» (2014-2015). The goal of the project is to mainstream the conservation and use of fruit trees for the improvement of regulatory functions of ecosystems and improvement of sustainability of traditional agricultural production systems under conditions of low water level;
10. The GEF Small Grants Program (since 2008 to the present). One of the focus directions in the activities of the GEF SGP is the conservation of biodiversity through the reduction of pressure on ecosystem and habitats of important biological species caused by the activities of local residents. Since the beginning of the program, fourteen projects on biodiversity have been implemented.

Financial mechanisms

The funding of measures connected with biodiversity conservation and its sustainable use are carried out through:

- Targeted funding from the republican and local budgets, as well as from the funds of ministries, agencies and enterprises (nature users);
- Financial support (full support or with the state contribution) as direct investments of foreign governmental and non-governmental organizations, international foundations (including GEF, FAO, ADB and others) on tender or grant basis;
- Full or shared sponsorship from regional funds for nature protection or Republican Fund for Nature protection under the State Committee for Nature Protection;
- Funding through public foundations (e.g., the public fund for support of NGOs and other institutes of civil society under Oliy Majlis of the Republic of Uzbekistan).

Integrating biodiversity issues into national and sectoral development plans of Uzbekistan

Favorable environment for mainstreaming biodiversity issues into national and sectoral development plans has been created in Uzbekistan. The necessity of actions in this direction is included in such national strategic program documents as the National Action Plan for Environmental Protection (1998); National Action Programme to Combat Desertification (1999); National strategy for sustainable development (2000); Agenda-21 for Uzbekistan (2000); Welfare Improvement Strategy of Uzbekistan for 2013-2015, etc.

The practical implementation of conceptual directions fixed in these documents was reflected in the Environmental Action Programs of the Republic of Uzbekistan for the years 1999-2005, 2008-2012 and 2013-2017 in the course of planning and implementing sectoral activities and improving legislative mechanisms of implementation.

The necessity of conservation and sustainable use of biodiversity are declared in politically important national program documents and are reflected, for example in the, activity of “LUKOIL Uzbekistan Operating Company”, which has developed and carries out the operational departmental plan of measures on conservation of biodiversity for the years 2014-2016. This plan includes the regulations on monitoring, reporting, labeling of biodiversity in the contract territories, measures of re-cultivation of the territory, restoration of original dominant plants, informing of local residents on the questions of company activities, including conservation of biodiversity.

A wide range of activities on conservation of biodiversity during the construction is also reflected in the “Action plan on biodiversity conservation” prepared by the “Uz-Kor Gas Chemical” JV LLC in the context of Surgil project on construction of a plant for manufacturing polyethylene and polypropylene using gas from the developed Surgil gas deposit in Karakalpakstan. The Action Plan on biodiversity conservation was developed in order to take into account the issues of biodiversity conservation on the territory of the project and on the adjacent territories as well. This plan was developed in compliance with the requirements of the national legislation; it corresponds to international ecological demands and advanced practice. It includes implementation of measures to mitigate risks, compensate and conserve biodiversity, as well as creation of a monitoring system and programme of assessment of biodiversity conservation.

Measures that support biodiversity, are carried out by the departments of Ministry of Agriculture and Water Resources. These include forestation, improvement of hydrologic infrastructure, diversification of the structure of agricultural production, etc.

The enterprises of mining and metallurgic industries carry out re-cultivation of disturbed lands and storing of the fertile layer of soil. The plan of the national company “Uzbektourism” envisages diversification of tourism products, opening new educational routes for familiarization and raising awareness of people about the state and importance of biodiversity.

To further mainstreaming of the biodiversity issues into the sectors of economy, it is necessary to include them in the plans on development of sectors of the economy. Any activity, which can negatively affect the state of biodiversity, natural entities and systems, must be carried out with regard to prevention or reduction of this negative effect, but, if these measures prove insufficient, it is necessary to take a step aiming at restoring of natural entities and systems, and compensate the loss of biodiversity.

