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Chapter 1

POLICYMAKING FRAMEWORK FOR ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT

1.1 Major changes since the first review

Since its first review in 1999-2000, Kyrgyzstan has experienced significant institutional changes in its Government which have in turn affected the policymaking framework for environmental protection and sustainable development. In 2001, the Ministry of Environmental Protection (MEP) was merged with the Ministry of Emergencies and formed the Ministry of Ecology and Emergencies. This ministry was split in 2005, and as a result the national environmental authority was separated and reestablished as an independent body with the status of a State agency – the State Agency of Environmental Protection and Forestry – under the Government but with a status lower than that of a Ministry.

The policy framework for environmental protection also changed enormously during the reviewed period. The current set of strategies, programmes and plans for environmental protection and sustainable development is very different from the one in place in 1999. For example, the country’s key environmental policy document, the Ecological Security Conception\(^1\), was adopted in 1997 and reconsidered in 2007, and the country’s strategic documents on development were changed twice.

1.2 Policies and strategies

Previous strategies and plans

Development of the Kyrgyz policymaking framework for environmental protection and sustainable development began in the mid-1990s with the adoption of the National Environmental Action Plan (1995) and the National Strategy on Sustainable Human Development (1998), the Concept on Strengthening and Development of the Environmental Protection Activities (1998) and endorsement of the first version of the Ecological Security Conception\(^1\) (1997). The National Environmental Health Action Plan (NEHAP), adopted in 1999, was also considered to be an important policy document in this area, supplementing NEAP with activities designed to protect human health from environmental risks and threats.

The Concept on Strengthening and Development of the Environmental Protection Activities was proposed in 1998 in order to strengthen the status and increase capacities of the MEP. The Ecological Security Conception (ESC) of 1997 aimed to promote environmental protection by including it in the agenda of the Security Council chaired by the President. It also gave high priority to some aspects of environmental protection, e.g. air pollution and climate change, radioactive dump sites and transboundary accidents.

The development of NEAP facilitated the establishment of a separate function of the national environmental authority for the development and implementation of environmental policy. A specialized division was set up and capacities were raised to fulfil this function.

The Comprehensive Development Framework Strategy up to 2010 (CDF Strategy), adopted in 2001, provided a vision for the country’s long-term development. Its principal objective was to reduce poverty by half by 2010. Based on the situation in 2008, it is likely that this objective will be achieved. The CDF Strategy defined three pillars for Kyrgyzstan’s development:

\(^1\)Translated as the 1998 Ecological Safety Concept in the first EPR.
Formation of an effective and transparent State;
Building a fair society;
Promoting sustainable growth.

Along with other strategies, the CDF Strategy facilitated the promotion of government activities to strengthen environmental policy and develop legislative frameworks for prevention and control of air pollution, waste management, water protection, biodiversity conservation and sustainable use of its components, establishment of water users’ associations and expansion of specially protected natural areas. However, environmental objectives and priorities were not properly integrated into this strategic document, and only some environmental activities are essential parts of the matrix of actions (an annex to the CDF Strategy). Moreover, even given this limited list of environmental activities and projects, implementation failed, as it required significant funding from the budget (e.g. with provision of economic incentives for water efficiency, application of environmentally sound technologies and development of cadastre for biodiversity), which was not available. In fact, since 2007, the Country Development Strategy has been replacing the CDF Strategy, although the latter has not been repealed.

For implementing its objectives and priorities for the medium term, the Government adopted the National Poverty Reduction Strategy for 2003–2005 (NPRS), which was the operational plan for the first phase of implementation of the CDF Strategy. It aimed to provide and expand the opportunities for Kyrgyz citizens to enjoy adequate and equitable living standards. In addition, NPRS has set the national targets for seven of the eight United Nations Millennium Development Goals. According to the Asian Development Bank’s Country Strategy and Programme Update (November 2005), Kyrgyzstan was on track for four Millennium Development Goal targets: primary school enrolment, gender equality in primary education, reduction of child mortality and access to safe drinking water. It was not making satisfactory progress towards meeting two of the targets, reducing the maternal mortality ratio and controlling tuberculosis.

Since 2000, Kyrgyzstan has passed through a number of development stages with respect to its policymaking frameworks. A set of policy documents for environmental protection and sustainable development was drafted and officially approved during this period. Obvious progress has been achieved with respect to strengthening legal and policy frameworks for environmental protection as well, with the ratification of (and accession to) several multilateral environmental conventions. Kyrgyzstan has made progress in implementing environmental impact assessment (EIA) and environmental permitting as shown, inter alia, through the number and quality of regulatory documents issued and the scope of their application. Some positive changes have also occurred vis-à-vis implementation of certain multilateral environmental conventions, e.g. the Convention on Biodiversity, the Montreal Protocol on Substances That Deplete the Ozone Layer and the Stockholm Convention on Persistent Organic Pollutants. On 29 April 2002, the Government approved the State Programme on Elimination of Use of Ozone-depleting Substances. The programme was designated for the period 2002–2005 with funding from the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP); as a direct result, the Stockholm Convention was ratified by Kyrgyzstan in 2006.

