

The Integration of Biodiversity into National Environmental Assessment Procedures

National Case Studies

Kyrgyz Republic

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7 KYRGYZ REPUBLIC

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7.1 Introduction

The Kyrgyz Republic is a newly independent state, located in the centre of Eurasia. It shares borders with Kazakhstan, China, Uzbekistan, and Tajikistan. The Kyrgyz Republic is a small country (198,500km²) dominated by mountains, with over 90% of the country above 1000m altitude. These fragile mountain ecosystems support a unique assemblage of plants and animals. The Kyrgyz Republic has about 2% of the world flora and more than 3% of world fauna. This figure is rather big if we take into account that the country occupies only 0.03% of the whole area of the world or 0.13% of the dry land area.

Since 1991 economic, social and political reforms have been taking place in the country. New political parties and independent mass media have appeared, but economic difficulties still limit their activity. A referendum in October 1998, led to the institution of private property rights in the Kyrgyz Republic.

Agriculture and industry dominate the economy of the Kyrgyz Republic. Arable land represents about 7% of the territory, of which 64% relies on irrigation to enable production. During recent years both these sectors have been seriously damaged by the economic crises associated with political transition.

Today, the population of the Kyrgyz Republic is around 4.6 million people. Overall, 34% of the population lives in urban centres, while the remaining 66% lives in rural areas. For administrative purposes, the country is divided into a series of regions, or Oblasts. Approximately 80% of the population are estimated to live below the poverty level (the official index was 71.3% in 1997). Alongside the growth of poverty, there is an increasing gap between the richest and the poorest in the population, representing a decline in the balance of earnings. The income of the richest 20% of the population is 7.1 times higher than the income of the poorest 20%.

The economic crisis has resulted in both increasing pressures on biodiversity and a reduction in the effectiveness of existing mechanisms for environmental protection. Despite its size, the Kyrgyz Republic has relatively high species-richness; possessing nearly 1% of all known species in just 0.13% of the world's land-mass. Recently declines in many species have become evident, and 9.5% of bird species and 18.1% of mammal species are now considered to be at risk of extinction. A number of rare and valuable ecosystems have nearly disappeared, and forest cover has declined by over half in the last 50 years.

The biological resources of the Kyrgyz Republic play an important role in the economy and traditions of the country. Many species are used directly, either for subsistence or commercial extraction. The country is a centre of origin for domesticated fruit crops, and still possesses a number of wild relatives of these plants (e.g. walnuts, apples, apricots, and pistachio). Natural habitats are a vital part of many traditional land use practices, e.g. grazing which relies on the maintenance of mountain meadows. The loss of biodiversity has both a direct and indirect impact on people's welfare and quality of life – be it changes in water quality, access to natural resources, or erosion of culture and traditions linked to biodiversity. The mountains of the Kyrgyz Republic also play an important role in providing fresh water to other Central Asian countries.

The institutional and administrative base related to biodiversity conservation activities in the Kyrgyz Republic is undergoing rapid transformation. The political and economic changes have meant that most organisations are severely under-resourced and are taking time to adapt to the new situation. Both individuals and organisations involved in biodiversity conservation activities are discovering their new roles in this changing environment: the role of state agencies is becoming more focused; the relatively young NGO movement is becoming more diverse and experienced; and businesses are recognising their social, as well as economic,

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In the Kyrgyz Republic, legal protection of natural resources occurs through a series of laws and legal quotas enforced by the prosecutor's office and courts. In principle, the existing legal base covers all elements of the relationships between nature and society. Regional, interstate co-operation on environmental issues is also developing, and agreements have been signed with a number of other Central Asian states. Ecological legislation in the Kyrgyz Republic comprises ten Laws and 70 Acts which regulate activities connected with biodiversity.

7.2 Biodiversity and ecosystems

7.2.1 Introduction

The Kyrgyz Republic contains a great wealth of biodiversity resources in terms of species, ecosystems and landscapes. Although a small nation by land mass, the Kyrgyz Republic displays a wide variation in elevations and geology, leading to a broad range of habitats, which is reflected in a high diversity of species. The ecosystems represented range from high mountains, to lowland fertile plains and large freshwater systems. The character of biodiversity in the country reflects the high altitude of much of the land, being dominated by montane and alpine species. A range of factors over the last century have had an impact on biodiversity in the Kyrgyz Republic, resulting in declines in many groups, and leading to concern for a growing number of species, including key ones of economic importance. In total, 20 different classes of ecosystem are recorded in the Kyrgyz Republic. Most of these ecosystems (14 or 63.6%) are found between 2000-3000 m altitude, although only 30.8% of the territory lies within this range. Furthermore, the range of ecosystems is not evenly distributed throughout the country. Sixteen ecosystems (72.7%) are found in Western and Central Tien Shan, while the Ferghana valley and Southern Kazakhstan biogeographic region have the fewest ecosystems, three and five respectively. Thirteen ecosystems are represented in Alai, while ten ecosystems are found in other biogeographic regions (Northern Tien Shan and Issyk-Kul).

7.2.2 Threats and location of critical threatened ecosystems ('hot spots')

Overall forest loss has been dramatic over the last decades – fir and juniper forests have declined by over 35%, fruit and nut forests have declined by 50%, and pistachio and almond forests have reduced to only 30,000 ha over the last 50 years.

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

- The south slope of Baubash-Ata in Fergana mountain range, the valley of the Arslan-Bob and the Larodar rivers. The habitat of fruit and nut forests, which includes rich botanical communities with including relict forms and representatives of Ancient Mediterranean, Turan and Euro-Siberian regions, 49 endemic species of invertebrates and 12 species of plants. At risk of intensive recreation pressure.
- Kungei Ala-Too, natural boundary Cholpon-Ata. Ecosystem which consists of steppe, meadow and forest communities and mountain slopes and includes vegetation typical of North Tien-Shan and 34 species of endemic insects. Rayon under intensive recreation pressure and from pasture livestock. In future, the problem of pure river water which is used for needs of Cholpon-Ata city, needs consideration.
- Sary-Djaz, natural boundary Kaindy with the slopes of Inylchek mountain range. Ecosystem which consists of mountain - forest communities and typical Central Tian-Shan flora and fauna, with a large number of endemics: 31 species of endemic insects and 11 species of plants. The ecosystem is fragile to anthropogenic pressure and difficult to recreate

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- Chui valley, South suburbs of Bishkek city, slopes of Boz-Boltok mountains. The ecosystem which consists of steppe communities with bushes including rare and endemic species of flora and fauna, including 36 species of insects (17 endemics and 2 species included in the Red Data Book of the Kyrgyz Republic), 14 unique species of legumes. Rayon under intensive recreation pressure.
- Alai valley, South-West section up to the border with Tadjikistan including Kok-Suu. Steppe and meadow, high mountain communities of flora and fauna, the only 'hot spot' of the country with Gissaro-Darvas species and the only place where otter exists. Threat from non-regulation of grazing by livestock and uncontrolled hunting.
- Terskei Ala-Too, natural boundary Borskaun. A small (5-8 ha) section of fir forests which is located near the river, where regionally rare species of colonial red forest ants (*Formica truncorum*) exists. The colony might represent a settlement in fir forests to escape from insect pests. Threatened by livestock which graze this section of the forest. Possibility of fires set by tourists.
- Terskei Ala-Too, natural boundary Djylandy; Kyrgyz mountain range, valley of Ala-Archa river, Kashka-Suu; canyons at Alai and Turkestan mountain range. Complexes of animals nesting at the clay precipices. 'Hotspots' of bird and invertebrate diversity. Recreation pressure.
- Atainok mountain range, natural boundary Karasuu, Kyzyljar, Kurison. Semi-desert and dry steppe ecosystems with xerophil bushes. A great number of representatives of turan flora (endemics, relic and rare species of plants for the Kyrgyz Republic). Intensive anthropogenic pressure, destruction of the areas containing the aforementioned plants.

All the above mentioned 'hot spots' (the full list cannot be included as the necessary research has not yet been carried out) of critical ecosystems need to be protected; it is necessary to organise complex and special zakazniks under the control of leskhozes and local government.

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7.3 National Biodiversity Strategy and Action Plan

The NBSAP represents the first comprehensive review of biodiversity in Kyrgyz Republic.