Constraints of implementation of NBSAP strategic targets and ways to overcome them

Since its development in 1998, the first NBSAP has played an important role in problem solving that are connected with the conservation of biological diversity of the Republic of Uzbekistan. At the same time, in spite of successful realization of the strategic targets of the first NBSAP, there were a certain number of the restrained factors, also specific for other Central Asian countries:

- 1) Insufficient awareness and understanding of biodiversity problems;
- 2) Insufficient intersectoral involvement and lack of joint planning while development of the NBSAP;

- 3) Insufficient coordination and cooperation in the process of NBSAP implementation;
- 4) Insufficient funding of NBSAP.

The key lessons to be learned from the first NBSAP and taken into account during the development of the Action Plan for updated NBSAP:

- 1) Full compliance with the procedures of elaboration and coordination of the national development plans;
- 2) Including clear distribution of responsibility for its implementation and funding;
- 3) Integrate NBSAP targets into existing plans and priorities of economy sectors.

Mainstreaming of the new NBSAP into existing national frameworks and processes of development is the key element of its successful implementation. It is necessary that the structure and content of the updated NBSAP would take into account all the above mentioned lessons.

PART III. RESULTS OF IMPLEMENTATION OF AICHI TARGETS FOR THE YEAR 2020 ON CONSERVATION AND SUSTAINABLE USE OF BIODIVERSITY AND CONTRIBUTION TO ACHIEVEMENT OF RELEVANT TARGETS OF THE MILLENNIUM DEVELOPMENT GOALS SET FOR THE YEAR 2015

The National Biodiversity Strategy and Action Plan (NBSAP) of Uzbekistan have been developed and adopted by the President of the Republic of Uzbekistan in 1998. This version of NBSAP didn't include some elements of CBD Strategic Plan on achievement of Aichi targets, nor does it correspond to the new directives of the Conference of Parties.

The new CBD Strategic Plan that was approved at the 10th meeting of COP in Nagoya in 2010 reflects the necessity to improve and update NBSAP, and to implement it with a broad participation of all committed stakeholders.

The Strategic Plan covers a wide range of questions, which should be addressed in the updated NBSAP with regard to national priorities: a) a full awareness of the value of biodiversity and ecosystem services and mainstreaming these values into national and local strategies of development and enhancement of standards of living; b) increase in the area of all terrestrial protected areas from 12% to 17%; c) restoration and protection of main ecosystem services particularly in respect of water resources, public health and provision of livelihoods; d) strengthening of ecosystem resilience to climate change.

In 2012, the joint UNDP/GEF/Government of the Republic of Uzbekistan project "National Biodiversity Planning to Support Implementation of the Convention for Biological Diversity 2011-2020 Strategic Plan in Uzbekistan" was launched. In the context of the Project, National targets were developed, which reflected, on the one hand, directions of global Aichi targets to implement the CBD Strategic Plan, and on the other hand, which conformed to the main national priorities in the sphere of conservation and sustainable use of biodiversity, as well as to the available national potential and opportunities.

The implementation of national targets is considered as an algorithm, which allows moving from intentions directly to specific actions and further to measurable results. The preparation of national strategic targets and objectives was carried out by adapting Aichi targets to national conditions on the basis of recommendations of the Secretariat of the Convention, international consultants, members of multilateral work group, specialists from different agencies, and public organizations.

As a result, 4 national strategic goals and 10 National targetswere defined, and implementation results' assessment indicators have been developed, which will serve as a basis for implementation of the updated NBSAP in Uzbekistan (Tab. 12).

Table 12.

NATIONAL TARGETS FOR CONSERVATION AND SUSTAINABLE USE OF UZBEKISTAN BIODIVERSITY AND INDICATORS TO ASSESS THE IMPLEMENTATION RESULTS