The main overall constraint to more successful implementation of environmental protection and sustainable development strategies and plans remains the lack of budgeted State funding, particularly for projects requiring significant funds. This is not only due to limited revenues of the national and regional budgets. Some of the above documents, while well prepared and broadly discussed, lack necessary linkages to established official systems for approval, funding, monitoring and evaluation. Although it was approved by the President, the National Strategy on Sustainable Human Development was not approved by the Parliament (Zhogorku Kenesh) as is required for national social and economic development programmes, and therefore its implementation has not been financially secured. The National Environmental Action Plan, approved by the Government in 1995, has to a great extent been considered simply as a document for international and donor organizations. The National Agenda 21 (also referred to as the Concept of Transition to Sustainable Development) was prepared and approved by the Government in 2002 for the World Summit on Sustainable Development in Johannesburg, but subsequently was neither treated as an official governmental policy document, nor financed.

Current strategies and plans for environmental protection and sustainable development
The major current strategic documents for environmental protection and sustainable development are the *Country Development Strategy for 2007–2010* and the *Ecological Security Conception for 2007–2020*. The former is the mid-term overall development strategy of the Government; the latter is the main long-term environmental policy document.

**Country Development Strategy 2007–2010**

The *Country Development Strategy* is considered the necessary step to follow implementation of the *National Poverty Reduction Strategy for 2003–2005*. It defines the priorities of development as: (a) strengthening economic potential; (b) combating corruption; (c) promoting social development; and (d) ensuring environmental sustainability. The main development goals of the *Country Development Strategy* are: (a) poverty alleviation, (b) improvement of people’s living standards through promotion of decent work conditions and protection of the environment, (c) preservation of the cultural and moral values of the nation, (e) protection of civil rights, (f) gender equality and (g) effective democracy. An important new feature of this strategic document is its aim of relying on financing from the State budget and its clear linkage to the medium-term processes of budgetary planning.

Regarding strategic priorities related to the environment and measures for their implementation, the *Country Development Strategy* stipulates that the country’s development should provide stable long-term economic growth which will not lead to degradation of the natural environment. Ensuring environmental safety as the basis for sustainable development is one of the Strategy’s mid-term objectives. The Strategy lists the following specific measures as necessary to achieving this objective:

- Mainstreaming environmental policy and environmental legislation;
- Monitoring the state of the environment and promoting the rational nature use;
- Simplifying the environmental permitting system;
- Strengthening environmental enforcement;
- Establishing a network of specially protected natural areas;
- Strengthening biodiversity conservation and afforestation;
- Promoting rehabilitation and prevention of degradation of ecosystems.

The total budget needed for implementation of the above measures during the period 2007–2010 was assessed at US$ 60 million.

Another priority of the *Country Development Strategy* related to environmental protection is the rehabilitation of uranium and toxic dumping sites to prevent and eliminate threats of radioactive contamination. This goal is linked to the Strategy’s mid-term objective of ensuring the safety of the population and territories of Kyrgyzstan and neighbouring Central Asian countries from emergencies involving radioactive and toxic contamination. Reaching this objective is envisaged by rehabilitating tailing sites and uplands, ensuring dam safety, and undertaking regular research and technical work on the most dangerous tailing sites.

The *Country Development Strategy* also provides for detailed description of strategic planning aspects such as participation by local authorities and other stakeholders, adjustment of institutions and resources for implementation, assessment of potential risks and threats, and monitoring and evaluation. Delivery and implementation of the Strategy is promoted and coordinated by a specialized body: the National Council for Strategic Development, chaired by the President of the Kyrgyz Republic.

**Ecological Security Conception**

The *Ecological Security Conception*, approved by the President in 2007, replaced the first *Ecological Security Conception* of 1998 and is currently the country’s main strategic document of environmental policy. It lays down the basic principles of environmental policy and identifies global, national and local environmental challenges. It also outlines national priorities for environmental protection, as well as instruments for ensuring environmental safety and the expected outcomes of ESC implementation. The ESC defines several main directions of action in line with the specific measures of the *Country Development Strategy*: (a) to balance environmental, economic and social aspects of development; (b) to strengthen the legislative and regulatory systems; (c) to improve environmental enforcement; (d) to
promote economic incentives of environmental protection; (e) to reform and renew the system of environmental monitoring; and (f) to implement obligations under the ratified multilateral environmental conventions.

The approach of the ESC is based on a clear intention to interconnect the issues of environmental safety and sustainable development and to ensure coherence in the management activities of the national environmental authority on policymaking. Implementation of the ESC is scheduled in three phases:

- 2007–2010 – ensuring social and economic development within the carrying capacity of ecosystems (see box 1.1);
- 2010–2015 – reducing the level of environmental pollution and rehabilitating the natural environment;

The first phase of implementation is considered as preparatory, providing the necessary institutional arrangements, conditions and effective instruments for the next phases.