The National Environmental Action Plan (NEAP), developed in 1995, identified that joining further international environmental conventions was a priority for the Kyrgyz Republic. The Kyrgyz Republic ratified the Convention on Biological Diversity on 6th August 1996. One of the first commitments of the Kyrgyz Republic government under the CBD was to prepare a National Biodiversity Strategy and Action Plan (NBSAP) as an initial stage in biodiversity protection. Work on NBSAP preparation started in February 1998. The BSAP provides a thorough review and assessment of current biodiversity and the factors affecting it within the country. Principles and approaches for biodiversity conservation are then developed, in line with those outlined within the provisions of the CBD, but with reference to the national framework which will implement the plan. This review has been used to develop an integrated plan that will provide conservation activities over the coming five years. The plan has been designed in the light of guidelines produced by UNEP and UNDP. The development of the plan took into account as many of the suggested guidelines regarding participation and appropriateness as possible, with the intention of strengthening the plan, and the likelihood of its effective implementation.

The way in which the Biodiversity Strategy and Action Plan was prepared is important in understanding the context of the plan as a whole. The process was designed to fit in with procedures in the Kyrgyz Republic, and build on the experience of biodiversity planning the country, regionally and internationally.

7.3.1 Process Management

The BSAP preparation process involved the management and co-ordination of the following groups:

□ *BSAP Co-ordination Team*

The BSAP co-ordination team formed the core focus for the preparation process. The team consisted of:

- **Co-ordinator:** (Chinara Sadykova).
- **Government Representative:** A biodiversity and protected areas specialist from the Ministry of Environmental Protection (Fareda Balbakova).
- **Specialist Advisors:** Various specialists, including biodiversity (Emil Shukurov), education and public awareness (Cholpon Dyikanova), and economics and institutions (Murat Suynbaev).
- **Translators and assistants:** Various specialists assisted the work of the other team members.

□ *Steering Committee*

The BSAP preparation process was overseen by the Steering Committee (SC). The SC was made up of senior representatives of the key government agencies (Environment, Forestry, Finance), academic institutions, and NGO's. The SC was chaired by the Minister of Environmental Protection. The SC provided overall guidance, approval and political support for the key stages of the preparation process.

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□ *International Team*

The Ministry of Environmental Protection invited the UK-based conservation NGO Fauna & Flora International to provide general management and technical assistance to the BSAP preparation process. The three members of the FFI team worked with the BSAP co-ordinating team at all stages of the process.

□ *Consultant Specialists*

Over 50 specialist consultants were involved in the preparation of the BSAP. Most were involved for short periods of time to lend their skills and experience to the project. At various stages of the process, these consultants formed smaller working groups, to work together to look at different issues. However, due to the inter-disciplinary nature of the project, the focus was on maximum collaboration between as many different stakeholder groups, rather than being confined to fixed working groups.

□ *Stakeholders*

Hundreds of individuals and organisations were involved in the preparation of the BSAP. The range of stakeholders widened as the process continued, and stakeholders were encouraged to increase their level of participation (from being kept informed of progress, to taking the initiative themselves in planning and implementing activities). The national and far-reaching importance of the BSAP meant that many stakeholders had an input into the project as part of their job, rather than being employed specifically for the BSAP project.

□ *Mass Media*

Wide public awareness of the BSAP was an important part of the process. In particular this helped stakeholders participate in the process from an informed position, and widened awareness of biodiversity conservation issues in the Kyrgyz Republic. Representatives from mass media (TV, radio and newspapers) were encouraged to attend and even participate in many of the preparation activities.

7.3.2 The Process

□ *Stage 1: Preparation (Months 1-2)*

- Recruit project general manager.
- Local consultation with Ministry of Environmental Protection and key stakeholders and specialists.
- Develop and agree work-plans.
- Develop and agree terms of reference.
- Recruit BSAP team (Co-ordination team, national consultants).

□ *Key outputs*

- Working procedures established.
- BSAP team established.

□ *Stage 2: Information Gathering and Evaluation (Months 3-4)*

- Consultant briefing on BSAP and information needs.
- Preliminary information gathering.
- Planning and training workshop.
- Further information gathering.
- Public forums (Bishkek and Osh).
- Country study preparation.
- Country study distribution.
- Country study presentation forums (Bishkek and Osh).

□ *Key outputs*

- Country study produced.
- Increased stakeholder awareness and involvement.

□ *Stage 3: Action Planning (Months 5-9)*

- Action planning workshop.
- Draft action plan production.

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- Draft plan review and agreement.
- Final plan production.
- ❑ **Key outputs**
 - Final plan produced.
 - Wider stakeholder involvement.
- ❑ **Stage 4: Implementation (Month 10 onwards)**
 - Draft plan launch.
 - Financing search and allocation for actions.
 - Establishment of BSAP co-ordinating mechanisms.
 - Implementation of BSAP actions.
- ❑ **Key outputs**
 - Start of implementation of BSAP actions.
 - Co-ordination of implementation.
- ❑ **Underlying Principles**
 - Important principles for national biodiversity planning have been highlighted elsewhere (especially in 'National Biodiversity Planning: Guidelines based on early experiences around the world' (WRI/UNEP/IUCN) and various outputs from the Convention on Biological Diversity). The underlying principles outlined below are those which were key to the preparation process in the Kyrgyz Republic.
- ❑ **Stakeholder participation**
 - Stakeholder participation in the BSAP preparation is vital for a number of reasons:
 - The implementation of the BSAP will affect and be affected by a wide range of institutions, policies and plans.
 - An enormous range of groups will implement the plan. Their awareness, support and input to the preparation are essential.
 - Although many people are stakeholders in biodiversity conservation, it is not a priority for many of them. Successful implementation of the plan relies upon goodwill, support and approval.
 - Although the plan will become official government policy, there will be few mechanisms for enforcing the implementation of the plan.

Different levels of participation were appropriate for different groups, depending on:

- ❑ The importance of biodiversity to them.
- ❑ How much they could be involved in implementing the BSAP.
- ❑ The level of influence they could have on biodiversity conservation (positive or negative, financial, political, biodiversity use).
- ❑ The scale of their activities (the BSAP is a *national* level plan, hence it was not necessarily appropriate for stakeholders at the international or local scale to have a high level of participation).
- ❑ Stakeholders' willingness to participate in the process.
- ❑ Available time and resources (although wider stakeholder participation was sometimes quicker and cheaper).

The BSAP preparation process was designed to accommodate the need for different levels, but also to encourage stakeholders who started with a low level of participation (e.g. being kept informed of progress) to become more involved (e.g. taking the initiative themselves in planning and implementation).

7.3.3 Planning as a process

The main output of the preparation process was obviously the production of the Biodiversity Strategy and Action Plan. However, the main aim of the process was to ultimately improve biodiversity conservation in the Kyrgyz Republic, and hence produce a plan that would be implemented. Therefore, an important aspect of the project was *how* it was produced, not only *what* was produced.

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Therefore, there was a continual balance between the quality of the *content* of the final plan, in terms of:

- Detail.
- Comprehensiveness.
- Accuracy.

And the quality of the *process* of its preparation, in terms of:

- Likelihood of implementation of actions.
- Stakeholder input into the process.
- Stakeholder ownership and consensus.
- Appropriateness of the actions.
- Awareness of the plan.

The quality of both process and content was often complementary, although there were times when one would inevitably compromise the other. For instance, the cost of producing a 'glossy', high quality version of the country study would mean that less could be produced, hence reducing the amount of stakeholders who obtain a copy.

7.3.4 Building the capacity of existing institutions

The principle of building the capacity of existing institutions was critical in starting to address a number of problems, including:

- Many of the formerly well-resourced institutions were suffering from the current problems resulting from the transitional political and economic situation.
- The changing situation has also meant that these institutions have high capacity in some areas (e.g. academic excellence), but are lacking in others (e.g. project cycle management skills).
- The limited financial resources available for biodiversity conservation means that the BSAP would be more effective if it focussed on more efficient use of existing resources, rather than creating new institutions.
- The institutional sustainability of the BSAP would be ensured by building existing institutions.