#	National targets	Indicators (2020, 2025)
Strategic Goal 1: Mainstreaming biodiversity across the government and society for sustainable development of the country		
1.	By 2025, the national monitoring system is improved and is an integral part of biodiversity and ecosystem services management.	<p>1.1. By 2020, monitoring research and cadastre update of biodiversity components are included into the list of the State's priorities, which are reflected in planning processes;</p> <p>1.2. By 2020, the cadastral works are financed sustainably;</p> <p>1.3. By 2020, the data bases on biodiversity are developed, systematised and regularly updated;</p> <p>1.4. By 2020, information exchange mechanisms in the sphere of biodiversity and ecosystem services (Clearing House Mechanism) are functioning between all the involved parties;</p> <p>1.5. By 2025, the data gathered through monitoring of biodiversity components is applied in biodiversity and ecosystem services management.</p>
2.	By 2025, awareness of the government and society about the value of biodiversity and ecosystem services has significantly risen.	<p>2.1. By 2020, the majority of staff members of relevant ministries and agencies understand the importance of biodiversity and ecosystem services for future development of the country.</p> <p>2.2. By 2025, the majority of staff members of local authorities understand the importance of biodiversity and ecosystem services for future development of the country.</p> <p>2.3. institutions understand the importance of biodiversity and ecosystem services for future development of the country;</p> <p>2.4. By 2025, the majority of teachers of general education institutions understand the importance of biodiversity and ecosystem services for future development of the country;</p> <p>2.5. By 2020, the educational programmes in the sphere of biodiversity are included into the learning process in all educational institutions.</p>
3.	By 2025, national approaches to conduct economic valuation of biodiversity and of the most important ecosystem services, are developed and applied to planning processes	<p>3.1. By 2020, methodology and approaches to conduct economic valuation of biodiversity and ecosystem services are selected and adapted to the national specifics;</p> <p>3.2. By 2025, methods of economic valuation of biodiversity and ecosystem services are developed and adopted on the national level.</p>
4.	By 2025, measures to integrate biodiversity issues into Environmental Impact Assessment procedure (EIA) and to improve the fees for environmental pollution and special use of natural resources with regard to their assessed value are developed and in process of implementation.	<p>4.1. By 2020, the legislation that relate to the Environmental Impact Assessment (EIA) is fully considered the issues of biodiversity and ecosystem services conservation.</p> <p>4.2. By 2020, the schemes to regulate compensation principle for inevitable / residual damage to biodiversity are developed and pilot testing is conducted.</p> <p>4.3. By 2025, the fees for environmental pollution and special use of natural resources are applied without fail based with regard to their assessed value.</p>

Strategic Goal 2: Reducing the direct pressures on biodiversity and sustainable use of its components in productive landscapes

5.	By 2025, a set of measures to reduce the rate of degradation and fragmentation of the most vulnerable natural ecosystems is developed and is in the process of implementation.	<p>5.1. By 2020, the processes of degradation and fragmentation of the most vulnerable natural ecosystems are studied and a set of measures to reduce the rate of these processes is developed;</p> <p>5.2. By 2020, a set of measures to reduce the rate of degradation and fragmentation of the most vulnerable natural ecosystems is included in the process of sectoral planning;</p> <p>5.3. By 2025, activity that is aimed at conserving and restoring natural ecosystems is included into the national action programmes;</p> <p>5.4. By 2025, the share of degraded lands is decreasing or at least it is stabilised in comparison to 2015.</p>
6.	By 2025, the fishing activity in water bodies that have a fishery value, is realized sustainably and legally.	<p>6.1. By 2020, the amendments and adjustments are introduced into the regulations on the fishery activity in comparison to 2015;</p> <p>6.2. By 2025, the productivity of water bodies is increased in comparison to 2015;</p> <p>6.3. By 2025, the sustainable activity to restore fish stocks is being implemented.</p>

Strategic Goal 3: Developing the system of protected areas system to conserve biodiversity and increase the scope of benefits from ecosystem services

7.	By 2025, till 17% of the country's territory is covered by effectively managed natural protected areas (I-IV categories).	<p>7.1. By 2020, the necessary changes and amendments are introduced into the legislation on protected areas;</p> <p>7.2. By 2020, the effectiveness of management of the protected areas system is assessed in accordance with international practice;</p> <p>7.3. By 2025, the total area of natural protected areas (I-IV categories) is increased;</p> <p>7.4. By 2025, the ecosystem representativeness of natural protected areas is increased at least by 10% of the area of each type of natural ecosystems;</p> <p>7.5. By 2025, the system of protected areas includes more unique natural sites in comparison to 2015;</p> <p>7.6. By 2025, the number of rare and endangered species of plants covered by territorial protection (protected areas of categories I-IV) increased to 70%;</p> <p>7.7. By 2025, the number of rare and endangered species of animals that are covered by the territorial protection (protected areas of categories I-IV) has increased up to 90%.</p>
8.	By 2025, the state programme for conservation and sustainable use of agricultural biodiversity is developed.	<p>8.1. By 2020, the national database on agricultural biodiversity is developed and updated on a regular basis;</p> <p>8.2. By 2020, the main habitats of wild relatives of cultivated plants are identified;</p> <p>8.3. By 2025, the state programme of measures for conservation and sustainable use of agricultural biodiversity is developed and is in the process of implementation.</p>