### Box 1.1. Implementation of the Ecological Security Conception

On 13 June 2008, the President of the Kyrgyz Republic approved a set of measures (i.e. action plan) for the first phase of implementation of the ESC for the period up to 2010. The document covers environmental enforcement, climate change, conservation of biodiversity, sustainable management of land resources, air pollution, water pollution, waste management, environmental monitoring, access to information, public participation in decision-making, environmental education and international cooperation. Each action is provided with indications of timelines, sources of funding, budgets, responsible institutions and outcomes. Matters to be addressed in a future document on implementation measures of the ESC for the period 2011–2020 are also outlined.

**Source:** Resolution of the Government of Kyrgyz Republic of 13 June 2008 N 294 on implementation of the Ecological Security Conception

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**Other strategic documents**

The draft Concept of Transition to Sustainable Development until 2035² (CTSD) is considered by the Country Development Strategy as the document that will integrate environmental aspects into sectoral policies. Implementation of the CTSD is expected in three phases:

- Preparatory (2008–2010);
- Economic and social reform (2011–2020);
- Strengthening of the economy and the social sector (2021–2035).

The current draft CTSD provides very general information on: (a) the main challenges and priorities for development; (b) the stages and directions of transition to sustainable development; and (c) the methodology for evaluating progress achieved with respect to implementation and sustainable development indicators.

The 2002 Biodiversity Strategy aims at the conservation of biological and landscape diversity as a means to ensuring the sustainable social and economic development of the country. The Biodiversity Strategy defines nine main objectives, is supplemented by the Action Plan and was followed up with the establishment of the Commission on its Implementation, comprising representatives of various ministries and agencies and the National Academy of Science. The Action Plan defines a list of implementation measures for the Convention on Biodiversity, with timelines and responsible institutions and organizations. The State Forest Service (currently a part of the State Agency of Environmental Protection and Forestry) was appointed as the implementing agency for the Strategy and Action Plan. To proceed, the Biodiversity Strategy needs a revised operational plan, with budgets, clear and measurable outcomes, and indicators for monitoring and evaluation.

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² The draft Concept was submitted to the Government in May 2008 by the State Agency of Environmental Protection and Forestry.

- Preparation of outlines for long-term strategic planning (i.e. a concept);
- Strategic long-term planning (i.e. a strategy or long-term programme);
- An operational plan for an implementation phase (i.e. an action plan or a medium-term programme).

The Concept of Development of Forestry was followed by the preparation of the National Forest Programme and the operational Action Plan, which prescribes steps of implementation for a period of four years.

The overall objective of the three documents is the conservation of forest ecosystems through the gradual coverage of forests by protected areas. At the same time, these documents also aim to establish forestry development as a healthy and sustainable economic sector and to promote the role of the private sector in the management of forests, both through the privatization of the production functions and through the leasing of forest lands to individuals or groups. In this regard, it is important to mention that the reviewed documents do not provide guidance on how those two approaches will be reconciled.

The 2005 State Programme on Use of Industrial and Domestic Waste is an instrument for supporting the implementation of the Law on Industrial and Domestic Waste of 2001. The programme aims to develop and implement measures on waste prevention, waste recycling and reuse, environmentally safe waste disposal, remediation of lands used for landfills, handling hazardous and toxic waste, funding of waste management, construction of installations and landfills for disposal of municipal waste, and recycling of organic waste. Designated for the period 2005–2011, the total budget of the State Programme on Use of Industrial and Domestic Waste is 186 million KGS. This includes 50 million KGS from the national budget, 20 million KGS from regional and local budgets and 15 million KGS from the national and regional funds for environmental protection and forestry sector development.

1.3. Legal framework

Key environmental protection laws, namely on environmental protection, environmental expertise, air protection, fauna and specially protected natural areas, were enacted in Kyrgyzstan in 1999 or even earlier and have not been subject to significant changes since that time. During the same period a number of natural resources laws were adopted that contain provisions on environmental protection (see the first EPR and box 1.2 below).