This principle was applied in a number of activities in the process, including:

- Skills development (e.g. project cycle management, computer use, language, workshop facilitation).
- Network building (the excellent level of networking in the Soviet Union was partly re-established, e.g. the workshops enabled many protected areas managers to work together again for the first time since Soviet times).
- Ownership (Stakeholders were encouraged to take active responsibility for all aspects of activities in the action plan, creating a sense of ownership).
- Using existing structures (e.g. ensuring all actions in the BSAP were integrated with existing policies and legislation).
- Working language (the working language at all stages was Russian, and translations of key information in Kyrgyz were made available, although due to the international nature of some aspects, some information was required in English).
- External assistance (the international team and other external facilitation and advice was made available in response to needs expressed by the national institutions involved, rather than dominating and dictating the direction of the process).
- **Flexibility**
 - The principle of flexibility was applied at a number of scales in the process:
 - The timetable and format of the process was adaptable to the changing situations as the project continued, especially as the needs of different of stakeholders developed.
 - Feedback from stakeholders was received continuously and was an important part of the flexibility of the process.

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- The transitional nature of the Kyrgyz Republic's social, political and economic situation meant that the BSAP had to be designed to be flexible to the unpredictable changes over the coming years.
- Flexibility was encouraged between stakeholders, as preparation of the plan often required conflict to be resolved, or negotiation between differing views.

The BSAP is finally completed, but has not yet been adopted at governmental level as a national report.

7.3.5 Progress with implementation of NBSAP

So far, 174 parties have ratified the CBD. The Kyrgyz Republic ratified the Convention on Biological Diversity and adoption of this convention obliges a country to undertake measures to directly protect biodiversity within its borders. The main concepts, strategies and spheres of jurisdiction for biodiversity conservation are outlined in the CBD. It also provides guidance on general actions for protection and sustainable use of biodiversity, and highlights key approaches to conservation in a global arena. These include monitoring and evaluation, capacity building, public awareness, participation, access to genetic resources and technologies, exchange of information, co-operation, financing mechanisms and other issues connected with the development and implementation of projects on biodiversity. The CBD reiterates the essential value of biological diversity for life and sustainable wellbeing of present and future generations. Kyrgyz NBSAP was present to CBD in December of the 1998. But Kyrgyz Government not signed this NBSAP such National Report yet. Probably our Government not realized in important of NBSAP or they are busy with other problems.

One of the outcomes of BSAP's work was the organisation of the Ecological NGO Consortium in December 1998. The Consortium worked in the partnership with national NGO's the tourism sector, and relevant Ministries to develop a code of conduct for the tourism sector and to help to promote sustainable tourism. Hence the urgency to integrate the biodiversity conservation with sustainable tourism development and protected area is recognized at the national level. The biological and cultural diversity of the Kyrgyz Republic provides an excellent opportunity to develop income generating through ecological tourism. Ecological NGO Consortium is working with different stakeholders in the ecological education field, in environmental protection and biodiversity conservation. Members of Consortium to distribute the knowledge about biodiversity among students in Universities and schools.

The main step of implementation of BSAP is the West Tien-Shan project started in March 2000. The project is consistent with Article 8 (in situ conservation) of the Convention on Biological Diversity (CBD), since it will provide support for the strengthened protection, management and extension of the zapovedniks in region of high biodiversity and will promote the protection of habitats and species within the zapovedniks and beyond. Furthermore, it will address the issue of land degradation by promoting environmentally sustainable development in the West Tien-Shan; allowing for natural regeneration and restoration of degraded ecosystems and recovery of threatened species; and encouraging alternative land use practices and cessation of overgrazing by livestock. The project will promote the conservation and sustainable use of natural resources and biodiversity outside zapovednik boundaries, focussing especially on the production landscape and wildlife corridors, which will be particularly beneficial for wide-ranging species.

The project responds to guidance from the Conference of the Parties (COP) to the CBD by promoting conservation, management and sustainable use of mountain and semi-arid ecosystems, threatened and endemic species, including wild relatives of domesticated species; and by promoting public education and awareness to strengthen support for biodiversity conservation. It addresses guidance from COP3 through: promoting capacity building for conservation and sustainable use; conservation of agrobiodiversity; and economic incentives and alternative livelihood opportunities for local communities. It also responds to COP3 through activities to incorporate biodiversity conservation objectives into land-use planning,

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agriculture, and forestry. By strengthening the involvement of local communities and non-governmental organization (NGOs) and building strategic partnerships at local, national and regional levels, the project will promote innovative and cost-effective measures to conserve biodiversity in a trans-boundary and trans-national context. Because the West Tien Shan lies on the migratory flyway for some Palearctic song birds and raptors, habitat protection along this flyway contributes to conservation of migratory species in accordance with the Bern Convention on Migratory Species as well as the CBD.

The project contributes to a GEF programmatic approach by building on other GEF activities in the region. All three countries are completing biodiversity strategies, with GEF resources, which identify conservation action in the West Tien Shan as national priorities. The project will also complement the Bank/GEF-financed Aral Sea Basin Program, Water and Environmental Management Project by protecting natural habitats in the watersheds and headwaters of tributaries that feed this inland sea.

Government strategy. The Kyrgyz Republic has ratified the CBD and currently developing, or have completed, biodiversity strategies under grants from GEF. And also participating in the pan-European Biodiversity and Landscape Strategy.

The West Tien Shan project will result in significant contributions to the short and long term objectives of the NEAPs and the countries' commitments in accordance with the CBD. It will lead to improved management of a three-million hectare complex comprised of trans-boundary zapovedniks and lands under forestry and agricultural land use, strengthening conservation of an important trans-border ecosystem. Improved management will ensure conservation of regionally important habitat and ecosystems, maintenance of a range of diverse landscapes, and lead to sustainable protection of globally important species, some of which are endemic and would be conserved in their native habitats. Other global benefits will include enhanced knowledge of biodiversity through applied research, inventories and monitoring of species and ecosystems in the zapovedniks. Significant lessons for replication in other countries and regions can be drawn from monitoring and studying the effect of project activities on biodiversity conservation.

Project alternatives considered and reasons for rejection:

Despite Government commitment to biodiversity conservation, significant biodiversity loss and institutional decline would continue without the project. The Government are not able to provide the necessary budget allocation for comprehensive biodiversity projects given higher priority demands on public sector finance at this stage in their economic development. Without the GEF grant, the global benefits of conserving rare and endangered species would not occur. Staff capacity would remain weak and given the extremely difficult conditions in which they work, staff numbers would decline still further, making enforcement unachievable. The lack of effective enforcement and a co-ordinated management plan with other natural resource users would increase biodiversity loss within the zapovedniks and their surroundings and would endanger several rare species.

Choice of sites. Each Government was asked to indicate the sites that they considered to be the most important in terms of global biodiversity (those most urgently requiring support to conserve vulnerable species), and were national priorities. The four zapovedniks in this project fulfilled these criteria. The project sites are national priorities and are not the focus of other projects. They form a transboundary complex of zapovedniks which together protect an area of high biodiversity. Together they ensure that a complete ecological unit, rather than isolated fragments, is conserved.

Lessons learned and reflected in the project design:

The project will benefit from lessons learned from the ongoing implementation of the Russian GEF Biodiversity Conservation Project and the Kyrgyz Republic's NEAP, the Kazakhstan Technical Assistance Project, and the Water Supply, Sanitation and Health Project in Uzbekistan. Lessons learned include: the need to ensure stakeholder participation through social

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assessment at an early stage; and the need to build partnerships at local and national levels between both communities and leshoz/zapovednik managers.

The overall aim of the NBSAP project is the protection and rational use of biological and landscape diversity for the sustainable social and economic development of the Kyrgyz Republic.

The objectives are a quantifiable representation of the overall aim, and an expression of what achievement of the aim will mean. This is given in terms of actual changes in biodiversity or economic status. The objectives also provide a target towards which all planned activities should contribute, and a clearer focus as to how the overall aim might be achieved.