Strategic Goal 4: Enhancing the effectiveness of conservation and sustainable use of biodiversity through participatory planning, capacity building and funding mechanisms development

<p>9.</p>	<p>By 2025, the National Strategy and Action Plan for biodiversity conservation are being implemented as an integral part of plans for national, territorial and sectoral development.</p>	<p>9.1. By 2020, activities within the framework of NBSAP is included into the plans for national, territorial and sectoral development; 9.2. By 2025, activities to conserve biodiversity and maintain ecosystem services is being implemented in relevant economic sectors according to the Action Plan of the National Strategy</p>
<p>10.</p>	<p>By 2025, the activities on conservation and sustainable use of biodiversity and maintenance ecosystem services are financed from state, private and international financial resources.</p>	<p>10.1. By 2020, efforts are made to mobilise financial resources from various sources, including state budget, special funds, private sector, land users and international investments; 10.2. By 2025, financial investments to support biodiversity conservation and maintenance / restoration of ecosystem services are significantly increased in comparison with 2015.</p>

ANNEX 1.

**PROTECTED AREAS OF THE REPUBLIC OF UZBEKISTAN
as of 01.10. 2013**

#	Official name and year of establishment	Location	Area thousand (ha)	IUCN category	Departmental affiliation
State Nature Reserves					
1	Chatkal mountain-forest reserve 1947	Tashkent province, Akhangaran and Parkent districts	35,724	I	Tashkent Regional khokimiat
2	Gissar mountain-juniper reserve 1983	Kashkadarya province, Yakkabag and Shahrisabz districts	80,986	I	State Committee for Nature Protection
3	Zaamin mountain-juniper reserve 1926, 1960	Jizzak province Zaamin and Bakhmal districts	26,840	I	Main department of forestry
4	Kyzylkum tugai-sandy reserve 1971	Bukhara province Romitan district, Khoresm province.	10,311	I	Main department of forestry
5	Zarafshan Valley-tugai reserve 1979	Samrkand province, Bulungur and Jambai districts	2,352	I	Main department of forestry
6	Nurata Mountain - nut-bearing reserve 1975	Jizzak province Farish district	17,752	I	Main department of forestry
7	Surkhan mountain-forest 1987	Surkhandarya province, Termez and Sherabad districts	24,554	I	Main department of forestry
8	Kitab geological reserve 1979	Kashkadarya province Kitab district	3,938	I	State Committee for Geology
Total Nature Reserve:			208,919		
State Natural Parks					
1	Zaamin people's park 1976	Jizzak province, Zaamin district	24,110	II	Main department of forestry
2	Ugam-Chatkal natural national park 1990	Tashkent province, Bostanlyk, Parkent, Akhangaran districts	574,590	II	Tashkent regional khokimiat
Total Parks:			598,700		
State Biosphere Reserves					
1	Lower-Amudarya State Biosphere Reserve 2011	Karakalpakstan Amydarya and Beruni districts	68,7		Main Department of Forestry
Total Nature Parks and Biosphere Reserves:			667,4		
Total:			875,3		
Nature Nurseries					
1	Republican center for breeding of rare animals Ecocenter Djeiran 1976	Bukhara province Karaulbazar district	16,47	IV	State Committee for Nature Protection