<table>
<thead>
<tr>
<th>Box 1.2. Main environmental laws (as of 2008)</th>
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<tbody>
<tr>
<td>1994 Law on Water</td>
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<td>1994 Law on Specially Protected Natural Areas</td>
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<td>1997 Law on Fishery</td>
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<td>1997 Law on Subsoil</td>
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<td>1999 Land Code</td>
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<td>1999 Forest Code</td>
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<td>1999 Law on Environmental Protection (framework law on environmental protection)</td>
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<td>1999 Law on Fauna</td>
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<td>1999 Law on Biosphere Territories</td>
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<td>1999 Law on Environmental Expertise</td>
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<tr>
<td>1999 Law on Air Protection</td>
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<tr>
<td>1999 Law on Drinking Water</td>
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<tr>
<td>2001 Law on Industrial and Domestic Waste</td>
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<tr>
<td>2001 Law of Protection and Use of Flora</td>
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<tr>
<td>2001 Law on Tailing Sites and Slag Heaps</td>
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<td>2002 Law on Mountainous Areas</td>
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<tr>
<td>2004 Law on Sustainable Development of the Environmental and Economic System, Issyk-Kul</td>
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<tr>
<td>2005 Water Code</td>
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<td>2006 Law on the Ozone Layer Protection</td>
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</table>
The 1999 framework **Law on Environmental Protection** lays down the basic principles of environmental protection. It also gives short basic provisions on most regulatory areas, e.g. specially protected natural areas, environmental quality standards, EIA and environmental expertise, environmental permitting, dangerous substances, nuisances, waste management, climate change and protection of the ozone layer, eco-audit, financing measures on environmental protection and environmental insurance, environmental disasters, competencies of governmental bodies, public environmental rights, environmental information and education, liability for environmental harm, environmental monitoring and enforcement. These provisions provide the basis for the development of new legal instruments on separate areas of environmental protection, which can be adopted by resolutions of the Government, orders of the State Agency of Environmental Protection and Forestry and sometimes as laws adopted by the Parliament and signed by the President. Nevertheless, some of the above-mentioned areas of regulation have yet to be implemented, and there are no specific environmental laws or secondary legislation related to them, e.g. environmental insurance.

The 1999 **Law on Environmental Expertise** provides detailed regulations on the procedures of environmental expertise and EIA and covers both current and new environment-related programmes, plans and legislation. The strategic environmental assessment (SEA) procedure is still not developed in Kyrgyzstan. The EIA procedure, rules on public participation, and requirements for preparation and design of EIA documentation, together with a list of activities subject to EIA, are also regulated by the **EIA Instruction**, which was approved by the MEP. Currently, certain amendments to the EIA Instruction regarding public participation and the screening phase are being considered by the State Agency of Environmental Protection and Forestry.

Besides the 1994 **Law on Specially Protected Natural Areas**, some types of protected areas are also regulated by special laws and secondary legislation, e.g. on 18 June 2001 the Ministry of Ecology and Emergencies approved special rules on natural reserves. There is also the 1999 **Law on Biosphere Territories**, which has been applied only to the biosphere territory Issyk-Kul so far.

The 1999 **Law on Air Protection** is a framework law covering air pollution from both stationary and mobile sources. It includes some provisions on ozone-depleting substances and greenhouse gases. On 27 March 2000, the MEP adopted rules on air protection that serve as a key legal instrument for the Law’s implementation. These rules define legal, administrative and organizational measures to prevent and control emissions of pollutants from point sources as well as from diffuse sources. Among other things, they provide guidance for enterprises on how to organize their activities to comply with legislation on air protection, e.g. the requirement to have a specialized division or personnel responsible for planning and conducting measures on air protection.

During the 1990s, Kyrgyzstan also adopted a number of natural resources laws containing provisions on environmental protection. These include the **Law on Water** (enacted in 1994), the **Law on Fishery and Law on Subsoil** (both 1997), and the **Law on Fauna Land Code and Forest Code** (all 1999). The **Law on Fishery** and the **Law on Subsoil** contain only very short provisions on environmental protection, which are just references to the environmental law. A new 2008 **Law on Subsoil** has been drafted and is currently being considered by Parliament. In contrast, the **Land Code, Forest Code and Law on Drinking Water** have more detailed provisions on environmental protection, and provide specific environmental protection instruments, e.g. water protection stripes and zones, procedures for conservation of lands contaminated by chemicals and radioactive substances above certain thresholds, and State forest protection.

Since 2000, Kyrgyzstan also enacted a number of new environmental laws. One of the areas of environmental protection regulated by the new laws is waste treatment and management. The **Law of 2001 on Industrial and Domestic Waste** laid down general rules that apply to all categories of waste, while the **Law of 2001 on Tailing Sites and Slag Heaps** addressed the issue of uranium and toxic waste sites inherited from the Soviet era.

Two newly adopted laws are devoted to specific ecosystems, namely the 2002 **Law on Mountainous Areas** and the 2004 **Law on Sustainable Development of the Environmental and Economic System, Issyk-
Kul. Additionally, the Law of Protection and Use of Flora was enacted in 2001. It supplements the Forest Code, but is more focused on conservation goals.

On 12 January 2005, Kyrgyzstan adopted the Water Code. The Water Code actively promotes an integrated water resources management approach through new provisions establishing a National Water Council and river basin councils and developing a National Water Strategy and basin management plans. It also includes new provisions on drinking water and dam safety. However, the 1994 Law on Water has not been repealed, and so legislation that does not contradict with the provisions of the 2005 Water Code remains in force (e.g. article 99 of the Water Code). Apart from those on the establishment of the National Water Council, many provisions in the Water Code have yet to be implemented (see chapter 6).