7.3.6 Objectives

- ❑ To conserve and restore the most important complexes of species, ecosystems and landscapes required to attain natural and sustainable reproduction.
- ❑ To conserve and rationally use forest resources allowing an increase of forested areas by 0.3% by 2004.
- ❑ To ensure the conservation and restoration of those species most important to natural ecosystems, and valuable for local communities.
- ❑ To extend specially protected areas to an area of 4.8% of the Republic by 2004.
- ❑ To decrease pollution to levels which prevent further damage to natural ecosystems by 2004.
- ❑ To improve the capacity of state natural resource management institutions and non-state groups, in order to support the other objectives.
- ❑ To improve ecological legislation by 2003 in order to provide sufficient protection of biological and landscape diversity.
- ❑ To improve public awareness of environmental issues, ecological education and public participation in decision-making by 2004.
- ❑ To develop economic mechanisms for the protection, and rational use, of biological and landscape diversity.
- ❑ To attract internal and external investments to assist the conservation and rational use of biodiversity.
- ❑ To contribute to the implementation of the government programme to reduce poverty.

The action plan outlines the practical activities to be carried out within each strategic component, in order to fulfil the objectives and the overall aim. Actions are sub-divided into a set of constituent, and inter-related, activities. A number of the listed activities will be implemented under existing plans or projects, whereas others will be designed and developed from scratch. All activities are intended to provide clear outlines for implementation, with indicative costings and time-scales, and defined outputs. Relative priorities for activities are indicated through the attached time-scale – high priority activities, including those on which further activities depend, are shown to start earlier in the five-year plan than other, more peripheral, activities.

7.4 The EA system

In 1999, the Kyrgyz Republic ratified the Law on Environmental Protection and drafted a new Law on Environmental Assessment. The nature and their components there are a national property of the Kyrgyz Republic, and it is determinative factor on sustainable socio-economic development. The Law on Environmental protection defined policy and regulated legal relationship in field of nature management and environmental protection in the Kyrgyz Republic. The Environmental Assessment is revealed, analysed, evaluated and expected impact of any activity to providing changes to nature. In 1997 the direction accepted by Ministry of Environmental Protection of the Kyrgyz Republic. The EA definition, it is to prognosis of changes in the components of water, soil, fauna and flora, depth and air. The

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plans and project could be scanner principle of the EA policy it is necessary. But EA of project and programs couldn't be a substitute for the EA on the project level.

In the Kyrgyz Republic the system of ecological legislation on biodiversity includes 10 Laws and 70 Acts (legislation acts of executive power bodies). Such documents regulate the activities connected with biodiversity:

- provision for natural resources use including vegetation and animal world is established;
- rare and disappearing species of animals and plants are identified, and their collection is prohibited;
- the rules for amateur and commercial hunting and fishing are established;
- licensed activities (hunting, fishing, collection of medicinal plants, etc.) are established;
- protected areas with different legal regime (national natural parks, zapovedniks, zakazniks, etc.) are created;
- requirements for nature protection when undertaking economic and other activities are established;
- types of ecological violations and crimes, measures of responsibility and the means of enforcement are established;
- rules for recovery of damage caused by illegal use of nature including plants and animals are established.

The nature protection legislation of the Kyrgyz Republic has been reformed and changed in accordance with the new economic situation. The law on protection of animals is at the stage of approval; the law on protection of plants is designed. The criminal and administrative Codes of the Kyrgyz Republic are approved to provide accountability and enforcement.

Nevertheless the approved legislation documents quickly become outdated and it is necessary to update them annually with additions and changes. Most of the considerations underlying biodiversity conservation are old ones the same could be said about Red Data Book on protection of animals and plants.

In spite of the fact that it has legal status, provision of protected area status is not sufficient. A lot of difficulties in organisation and functioning of protected areas are connected with a lack of categories for natural resources protection in the land legislation. Nature zapovednik areas have to be provided a special status.

In the conditions of economic crisis it is necessary to develop new types of protection and uses of areas, protection of habitats for rare and disappearing species and for their continued reproduction. Restructuring of the nature protection system is required. It also has to be adapted to the needs of local communities.

There is an urgent need to develop and approve a legal complex relating to biodiversity protection, increase efficiency of the existing legislative base and its implementation, because under current economic conditions of inflation and poverty enforcement does not occur. The reform of the legislation and its adaptation to the current situation is required.

Existing legislation not directly related to conservation but which has an impact on biological resources

In the Kyrgyz Republic there are some legislative documents which regulate the conditions in agriculture, forestry, fishery, land usage and water usage.

In accordance with the forestry legislation, all the forests in the Kyrgyz Republic are covered by legislation that prohibits commercial clearance for wood production - this is a favourable factor for biodiversity protection, because mountain forests have important water regulation and soil protection roles;

- land legislation in the Kyrgyz Republic regulates land relations and creates conditions for protection and rational use of land, soil protection, and improvement of environment;
- fishery legislation obliged fisheries to provide for the protection of habitats, breeding

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- water legislation obliges water users to organise fish protection measures, ensure minimum water levels in accordance with ecological, fish protection and other standards.

The inter-government agreement of Central Asian countries on distribution of surface and ground water identifies that the country may use 24% of river throughput annually, and thus the volume of water resources available to the Kyrgyz Republic is limited;

Legislation on local self-government and local state administration authorises local administration to oversee implementation of legislation on environmental protection and natural resource use; it also obliges local administration to develop and implement programs for environment improvement.

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De facto use of the resources affecting biodiversity. Efficiency of legislation implementation

During the transition to a market economy the Kyrgyz Republic has undergone an economic crisis. Most of the industries have collapsed, and as a result, many people of working age people are unemployed. More than half of the population lives below the poverty level. This situation can't help but influence the situation of biodiversity in the country. Because of the lack of funds for purchasing of coal, the rural population (60% of the country) use wood for heating in winter time. Most of the trees are cut along roads and in the forests without any punishment. It has led to a reduction in forest areas.

The number of wild animals is sharply reduced because of uncontrolled hunting and through habitat loss.

The staff of protected areas (zapovedniks, natural parks, etc.), as a result of lower wages and poverty, use these areas as a source of income (grazing of livestock, haymaking, collection of berries) and violate the management regime identified for such areas (through illegal hunting, fishing, etc.). Such facts illustrate the insufficiency of the existing ecological legislation.

The agricultural sector also negatively influences the status of biodiversity. Impacts include uncontrolled grazing and overstocking of livestock resulting in overgrazing and soil erosion, and inappropriate storage, transportation and use of pesticides (agricultural chemicals).

Metallurgical mining enterprises previously had an important role in the economy of the Republic. From 1955 the Kyrgyz Republic was the biggest uranium producer in the USSR. Though uranium production in the country has been suspended, the previous activity has left dangerous after-effects for health, vegetation and animals, and problems for disposal of radioactive waste. Mining enterprises have produced million of tonnes of waste containing mercury, antimony, heavy metals and other elements dangerous for living organisms.

This list of the impact of resource use on biodiversity remains incomplete.

Land use and how it affects efforts to conserve biodiversity

By January 1, 1996 the total area of the country within the administrative boundaries was about 20 million hectares, of which 10,750,000 hectares was agricultural land. During the 20th Century the legislative base and policy for land use permanently changed. At the beginning of the 20th Century most of the area of the country was divided into separate regions under the aegis of family and related groups of people. After the socialist revolution collective and state farms were established. Most of the land, especially agricultural land, was redistributed. The land, along with its mineral resources, was the property of the country. At that time extensive cropping occurred, along with large-scale production. Protection of flora and fauna to support ecological sustainability was regarded as the function of some agencies. During development of long-term programs for social and economic development of the country and to develop new agricultural areas, the problems of biodiversity were not always taken into account.

After collapse of the USSR and transition of the country to a market economy, agrarian and land reform has been implemented, by which most of the land is provided to private or collective (peasant farms, joint stock farms, etc.) property or on long time lease. There are opportunities for temporary use of land by citizens of other countries.

Since 1991 land use in the Kyrgyz Republic has been determined in accordance with the Land Code of the country. In the Land Code the land of the country is subdivided into agricultural areas, settlement areas (cities, towns, rural and urban settlements), industrial areas, areas for transport, communication and defence, nature protection areas, areas for recreation and historical-cultural purposes, forestry areas and water sources, and reserves. The Code regulates land relations in the country and has targeted the creation of situations for rational use and protection of land, maintenance of soil fertility, and protection and improvement of the natural environment.

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Nevertheless the legislation on land use does not fully guarantee the protection of biodiversity of areas under human use.