2	Nursery for breeding of houbara bustard NGNFPRI «Emirates Bird Breeding Center for Conservation» 2007 r.	Bukhara province Peshkunsky district	0,1	IV	State Committee for Nature Protection
3	Nursery for breeding of houbara bustard, NGO «Emirates Centre for Conservation of Houbara» 2008	Navoi province Karmana district	0,1	IV	State Committee for Nature Protection
Total Nurseries			16,67		
State Reserves (Zakaznik)					
1	Arnasaiskiy 1983	Bukhara province	63,3	IV	"Uzriba" - currently State Committee for Nature Protection
2	Dengizkul 1973	Bukhara province	50,0	IV	State Committee for Nature Protection
3	Kara-Kir 1992	Bukhara province	30,0	IV	State Committee for Nature Protection
4	Saigachiy 1991	Republic of Karakalpakstan	1000,0	IV	State Committee for Nature Protection
5	Sudochie 1991	Republic of Karakalpakstan	50,0	IV	State Committee for Nature Protection
6	Mubareksky 1998	Kashkadarya province	219,534	IV	State Committee for Nature Protection
7	Oktau 1997	Navoi province	15,42	IV	State Committee for Nature Protection
8	Karnabchul 1998	Samarkand province	25,0	IV	State Committee for Nature Protection
9	Koshrabat 1998	Samarkand province	16,3	IV	State Committee for Nature Protection
10	Nurabad 1992	Samarkand province	40,0	IV	State Committee for Nature Protection
11	Kumsulton 2011	Bukhara province Jondor district	4,9	IV	State Committee for Nature Protection
12	Hadicha 2011	Bukhara province Karaulbazar district	11,3	IV	State Committee for Nature Protection
Total Reserves (Zakaznik):			1 525, 754		
Nature Monuments					
1	Vardanzi 1997	Bukhara province	0,32	III	Shafirkan forestry
2	Mingbulak 1991	Namangan province	1,0	III	Regional khokimiat
3	Chust 1990	Namangan province	0,096	III	Regional khokimiat
4	Yaz'yavan 1994	Ferghana province	1,883	III	Regional khokimiat
5	Yangibazar 2003	Khoresm province	0,49	III	Regional khokimiat
6	Paikent	Bukhara province Karakul district	0,03	III	Regional khokimiat
7	Varahsha	Bukhara province Jondor district	0,007	III	Regional khokimiat
Total Nature Monuments			3,8264		

ANNEX 2.

EXISTING STRUCTURES OF BIODIVERSITY MONITORING IN UZBEKISTAN

Taxonomical groups and species – objects of monitoring	Necessary data	Executing agencies	Supervisory agencies	Form of information presentation and possible use of it for the purpose of management
Rare and endangered animal and plant species	Data on the state of species and their habitats; trends in the changes of numbers of species within their distribution; the nature of main impacts on species and their habitats	The Institute of Gene Pool of Plants and Animals of Uzbek AS RUz., State biocontrol of the SCNP	Cabinet of Ministers of the RUz, SCNP, MAWR, PAs system, regional municipalities	Scientific reports, Red Data Book of animals and plants, state cadastres of PAs, flora and fauna, data bases of components of Biodiversity and endangered habitats; the results of monitoring are used for management of PAs, ecosystems and entire systems of biodiversity, for development of programs for optimization of protection and sustainable use
Hunted-commercial species of animals and plants	Amounts of annual catches, data on the state and numbers of species and their distribution in ranges	State biocontrol of the SCNP, The Department of Reserves, National Nature Parks and Forestry Economies of the MFD under MAWR , Uzbekokhot-ribolovsoyuz (Union of Hunters and Fishers of Uzbekistan), AS of RUz	SCNP , State biocontrol of the SCNP, MAWR, system of hunting grounds, forestry farms	Data bases on biodiversity components, annual reports, cadastres of flora and fauna; the results are used for identification of the allowed volumes of bioresources exploitation, for management of ecosystems and sustainable use of resources
Animal species of medicinal importance	Monitoring data on carriers and vectors of important diseases (fleas, ticks), epizootological monitoring of natural nidus	The Center of prophylaxis of quarantine and most important infections, Republican , regional and district sanitary-epidemic centers	Ministry of Public Health, AS RUz Academy of Sciences	Annual reports, long-term forecasts, data bases of vectors and carriers; the results are used for management of short- and long-term forecast of outbreaks of important infections
Crop and wood pests	Data on distribution and levels of damages caused by important pests of crops and wood	The Institute of Gene Pool of Plants and Animals of AS RUz., Republican Center of Plant Protection and Agrochemistry, the Republican Scientific-Industrial Center of Ornamental Horticulture and Forestry of MFD under the MAWR	SCNP , MFD under the MAWR	Scientific reports, publications of monitoring results in scientific editions; The results of monitoring are used for planning of protective measures and in management of agro-biodiversity