Ratification and implementation of multilateral environmental conventions has also contributed to lawmaking in Kyrgyzstan (see chapter 4). The 2006 Law on the Ozone Layer Protection and the 2007 Law on State Policy and Regulation in the Sphere of Emission and Absorption of Greenhouse Gases were elaborated and adopted to transpose into the national law provisions of the 1985 Vienna Convention for Protection of the Ozone Layer and Montreal Protocol and the United Nations Framework Convention on Climate Change and Kyoto Protocol.

The regulations derived from environmental and natural resources laws are being developed mainly by the Government, the national environmental authority and a few other ministries. Currently, the legislative framework in Kyrgyzstan provides more elaborate rules on the following aspects of environmental protection:

- Procedures for administrative environmental enforcement and status of environmental inspectors;
- Environmental expertise and environmental impact assessment;
- Water discharges;
- Air pollution from industrial plants;
- Toxic chemicals, including pesticides;
- Ozone-depleting substances;
- Protection of forests from illegal felling of trees, fires and plant pests.

In May 2008, a group of deputies of the Jogorku Kenesh (Parliament) initiated a draft Environmental Code, which if adopted would be a codified act of environmental laws. This would entail that all or some previous environmental laws, as well as a part of the subsidiary environmental legislation, would be annulled. The draft Environmental Code is currently being considered by the Committee of Land-Agrarian and Ecological Issues of the Jogorku Kenesh.

In comparison with the existing environmental legislation, the current draft Environmental Code provides more detailed regulation and can strengthen the legal frameworks for:

- Policymaking and planning for environmental protection;
- EIA and SEA;
- Environmental permitting and eco-audits;
- Administrative procedure of environmental enforcement and environmental liability;
- Public access to environmental information;
- Eco-labelling;
- Environmental quality standards and permissible levels of emissions, discharges and ambient noise;
- Environmental monitoring;
- Economic instruments for environmental protection and financing of measures on environmental protection;
- International and transboundary cooperation.

Adoption of the Environmental Code by Kyrgyzstan would therefore dramatically change the legislative frameworks for most thematic areas covered in chapters 1 to 5 of the present review.
Many legislative new elements proposed by the draft Environmental Code were inspired by European Union (EU) and UNECE legal instruments, particularly by the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention), the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) and its Protocol on Strategic Environmental Assessment, the EU directives on public access to information, EIA and SEA, and the EU Integrated Pollution Prevention and Control (IPPC) Directive. However, successful harmonization of the Kyrgyz environmental law with international environmental law and EU environmental legislation will depend to a great extent on the quality of the drafting of the law. At present, some parts of the draft Environmental Code mix incompatible elements. For example, the proposed list of activities subject to EIA and environmental permitting is based on an outdated sanitary classification of facilities. If the current draft Code were adopted as is, the whole EIA and future IPPC process in Kyrgyzstan would be inconsistent and incomparable with the ratified UNECE conventions. It should also be mentioned that the UNECE Strategy for Education for Sustainable Development has not been reflected in the current draft Code, which still deals only with eco-education objectives.

The adoption of the Environmental Code with its more detailed rules will likely reduce needs in development of the subsidiary environmental legislation. At the same time, adoption of the codified act of environmental legislation, with its large quantity of new elements, will require great resources and capabilities to implement them.

1.4. Institutional framework

National level

Until February 2001 the role of the national environmental authority was fulfilled by the MEP, which was then merged with the Ministry of Emergencies into the Ministry of Ecology and Emergencies. Within the framework of the merged Ministry, the main responsibility for environmental protection issues was assigned to the Department of Ecology and Nature Management, which had territorial offices in Bishkek, Osh and the oblasts. In November 2005, the national environmental authority was separated from the structure of the Ministry of Ecology and Emergencies and reestablished as an independent body with the status of a State agency. The State Agency of Environmental Protection and Forestry under the Government was formed by merging the functions of the National Forestry Service, the National Centre for the Development of Mountainous Regions, and the Department of Ecology and Nature Management of the former Ministry of Ecology and Emergencies.

The above institutional changes were not linked to changing priorities of environmental policy, but rather to political restructurings and processes (e.g. reducing bureaucracy, decentralization). One of the negative consequences of this is the lack of management continuity between old and new institutions. Another negative consequence is that, while the competence of SAEPF appears to be broader than the competencies of the former MEP or the Department of Ecology and Nature Management of the former Ministry of Ecology and Emergencies, in reality the status of State agency is lower than the status of a ministry or even a committee. This creates difficulties when it comes to defending ecological interests and raising environmental priorities.