Non-equity in distribution of agricultural land in oblasts, valleys and mountain regions, along with over-population of some regions, has caused the situation when some areas of human settlement are in very poor condition. In order to protect the biodiversity in the country there is a necessity to strengthen the existing legislation, create land monitoring and develop mechanisms to reduce negative influences of land use on biodiversity.

Environmental Category [] A [] B [X] C

Justification/Rational for category rating: The Central Asia Transboundary Biodiversity project will significantly increase the level of biodiversity conservation and the implementation of environmental legislation in Central Asia. There are no significant environmental concerns. There may be environmental implications associated with the implementation of sub-projects but these will be limited to small scale works; e.g. establishment of visitor centers in zapovedniks or construction of nurseries in areas contiguous to zapovedniks. These will be subject to national environmental assessment requirements.

7.5 EA implementation

Destruction of natural ecosystems, linked to increases in cultivated lands, poses the greatest threat to biodiversity in the Kyrgyz Republic. Fragmentation of natural communities also results from an extensive road-network, much of which connects seasonal or temporary settlements. Meanwhile, other ecosystems suffer indirect anthropogenic impacts. Overgrazing has restricted regeneration in fruit and nut forests, making their future uncertain. It has led to the degradation of pastures, and to drastic reductions in the numbers of wild ungulates. Threats to species include habitat change, pollution, direct competition with livestock, and the spread of invasive species, and diseases. Many of the remaining populations of species listed in the national Red Data Book are at the critical lower limit of viability, from which the populations may not be able to recover. The tiger became extinct in the Kyrgyz Republic at the turn of the century, and now the otter faces a similar fate. Even species thought of as common, such as pheasants and wild boar, were completely exterminated in many regions, but have since been reintroduced in some areas.

7.5.1 Biodiversity assessment

Of a total of 199,000 square km of the country, more than 60% is occupied by mountains, with an altitude 500-7,000 metres above sea level. More than 90% of the area is higher than 1,500 metres. About 40% is virtually uninhabitable, these areas include glaciers, rocks, scree, highland rock deserts, etc. Approximately 7% is occupied by artificial landscape: agricultural fields, settlements, roads, and industrial enterprises.

The rest of the territory is rich in different natural systems: fruit-nut, juniper, fir, deciduous forests (3.5%), bushes, meadows, steppes, deserts, and swamps. There are 20 classes of ecosystems and 160 types of highland and flatland landscapes may be regarded. These are inhabited by around 50,000 species of organisms.

The level of representation of flora and fauna is very high as compared with the rest of the world. Of the 22 taxa of plants (including fungi), the Kyrgyz Republic has 17 or 77.2%. Of the 22 taxa of animals, it has 10 or 41.7%. However, it has to be taken into account that most of the taxa of animals are connected with seas and the Kyrgyz Republic is at least 3,000 km far from the nearest one.

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Due to the fact that the geography is rather complicated and contrasting, there is a big concentration of species: there are approximately 2 species more for one unit of area than for the average for the whole world or Central Asia.

Resource trends

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

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14.	Financing.	Big reduction.	Decrease in the personnel and efficiency of work, increasing damage to natural resources; worsening of working conditions; lack of monitoring; big reduction in scientific and research work; lack of inventory of fauna and flora; even in the protected areas.
15.	Logistics.	Deterioration, lack of repair and of modernisation.	Worsening in the quality of work; non-productive use of time; the lack of possibility to increase the activity.
16.	Staff.	Reduction of the level of qualification, moving to other spheres of activity.	Lack of professionalism.
17.	System of training staff.	Destroyed, loss of contacts, reduction of quality.	Reduction in levels of qualification
18.	Communication.	High prices for services. The mechanisms are out of order	Isolation, any actions are agreed very slowly.
19.	Information.	The lack of literature, reduction of contacts with colleges, the lack of modern information management/technical equipment.	Reductions in qualification, inefficiency, inaccuracies in assessment and information

7.5.2 Quality of existing information on the status and trends of biodiversity

The flora and fauna of the Kyrgyz Republic have been studied unevenly across both systematic groups and rayons. The research has been conducted by qualified specialists. Practically all species discovered have been described in publications and specimens exist in herbariums and museums.

At the species level, vertebrates (fish, amphibians, reptiles, birds and mammals) have been the best studied. It is likely that virtually all species in the Kyrgyz republic have been described. However, there may be the need to clarify these inventories, systematics and distributions in less well-studied rayons.

Though the history of scientific research of the flora and fauna in the country is rather long (about one and a half centuries), more than half the number of species have become known during the last half a century. This was when the biota started to be studied regularly at local research centres.

It is difficult to determine trends of biodiversity changes because of the limited amount of research that has been conducted. Some species are known only from a single specimen. In the past, habitats had not been identified for most of the species, except common species. Population censuses of some agricultural insect and rodent pest species took place in the 20's and 30's from 40's. Inventories of game species and geobotanical surveys have also been conducted fairly regularly. Recently, work has started on the identification of the quantity and distribution of medicinal plants. In the 70's and 80's, large scale population surveys of terrestrial vertebrates were carried out, although these were mostly in the northern part of the Kyrgyz Republic. Since the end of 80's and the beginning of the 90's research work practically stopped. Accurate data on the current situation and trends of biodiversity are not available because of the lack of necessary research and monitoring.

7.6 Biodiversity and EA

As far as natural factors are concerned, biodiversity is mainly influenced by the arid climate of Central Asia, and mountainous relief. Life on steep hill slopes requires 1.5 times more energy as in the same climatic conditions on flat land. A large part of the territory is under, snow for nearly half of the year. The continental climate is characterised by big changes of seasonal, and day and night temperatures. Aridisation results in desertification, reduction of vegetation productivity, reduction of reproduction, and difficulties in rehabilitating hillside forests and other moisture-loving systems.

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Anthropogenic factors due to human activities largely have a negative impact on nature. Direct impact (cutting of trees and bushes, harvesting medicinal and aesthetically attractive plants, hunting, fishing, grazing of livestock, and hay-making) is added to by indirect factors (pollution, destruction by construction of roads, mining enterprises, settlements, dams, etc.). As the result, there is a reduction of habitat, and a decreasing of quantity and reproduction of species. Many of them are almost extinct. Some plants and animals have already disappeared, including *Tulipa nitida*, red wolf, and otter. The Red Data Book of Kyrgyzstan (1986) includes 65 species of plants, 2 species of fish, 3 reptiles, 32 species of birds, 13 mammals. However, this list needs revisions. An especially dangerous process is the reduction of forests; half of the species in Kyrgyz occur in forests, but the area of forest has halved in half a century.

7.6.1 Established mechanisms for monitoring the status and trends of key biodiversity indicators

Biodiversity monitoring in the Kyrgyz Republic is conducted by:

- ❑ The research departments of Sary-Chelek and Issyk-Kul zapovedniks, published as Nature Chronicles.
- ❑ The biological station in Cholpon-Ata city, which focuses on research of the flora and fauna in Issyk-Kul lake and other surface reservoirs.
- ❑ The pasture and fodder scientific research institute of the Kyrgyz agrarian academy (which conducts periodical geobotanical expeditions).
- ❑ The State Forestry Agency (which conducts regular inventories of forest reserves).
- ❑ The Biological and Soil Institute and Forests and Nut-Breeding Institute of the National Academy of Sciences (periodic biodiversity monitoring at permanent establishments and stations).
- ❑ The Chief Division on Hunting Enterprises and Hunting Supervision (censuses of game species).
- ❑ The Sanitary Epidemiological Station and Epidemic Supervision Division of the Ministry of Health (before 1993 they conducted censuses of rodents and pests of agricultural crops).
- ❑ Ministry of Environmental Protection (periodic inspection and monitoring).

All the above mentioned government agencies conduct biodiversity monitoring without a single government policy, methodology and institutional base.

The key indicators for biodiversity in the Kyrgyz Republic are the following:

- ❑ The area of forest cover.
- ❑ The condition and productivity of pasture ecosystems.
- ❑ The status of rare and endangered species of flora and fauna included in the Red Data Book of the Kyrgyz Republic.
- ❑ The degree of pollution of water ecosystems.

Methods for monitoring direct indicators, such as the condition of some populations of flora and fauna species, are not sufficiently developed.