Invasive species	Data on the state of numbers of invasive species, identification of trends in area changes, factors determining trends of such changes	The Institute of Gene Pool of Plants and Animals of AS RUz, Scientific-Research Institute of Genetics and Experimental Biology of AS RUz, the Republican Center of Plant Protection and Agrochemistry, the Republican Scientific-Industrial Center of Ornamental Horticulture and Forestry of MDF under the MAWR, Hunting Board	SCNP, the Main State Inspection of Plant Quarantine, MAWR	Scientific reports, scientific publications; The results of monitoring are used in management of ecosystems and the entire systems of biodiversity, for development of programs aimed at optimization of protection and sustainable use; opportunity of development of forecast models
Agro biodiversity	Data on productivity of agro biodiversity, levels and intensity of use of agro biodiversity	Research Institute of Genetics and Experimental Biology of Uzbek Academy of Sciences, Uzbek Research Institute of Plant Growing at Ministry of Agriculture and Water Resources, Scientific-Research Institute of Irrigation and Water problems at Tashkent Institute of Irrigation and Melioration, Uzbek Scientific-Industrial Center of Agriculture at Ministry of Agriculture and Water Resources, Institute of Microbiology of Uzbek Academy of Sciences, State Chemical Commission	State Committee for Nature Protection, Ministry of Agriculture and Water Resources, local communities, local administrations	Annual reports, cadastres of biodiversity; the results are used for the evaluation of importance of agro-biodiversity, development of programs aimed at optimization of protection and sustainable use, in the sphere of improvement of use and increase in the productivity of agricultural lands
Biodiversity of forests	Data on the state of forest fund, processes of degradation of forests, herbal and soil surface, indices of natural restoration of forest resources	The Institute of Gene Pool of Plants and Animals of AS RUz, the Republican Scientific-Industrial Center of Ornamental Horticulture and Forestry of MDF under the MAWR	SCNP, MAWR, PAs system, local administrations, local communities	Annual reports, cadastre of lands; The results are needed for management of reproduction, protection and use of forest resources; for management of processes of degradation of forests in the grounds of long-term use
Biodiversity of medicinal plants, including components of traditions use of biodiversity	Data on distribution, indices of reproduction	The Institute of Gene Pool of Plants and Animals of AS RUz	SCNP, MAWR, Ministry of Public Health, PAs system	Scientific reports; the results are used in management of protected areas and the entire system of floristic biodiversity, for development of ways of medicinal plant use

Pasture resources	Data on the state of herbs and some shrub communities, levels of their diversity and degradation, geobotanical characteristics	-Research Institute of Plant Growing under the MAWR, The Institute of Gene Pool of Plants and Animals of AS RUz	SCNP, MAWR, PAs system, Uzhydromet, local communities	The results are used for management of PAs, for rational organization of pasture rotation, cattle driving, a uniform distribution of loads on pastures, increase in the effectiveness of animal husbandry and in management of the state of herbal ecosystems
Genetic resources	Data on qualitative and quantitative state of genetic resources	-Research Institute of Genetics and Experimental Biology of AS RUz, -Research Institute of Plant Growing at the MAWR	SCNP, MAWR, Ministry of Higher Educational Institutions, AS RUz	Genetic collections; the results are used for creation of new biotechnologies and in management of bioresources
Most important ecosystems	Data on the level of disturbance of important ecosystems, tendencies in changes of their areas, level of ecosystem representativeness of protected areas	The Institute of Gene Pool of Plants and Animals of AS RUz, State biocontrol of the SCNP	The Cabinet of Ministers, SCNP, AS RUz, PAs system, local administrations, Uzhydromet, MAWR	Publications of monitoring results, scientific reports, databases of biodiversity components subject to vanishing; the results of monitoring are used for management of ecosystems and the entire complex of biodiversity, in management of protected areas and for assessment of the resources in the state