State Agency of Environmental Protection and Forestry

Currently, the State Agency of Environmental Protection and Forestry (SAEPF) is the national environmental authority responsible for coordination of State policy on environmental protection, conservation of biodiversity, rational nature use, forestry and hunting development, and environmental safety. It develops and implements national environmental policy; enforces environmental law; monitors and assesses biological resources; and provides information services for governmental bodies, economic entities and the public on state of the environment, biodiversity, environmental threats, and environmental protection activities and measures. Due to the split with the Ministry of Emergencies in 2005, however, it currently does not oversee environmental monitoring of water bodies and ambient air or the rehabilitation of industrial waste sites. SAEPF plays the leading role with respect to promotion of sustainable development in various sectors, and to this end developed the still-draft Concept of Transition to Sustainable Development (CTSD) to 2035.
In accordance with the SAEPF regulations, approved by Resolution of the Government of April 10, 2008, the structure of SAEPF also includes the following semi-autonomous bodies (see figure 1.1):

- Department of Hunting Control and Regulation of Hunting Resources Population (hunting authority)
- Department of Forest Ecosystems Development (forestry authority)
- Issyk Kul biospheric territory
- Administration for Forest and Hunting Organization
- National Fund for Environmental Protection and Forestry Sector Development.

SAEPF personnel totals 2,357, of which 87 employees work at the central office, 128 at the Department of Hunting Control and Regulation of Hunting Resources Population, and 34 at the Department of Forest Ecosystems Development.

Figure 1.1. Overall structure of the State Agency of Environmental Protection and Forestry

State Agency of Environmental Protection and Forestry under the Government of the Kyrgyz Republic

- Department of Hunting Control and Regulation of Hunting Resources Population
- Department of Forest Ecosystems Development
- Biospheric territory Issyk Kul
- Administration for Forest and Hunting Organization
- Republican fund for environmental protection and forestry sector development

Territorial administration for development of nut-tree forest ecosystems in the Jalal-Abad zone

Forestry enterprises; units include district forestry, forest and hunting ranges; forest farms and wood farms, forestry protection stations

Chu-Bishkek-Talas interregional environmental protection administration

Issyk Kul-Naryn interregional environmental protection administration

Jalal-Abad interregional environmental protection administration

Osh-Batken interregional environmental protection administration

Natural reserves, national parks

Chu-Bishkek-Talas regional fund for environmental protection and forestry sector development

Issyk Kul-Naryn regional fund for environmental protection and forestry sector development

Jalal-Abad regional fund for environmental protection and forestry sector development

Osh-Batken regional fund for environmental protection and forestry sector development
Environmental protection matters are handled by the central office and the four interregional environmental protection administrations. The central office is divided into divisions and sections (see figure 1.2.).

**Figure 1.2. Structure of central office of the State Agency of Environmental Protection and Forestry**

<table>
<thead>
<tr>
<th>Board</th>
<th>Director</th>
<th>Deputy Director</th>
<th>Deputy Director</th>
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<tbody>
<tr>
<td><em>Chief of Administration</em></td>
<td><em>Division of finance and economy</em></td>
<td><em>Division of state environmental control</em></td>
<td><em>Division of environmental strategy and policy</em></td>
</tr>
<tr>
<td><em>Division of legal services, human resources and documentation support</em></td>
<td><em>Section of industrial ecology</em></td>
<td><em>Section of economy of nature use and standards</em></td>
<td><em>Section of state environmental review</em></td>
</tr>
<tr>
<td><em>Financial section</em></td>
<td><em>Section of fauna and flora</em></td>
<td><em>Section of information and analytical support, development of programmes</em></td>
<td><em>Section of biodiversity, protected areas, ecoeducation and mass media</em></td>
</tr>
<tr>
<td><em>Section of accounting, audit and economy</em></td>
<td><em>Section of fishery control and inspection</em></td>
<td><em>Section of international cooperation</em></td>
<td><em>Division of environment monitoring</em></td>
</tr>
</tbody>
</table>

**Executive government bodies involved in environmental protection**

**The Ministry of Emergencies.** Together with traditional functions of population protection from threats of natural and man-made emergencies and forest-fire prevention, the Ministry of Emergencies is also responsible for State management of hydrometeorological activity. In the course of splitting up the Ministry of Ecology and Emergencies in 2005, the Main Directorate for Hydrometeorology (Kyrgyzhydromet), which conducts State monitoring of the ambient air and water resources, was left within the structure of the Ministry of Emergencies. In addition, the latter retained competence of monitoring and rehabilitation of uranium tailing sites.

**The Ministry of Healthcare** is actively involved in promoting the population, health and welfare protection policy in Kyrgyzstan in close connection with environmental issues and prevention of
negative environmental impacts on human health. For this purpose, the National Environmental Health Action Plan (NEHAP) was adopted in Kyrgyzstan in 1999. The Sanitary and Epidemiological Supervision Department is of special importance for environmental enforcement because many environmental quality standards are actually sanitary standards.