During the implementation of the National Strategy and Action Plan, biodiversity monitoring has to be conducted by specially protected areas, where the methods and techniques of biodiversity indicator monitoring should be developed.

7.6.2 Existing research programmes

Biodiversity research has traditionally been concentrated in the Biological and Soil Institute in the National Academy of Science. The Institute has existed for more than 50 years and the activities of the Institute have collected the main bulk of information on species for most of systematic groups. The professors and teaching staff of higher education institutions

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especially the Biological and Soil Faculty in the National University, have also made a big contribution. Recently, research teams have been established in Osh and Kara-Kol State Universities. Unfortunately during recent years, financing of research has significantly decreased.

Research work continues in the Biological and Soil Institute which is implementing a project on developing an eco-geographical basis for the protection and sustainable use of biodiversity in the Kyrgyz Republic. Some research work is also conducted at the Botanical Garden (where the research is connected with the conservation and introduction of wild flora (including tulips)), at the Institute of Forestry and Nut Breeding and at Universities which have biology departments.

The GEF Transboundary Biodiversity project in the West Tien Shan, which started in 1998, will support biodiversity research. Mostly the research will be conducted in Sary Chelek and Besh Aral zapovedniks and their surroundings.

7.6.3 Capacity for carrying out research on biodiversity

There are 200 highly educated specialists in the country which have experience and qualifications for carrying out biodiversity research at the species and community level. Several Universities teach biologists and ecologists. The students develop course and diploma papers on different aspects on biodiversity.

The main potential is concentrated in the Biological and Soil Institute in the National Academy of Science, where more than 100 researchers work. Many of them are high-class specialists. The main trend of the research work is the investigation of biodiversity of the Kyrgyz Republic and how to protect it.

There are also many specialists in Osh (Osh State University), Djalal-Abad and Kara-Kol.

There are many opportunities to co-operate with specialists from other CIS countries and other foreign scientists with whom good scientific contacts have been established. Some projects may be implemented with assistance from WWF, IUCN, RIOD, TACIS and other international agencies.

There are more than 100 ecological NGO's in the country. Some of them carry out research on biodiversity, because they have researchers among their members. Such research may be extended if there is the necessary financial support.

There are full-time scientific staff stationed in all of the zapovedniks in the country. In accordance with regulation, the staff of zapovedniks must produce a Nature Chronicle. Such Chronicles could be an important source of information on biodiversity condition and trends if produced well. The participation of specialists from the Academy of Science and Universities, which took place in the past, has to be renewed.

Much attention has to be paid to environmental impact assessments, research on damage to biodiversity, and mechanisms for prevention and compensation.

Observations that are carried out at permanent establishments are especially valuable. The biological station of the Biological and Soil Institute in Issyk-Kul Lake, and the mountain meadow geobotanical permanent establishment of the same Institute in the Kyrgyz Ala-Too have collected extensive data for several dozen years.

7.6.4 Gaps in existing information and research activities

In all except the most common species there is no data on their distribution, habitat or populations. Research at the sub-species level is lacking.

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There is no detailed description of biological communities. The closest effort to achieving this is a collective book: "Productivity of high mountain ecosystems in Tien Shan" (Bishkek: Ilim, 1991). There are not enough publications on the aesthetic, recreation, traditional, and educational value of biological and landscape diversity.

There is a lack of monitoring of many species, groups of species, and communities. Species lists have not been developed for most areas and habitats (this is very important for supporting sustainable ecosystems and to help identify indicator, rare, disappearing, useful, and pest species).

A survey of the genetic fund of the Kyrgyz Republic has not yet been completed. 2 volumes have been published: Volumes 2 (vertebrates) and 3 (viruses, bacteria and protozoa).

A complete inventory of protected areas has not been carried out.

There has not been detailed scientific research on the distribution of endemic biodiversity.

Areas that have been particularly poorly studied include invertebrates, lower plants, South Kyrgyzstan and the central Tien Shan.

7.6.5 National system of in-situ conservation; representativeness for Kyrgyz biodiversity; efficiency of protection

The Kyrgyz Republic has inherited existing system of in-situ conservation from the former Soviet Union. There is currently an extensive and diverse network of protected areas throughout the Republic.

Protected areas can be grouped into four functional categories, in accordance with IUCN definitions:

- Zapovedniks: 6 zapovedniks with a total area 250,5 ha.
- National and natural parks: 1 national and 5 natural parks with a total area 72.2 ha.
- Natural monuments: 19 monuments. These have been designated by the government since 1975.
- Areas for the protection of biotopes and species: zakazniks and complex zakazniks (complex zakazniks are characterised by their complex character of protection and the landscape integrity of the area). Zakazniks account for more than half of the total territory of protected areas; 319,900ha. Zakazniks have a seasonal or temporary character.

Protected areas cover virtually all the main types of forests; these include the majority of biodiversity and play a key role in supporting ecological processes.

However, protected areas include only parts of wider ecosystems. Most of the territories are too small to include viable population of plants and animals. Some ecosystems are not included in the network of protected areas. Most of large mammals need bigger territories and corridors to move to other sections seasonally.

The capacity and resources available to government agencies responsible for protected areas has significantly weakened. Scientific divisions have been liquidated, and the number of rangers has reduced in zapovedniks. The financial problems of zapovedniks are often solved by the development of economic activity based on natural resources (e.g. forest products, game, etc.). The same situation exists in national parks, and hunting and forestry zakazniks.

The management of protection areas is fairly autonomous. Management and protection of areas depend on the relations between the heads of protected territories and local government.

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7.6.6 Existing ex-situ means of protecting biodiversity: botanical gardens, zoos and captive breeding; gene-banks.

1. Botanical gardens

- Botanical garden of the National Academy of Science of the Kyrgyz Republic.
- Botanical garden of the Kyrgyz National University.
- Botanical garden of Osh State University.

2. Zoos

- Bishkek Zoopark.
- Kara-Kol city zoo.

3. Captive breeding

- Maral (*Cervus elaphus*) nursery in Naryn zapovenik.
- Pheasant (*Phasianus colchicus*) at the zakaznik in the suburbs of Tokmok.
- Ananiev nursery for the mountain goose (*Eulabelia anser*) in Issyk-Kul zapovednik.
- The Herpetological Centre of Mr. V.Ozarovski in Bishkek city.
- Tulips (*Tulipa*), Eremerus (*Eremurus*) and Onion (*Allium*) in the Botanical Garden of the National Academy of Sciences in Kyrgyz Republic.

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7.7 Illustrative examples or case-studies.

The Kyrgyz Republic has always paid much attention to the participation in international conventions, and implementation of generally recognised policies in the sphere of environmental protection.

The first international environmental protection agreement which was signed and ratified by the Kyrgyz Republic was the agreement on cooperation in the field of ecology and environmental protection between CIS countries. It was signed in June 1992 in Moscow. This agreement identifies the main principles and spheres of cooperation between CIS countries. An intergovernmental ecological Board and Secretariat (located in Minsk) were established.

The second international agreement signed and ratified by the Kyrgyz Republic was the Agreement on Joint Actions to Save the Aral Sea. A working body on implementation of the agreement was created.

In 1995, the Kyrgyz Republic, with the assistance of the World Bank, developed a National Environmental Action Plan (NEAP). One of the priorities of this Plan is to join international environmental conventions.

In 1996, in accordance with the NEAP, the Kyrgyz Republic joined the Basel Convention on control for transboundary transportation of dangerous wastes and their removal.

In July 1996, the Kyrgyz Republic ratified the Convention on Biological Diversity. In accordance with this Convention, the Transboundary Biodiversity Project in West Tien Shan was developed. Kazakhstan and Uzbekistan are also participating in this project.

GEF through the World Bank and the UK Environmental Know How Fund have provided financial assistance to develop the Biodiversity Strategy and Action Plan on.

In 1996, the Asian Development Bank provided US\$550,000 to the Ministry of Environmental Protection to develop the international procedures for environmental impact assessment.

The Government of Finland has made a decision to provide of US\$500,000 for the establishment of a common system for ecological monitoring.

In 1997, the Government of Germany made a decision to provide of 1.5m DM for a project on planning of ecological and economic development of a biosphere reserve in Issyk-Kul.

One of the biggest donors within the Kyrgyz Republic is the Soros-Kyrgyzstan Fund, which in 1996 spent US\$6300 for ecological training and US\$1500 for one ecological NGO to develop internet use. The Government has discussed the possibility for the country to join other conventions connected with biodiversity; including the Ramsar Convention on wetland areas of international importance as habitats of waterbirds (1973), CITES on control of trade in rare and disappearing species of animals and plants (1973), the Bonn Convention on protection migratory birds. However, because of different procedures and the financial problems the Kyrgyz Republic, it has not joined these Conventions yet.

Regional agreements are very important for biodiversity protection. In March 1998, the heads of three Central Asian countries (Uzbekistan, Kazakhstan and the Kyrgyz Republic) signed agreements on cooperation on biodiversity protection in the West Tien Shan, and cooperation in environmental protection and rational nature use.

7.7.1 Other activities

Other activities include:

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- ❑ Construction and usage of roads. Many roads do not connect settlements but provide access to remote areas. As a result there is a degradation of wild habitats within an area of 1 km along the road, fragmentation of habitats, introduction of exotic species, over-exploitation of components of biodiversity.
- ❑ Commercial collecting of a range of species, and products (such as bird nests) and killing of birds.
- ❑ Collection of snakes for medicinal use, and direct persecution as a result of ignorance and fear.
- ❑ High voltage electricity lines on which a lot of predatory birds and night migratory species die.
- ❑ Drying of swamps which reduce complex wetland habitats.
- ❑ During extreme conditions (snow falls, draught, severe frosts, etc.) animals migrate for food to settlements, where they are killed by local people.
- ❑ Death of animals and birds and destruction of nests during harvesting by agricultural machinery.
- ❑ Death of animals and destruction of plants during fires caused by local people.
- ❑ Destruction of birds, small mammals and invertebrates by children and teenagers for fun.
- ❑ Commercial bagging of animals for fur, destruction of habitats and death of animals during earth works (underground communication, installation of water pipes, gas pipes, etc.).
- ❑ Establishment of settlements in new areas causes disappearance of some wild species, and replacement with weeds and synanthropic species.
- ❑ Importation and distribution of exotic species through transportation systems.
- ❑ Collection of wild species of animals and birds: a) for medicinal use (snakes, frogs, bears, marmots, etc.); b) for decoration (pheasant, owl, etc.).
- ❑ Purposeful introduction of new species for different purposes and uses.
- ❑ Export of wild birds and animals, roots and seeds of medicinal and other plants.

7.7.2 Institutions/Sectors concerned with or having an impact on biodiversity

Ministry of Agriculture and Water Economy:

- ❑ Republican Centre for Land and Agrarian Reform;
- ❑ Department for Protection of Plants;
- ❑ Department for Water Economy;
- ❑ State Veterinary Department;
- ❑ Oblast and rayon Centres for Land and Agrarian Reform;
- ❑ Oblast Departments of Agriculture;
- ❑ Oblast market information services extension;
- ❑ Rayon Departments of Agriculture;
- ❑ Rayon Departments of Market Information;
- ❑ Basin Departments and rayon Departments for Water Economy;
- ❑ Oblast and rayon Veterinary Departments.

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The decision has been made to transfer to the Ministry of Agriculture and Water Economy.

- ❑ State Agency for Forestry;
- ❑ Self paid forest and hunting service;
- ❑ Chief Department of Hunting and Hunting Supervision;
- ❑ Oblast hunting enterprise, zakazniks;
- ❑ Osh oblast Forestry Department;
- ❑ Leskhozoes of Osh oblast;
- ❑ National Park “Kyrgyz-Ata”;
- ❑ Djalal-Abad Department for fruit-nut Forest;
- ❑ Lekhozoes of Djalal-Abad oblast, station of forest protection, nursery Kara-Daria, forestries;
- ❑ Issyk-Kul oblast Departments of Forestry;
- ❑ Forestries of Issyk-Kul oblast;
- ❑ Leskhozoes: Naryn, Talas and Chui oblasts.

The State Agency for Geology and Mineral Resources also influences biodiversity of the country because it provides different types of work - from studying deposits of mineral resources through to their exploitation. The exploitation includes a lot of blast-hole drilling and mountain technical works.

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

The agencies which directly influence biodiversity (or rather use natural resources, to be precise) are “Kyrgyzokhotrybolovsouz” (Kyrgyz union of Hunters and Fishermen) and “Kyrgyzlekrasprom” (Kyrgyz medicinal industry).

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7.8 Future actions to improve effectiveness of biodiversity conservation and sustainable use

The prevailing biodiversity and forestry policy frameworks in Kyrgyz Republic currently lack responsiveness to changing local, regional and global conditions. The socio-economic importance of genetic resources and protected areas in general are not captured into economic instruments or supported by appropriate laws. For example, in an attempt to halt the decline of dwindling biodiversity resources, governments have prohibited the collection and use of certain materials without developing any realistic and effective management systems to support their policies. As a result, and largely because of poverty and a lack of alternatives, many people are forced to rely on the use of prohibited materials, rendering the current approach largely ineffective.

This situation, however, could be improved. Private small and medium-sized enterprises (SMEs) located near the protected areas which process natural resources might have potential to develop within a free market economy. A major constraint, however, is the lack of a supporting economic, legal, and political framework (e.g. expensive credits, high taxes).

In addition, existing Forestry and Environment Codes in the Kyrgyz Republic are inadequate as tools for forest policy management. The codes need to be revised to make them comprehensible and to remedy a number of faults. Ideally, the codes should facilitate foreign investment, stimulate private activities, provide for leasing of state land, and clarify the responsibilities of lessees and State Forest Authorities. Currently, for example, the new national forestry code¹ in the Kyrgyz Republic provides little detail on Community Forestry Management (CFM).

National approaches to sustainable development require an integrated approach to the achievement of conservation and development objectives. *An integrated* approach must be the basis of policy development as well as the practical implementation of programmes. This approach must also be consistently applied throughout all levels of government.

The Tacis Transboundary West Tien Shan project will provide for technical assistance and training to support the harmonisation of national legislation, as well as the transformation and assistance to help frame effective supporting economic and fiscal instruments to encourage both private and public participation in landscape protection and biodiversity conservation.

In specific local situations, effective and sustainable trade-offs (e.g. between grazing and forestry and biodiversity priorities) require consultation, debate, consensus-building and priority setting. These are tactical site-specific policy decisions and not ones of overall strategic policy direction.

A change in legal policy and practical approach would lead to a number of benefits, including:

- improved interstate co-operation on environmental assessment, conservation of biodiversity and protected area management
 - much needed support for legal and tax reform for SMEs to develop forestry and natural resources based businesses near protected areas;
 - as a result of the above, the re-establishment of a variety of trees into the landscape and provide various forms of forest, woodland and open woodland tree cover to maintain a variety of habitats for conserving biodiversity;
 - the provision of much needed economic resources (particularly building materials, food and energy resources) for future generations;
 - the creation of a credible policy and operational framework for officials to promote sustainable development which would increase the standing and credibility of officials in the eyes of local people.
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- Institutional and administrative base which improve effectiveness of biodiversity conservation and sustainable use.

National and local government bodies for which conservation (parks and protected areas) is a primary objective of management:

- Ministry of Environmental Protection of the Kyrgyz Republic (zapovedniks).
- State Agency of Forestry for the Kyrgyz Republic (forestry and botanical zakazniks).
- Administration of the President of the Kyrgyz Republic (recreation department) (National park Ala-Archa and Tokmok zakaznik - phasans).
- Chief Division on Hunting Enterprises and Hunting Supervision of the Kyrgyz Republic, Republican Society of Hunters and Fishermen - "Kyrgyzokhotrybolovsoyuz" (hunting zakazniks).
- Oblast and rayon administration - "akimiats" (national parks, zakazniks including natural and geological monuments).
- NGO's (national and international) directly involved to enhance consideration of biodiversity conservation

In the Kyrgyz Republic there is a significant resource of scientific staff and highly qualified specialists, who work with biodiversity problems. They are the specialists from the Ministry of Environmental Protection, National Academy of Sciences, and important educational institutions. Most of them are also the active members of different ecological NGO's. Of 160 ecological NGO's in existence, 33 deal with biodiversity problems. Some of these are listed below.