The Ministry of Industry, Energy and Fuel Resources plays an important role in promoting sustainable development in the industry and energy sector through developing and offering economic incentives, as well as through other forms of incentives and methods. In addition, the Ministry actively promotes energy efficiency and the development of renewable energy sources, which are under the competence of the State Department on Fuel and Energy Complex Regulation of the Ministry of Industry, Energy and Fuel Resources. At the same time, the Ministry’s structure includes the Kyrgyz Association of Renewable Energy Sources. In October 2008, this Ministry adopted a draft Law on Use of Renewable Energy to the Government.

The Ministry of Agriculture, Water Management and Processing Industry is a key institution in terms of water resource management functions, promotion of sustainable development in agriculture and fishery, and the supply of drinking water to the rural population. The Ministry’s structure includes, inter alia, the following departments: (a) water industry; (b) fishing industry; (c) pastures; (d) rural water supply; (e) use of chemicals to protect plants and phyto-sanitary control; and (f) State veterinary service.

The State Agency of Geology and Mineral Resources is the authorized State body in the area of subsoil use and mining industry development. In particular, this agency monitors groundwaters and their quality, and exercises State control over the rational use and conservation of mineral resources by mining enterprises.

The State Agency of Registration of Immovable Property Rights (Gosregistr) is the authorized State body in the area of monitoring and management of land resources, including croplands and pastures.

**Interregional level**

Four interregional environmental protection administrations (Issyk-Kul-Naryn, Chu-Bishkek-Talas, Osh-Batken and Jalal-Abad) operate under the State Agency of Environmental Protection and Forestry at the regional level. In accordance with the Government Resolution of 10 April 2008, the four administrations were established by uniting regional (oblast and the cities of Bishkek and Osh) territorial environmental protection departments. Local environmental protection and forestry funds currently exist on the same interregional basis.

**Regional and Local Levels**

The structure of regional and local governments and bodies of local self-governance is currently under formation in Kyrgyzstan. In this connection, on 29 May 2008 the Law on Local Self-Governance and Local State Administration was adopted. According to this Law, local power at the level of administrative-territorial units (districts, cities, villages, small rural communities) is exercised by bodies of local self-governance and the local State administration. Bodies of local self-governance include local keneshes (councils), heads of aiyt provinces, villages and cities of district importance, mayors of cities, and executive-administrative local government bodies. Moreover, different kinds of territorial public government may be created in a separate part of a city, village, ail, e.g. on the level of a micro-district. Such bodies are formed by the population itself, as well as by kurultais (assemblies) of citizens.

The competence of bodies of local self-governance comprises, inter alia:

- Drinking water supply for the population;
- Maintenance of sewage systems and treatment facilities in settlements;
- Landscaping and gardening in public spaces;
- Household waste collection, disposal and utilization;
- Local cultural heritage protection;
- Establishing land-use and area development regulations.
In addition, bodies of local self-governance may be delegated additional power on the basis of a law or agreement with a relevant governmental body.

On the oblasts and district level, State administrations function as the executive bodies of general competence and are subordinated to the President and the Government. Existing legislation does not expressly specify environmental matters as being in the competence of State administrations at the oblast level, whereas the competence of State administrations includes collection of resources in order to solve urgent environmental tasks. Most central ministries and agencies have territorial departments at the regional (oblast, city of Bishkek) level. Thus, interregional environmental protection departments of SAEPF have their head offices in the Issyk-Kul, Jalal-Abad and Osh oblasts as well as in Bishkek; in other oblasts (Batken, Naryn, Talas and Chu), there are representative offices of the relevant interregional environmental protection administrations. Although they are called basin departments, the territorial departments of the Water Management Department of the Ministry of Agriculture and Water Management and Processing Industry are actually oblast offices (e.g. Jalal-Abad, Issyk-Kul, Batken, Osh, Chu, Talas, Naryn).

There is currently no clear picture of the distribution of environmental protection competencies among the bodies of local self-governance, the local State administrations and the territorial departments of the central ministries and agencies.

**1.5. Mechanisms for integration and cooperation**

In Kyrgyzstan, issues of coordination and cooperation between the central executive bodies are being tackled, first of all, by the creation of governmental and inter-agency coordinative and consultative bodies. Specifically, commissions or organizational commissions, councils, and working groups can be established. Commissions are used for making joint decisions by several governmental bodies on a certain range of issues. A council can be established for a preliminary consideration of issues and can make recommendations only. A working group, as a rule, can be set up for efficient joint preparation of information on a certain issue or to draft a legal act or policy document.

The governmental or inter-agency commissions and councils, together with the working groups, are established based on a decision of the Government or the Prime Minister. The working groups can also be established based on decisions of the existing commissions and institutions. According to the Government regulations, the inter-agency commissions and councils are headed, as a rule, by the Minister or Deputy Minister, or by a Head or Deputy Head of another executive body; while the organizational aspects are tackled by the agency whose Head is fulfilling the functions of chairman. It should be noted that in practice a State agency is not as well positioned as a Ministry to organize and manage the activities of an inter-agency commission or council, since it is lower in the hierarchy of State bodies.