- ecological movement of the Kyrgyz Republic "ALEINE"
- ecological NGO consortium
- public committee on biodiversity in the Kyrgyz Republic
- ecological information centre "Ecoinfocenter"
- botanical society of the Kyrgyz Republic
- entomological society of the Kyrgyz Republic
- Kyrgyz ornithological society
- society called "ECOPAR" in the Kyrgyz Republic
- section on soil ecology
- section on ecohydrogeology and fight against desertification
- young people ecological movement "BIOM"
- young people ecological movement "GREEN HOUSE" (in Issyk-Kul, Kara-Kol city)
- ornithological centre "FALCO CENTRE"
- "ANATIDA" club
- Ecological group "TULIPA" (Botanical Garden of the National Academy of Science of the Kyrgyz Republic)
- ecological club "IRBIS" (Djail rayon, Sosnovka village)
- Issyk-Kul ecogroup "Mountain Goose" (Issyk-Kul rayon, Ananievo village)
- Kyrgyz National committee on UNESCO program "Man and Biosphere"
- centre on rare animal protection
- union of Kyrgyz scientists
- club of animal fans
- Kyrgyz union of hunting and fishing societies
- Bishkek city society of hunters and fishermen
- section of hunters with hunting birds "SHUMKAR"
- oblast society of hunters and fishermen

International organisations - partners and donors involved in environmental and biodiversity protection:

- World Bank
- Abert Fund for Central Asia
- Counterpart Consortium
- ISAR for Central Asia
- Mileukontakt OOST - Europa

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- “Eurasia” Fond
- GEF Central Asia Transboundary Biodiversity Project in West Tian-Shan
- NABU
- National Environmental Action Plan (NEAP)
- “Soros-Kyrgyzstan” Fund
- HIVOS
- “Know-How” Fund
- Information centre WHO for Central Asian Republics
- Peace Corps
- UNDP
- Adenauer Fond
- Swiss forestry program “Intercooperation”
- TACIS

Sectors using biodiversity as an attraction

The Kyrgyz Republic has an immense tourist and recreation potential and provides great opportunities for the tourist development, both domestic and international.

In 1996 the income from international tourism was 9,764,000 som, and from domestic tourism - 9,715,000 som. The sum of payments to the state budget from the tourist activity equalled 10,900,400 som.

Three international climbing centres operate in the Kyrgyz Republic. Tourist firms which arrange tours, make corresponding payments into the budget.

Safari or hunting tourism is one of the most profitable forms of tourism (because the license for shooting a mountain sheep costs 15,000-17,000 USD.)

Other types of tourism, such as water sports tourism (rafting down the rivers in canoe and rafts), caving, walking and horse riding take place independently and for that reason are not profitable.

There is practically no eco-tourism in the national parks: eg no botanical excursions are available.

Museums in the regions are controlled by local government and are not profitable.

Payment is required to visit the National Park close to Bishkek. Income from visitors is one of the main sources of revenue for the park during spring/summer season.

Issik-Kul basin is a mosaic-zapovednik zone. Most of the health resorts, sanatoriums, etc. are concentrated there. 88 resort institutions for 7,075 people function in the Issik-Kul region (health resorts, sanatoriums, holiday hotels, tourist bases, camps, etc.). In total these cover 9,400 hectares.

In the south of Kyrgyzstan, in Jalal-Abad and Osh oblasts, there are 48 sites for recreation tourism, and 32 in the Chu valley.

A number of reasons restrict tourism development in the Kyrgyz Republic. These include a lack of modern tourist infrastructure and relevant service and also a weak link to the international tourist stock-exchange. These reasons explain the lack of development of the tourist industry in the Kyrgyz Republic.

Historic and architectural monuments are of a great interest for tourism and excursions. Furthermore, the location of the Kyrgyz Republic on the Great Silk Road provides enormous opportunities for expansion of resort areas, development of the international tourism and climbing tourism.

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7.9 Final conclusion

Assess the relative impact of the EA system on biodiversity conservation and sustainable use, or the impact of biodiversity strategies on the development of the EA system, depending upon which preceded which. These priorities are shaped by the conservation goals which we aim to achieve in implementing the set of assess biodiversity conservation recommended in the portfolio:

1. Representation of all distinct natural communities within the network of the EA system;
2. Maintenance of ecological and evolutionary processes that create and sustainable biodiversity;
3. Describe the EA system, legal requirements for EA and its adoption at national government level;
4. Maintenance of viable populations of species;
5. Conservation of blocks of natural habitats large enough to be responsive to large-scale periodic disturbances and long-term changes in EA system.

The priority needs for conservation in Kyrgyz Republic can be separated into two groups. The first group of activities, Institutional Strengthening, addresses the need for change in governmental structures and legislation which sets the regulatory framework for conservation of the EA system. Programs aimed at institutional strengthening also attempt to build the capacity of NGOs and others to positively influence change in the biodiversity conservation fields. The second group of activities, Conservation Practices, reflects the need for assistance in on-the-ground programs in biodiversity conservation and implementation of the EA system

7.9.1 Institutional Strengthening

The priorities listed here illustrate the need to strengthen the institutions responsible for the EA system to provide the capacity of local communities to participate in and contribute to biodiversity conservation. These priorities include:

1. Development of capacity of the agencies responsible conservation and sustainable use of natural resources. (Activities include improving the structure of national agencies, implementation NBSAP and EA system, creating a mechanism for international (regional) coordination, training programs, publication of manuals, information exchange via internet, and organization of seminars and exchange programs.)
2. Improvement of legislation and regulation mechanisms to improve biodiversity conservation. (Activities include the development of national strategies and action plans on biodiversity conservation, integration the EA procedures, ratification of major international agreements and convention such as CITES, Ramsar and others, modernization of national laws and legislative acts in wildlife conservation, design of mechanisms to facilitate foreign investment in nature conservation.)
3. Strengthening of the non-governmental sector. (Activities include training programs in organizational and financial management, fundraising, publications and use of media, organization of public events, technology and skills transfer.)
4. Raising public awareness about and support for conservation. (Activities include the creation of environmental education centers in protected areas and museums; development of special curricula for all ages of school children; publication of natural history field guides, popular magazines, brochures, photographic albums, and atlases on biodiversity conservation; production of documentary films; invitation of public lecture series on the problems of wildlife conservation for non-professional conservationists.)

7.9.2 Conservation Practices

The priority activity activities in this group reflect the need to directly effect positive change in biodiversity conservation through a combination of scientific monitoring and applied research in habitat and species protection. The activities include:

- Improvement management effectiveness through EA system of the existing network of protected areas (Activities include analyses of the biographic representation within the

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existing network in protected areas; establishment of corridors, buffer zones, and other forms of habitat protection; development of regional-scale (inter-republic) plans to manage and expand the EA system.)

- Implementation of urgent measures to protect “keystone” ecosystems of the region. These ecosystems, critical for maintaining the diverse assemblages of species and ecological processes in Kyrgyz Republic, are the tugai (desert riparian forests); steppes; remaining fragments of the saksaul (*Haloxylon* spp.) desert forests; fragments of the unique walnut-fruit forests; and particular fresh-water habitats. (Activities include creation of new protected areas; restoration of degraded ecosystems; reversing direct threats to biodiversity; and implemented action plans and management strategies.)
- Preservation of rare and endangered species and unique ecosystems. (Activities include inventories of flora and fauna, scientific monitoring publication of species cadastres and Red Data Books for the region; computerization of databases and maps; unification of data collection and entry among nature reserves; development and implementation of species conservation programs through captive breeding, reintroduction, education and awareness programs; and anti-poaching brigades.)
- Initiation of model projects in sustainable development. (Activities involve development of local resources such as harvesting and marketing of non-timber forest products or medical herbs; development of alternative energy sources; development of incentives for reduction of water use in agriculture; introduction of soil conservation practices and other farming techniques to reduce erosion; and sustainable use of wildlife species, e.g., ungulates.)
- Development of economic incentives and new mechanisms for funding conservation. (Activities include establishment of trust funds and debt for nature swaps; development of tax-based incentives for corporate philanthropy; and development of pilot projects in ecological and scientific tourism.)