One of the most important issues of coordination and cooperation is the implementation of the **Country Development Strategy**. In April 2007, in an effort to coordinate and jointly manage the implementation of the strategic tasks, the National Council for Strategic Development was created by Decree of the President. This Council is headed by the President and its working body of the Council is the Ministry of Economic Development and Trade. The State Agency of Environmental Protection and Forestry, however, is not included in the structure of the National Council.

At present, the key spheres of inter-agency coordination and cooperation of environmental bodies are: (a) integrated management of water resources (see box 6.1 in chapter 6); (b) certain thematic areas of sustainable development (e.g. climate change, renewable sources of energy, energy saving); (c) issues of radiation safety; (d) management of Issyk Kul biosphere territory; (e) environmental enforcement and coordination of issues related to inspections; and (f) preparation of legislative acts and policy documents.

At the end of 2008, the mechanisms for integration and cooperation at the regional and local levels had not yet been developed and the system of bodies of local executive bodies and local self-governance was just being formed.
1.5. Conclusions and recommendations

Providing sufficient State funding for environmental protection measures remains a key challenge for Kyrgyzstan. Many policy documents approved by the Government and the President are not financially secured, for instance the National Environmental Action Plan, the Strategy on Sustainable Human Development, the Biodiversity Strategy and Action Plan and Agenda 21. The underlying problem is the existence of a great number of environmental protection and sustainable development programmes and plans for which financing has not been secured, and which are therefore not implemented.

Recommendation 1.1:
The Government should ensure that the approved programmes and plans for environmental protection and sustainable development are financed and directly linked to the system of budgetary financing, monitoring and evaluation of planned and financed activities. In order to do so, they should go through the parliament process.

Many existing environmental protection and natural resources laws in Kyrgyzstan, e.g. on environmental protection, air protection, industrial and domestic waste and fauna, are framework acts. To be implemented, they need to be reinforced by more detailed regulations from the Government or the competent ministries, committees and agencies. This is not always the case. For instance, the Water Code, adopted on 12 January 2005, has not been implemented and regulations have yet to be approved, while the 1994 Law on Water and its related regulations are still in effect. Moreover, implementation of laws by competent ministries, committees and agencies is currently not a well-planned and organized process.

Recommendation 1.2:
To improve the current situation, with effective and timely implementation of national environmental protection and natural resources laws, the Government should:

(a) Request ministries, committees and State agencies to combine lawmaking with the planning of effective further implementation of initiated laws, e.g. by preparation in advance of a list of legislation to be adopted or amended, and also of implementation guides defining in particular time frames for implementation;

(b) Establish a general procedure for the drafting and approval, by competent ministries, committees and agencies, of regulations to newly adopted laws, with timelines practicable and consistent with public participation requirements.

During the process of past institutional changes, the status of the national environmental authority has been decreased from a ministry to a State agency, despite the fact that its competence has been expanded by the addition of the functions of forest protection and management as well as biodiversity conservation. At the same time, performance of some of its functions, e.g. ensuring environmental safety or promoting sustainable development in various sectors, requires an appropriate status, one that grants broader capability for initiating and facilitating inter-ministerial and intersectoral cooperation. The current status of the national environmental authority seems to be too low for this. For example, the State Agency of Environmental Protection and Forestry is not currently a member of the National Council for Strategic Development, which is responsible for the coordination of activities of various governmental bodies on implementation of the Country Development Strategy. In such a situation, it is not possible for the State Agency of Environmental Protection and Forestry to properly carry out its responsibilities on environmental safety or promotion of sustainable development.

Recommendation 1.3:
To enable the national environmental authority to ensure environmental security and promote sustainable development, the Government should:

(a) Review the needs and options to raise the status of the State Agency of Environmental Protection and Forestry to that of a ministry;
(b) Ensure the Agency’s active participation in the coordination of intersectoral cooperation on sustainable development at the national level either by initiating its participation in the National Council for Strategic Development or through the establishment of a national council on sustainable development in which it would play a major role.

The governance system at the regional (oblast) and local levels is currently under formation. The current sharing of competencies on environmental protection between State administrations, interregional departments of the State Agency of Environmental Protection and Forestry and bodies of self-governance remains unclear. In these circumstances, the establishment of effective integration and cooperation mechanisms becomes even more important.

**Recommendation 1.4:**
To establish effective and practicable mechanisms for cooperation and to clarify environmental protection and sustainable development competencies at the interregional, regional and local levels, the Government should:

(a) Initiate consultations between competent central governmental bodies, the regional and local administrations, and local self-governance bodies on this matter;

(b) Develop, on the basis of outcomes of the above consultation, legislative frameworks clarifying responsibilities at every level, and ensure necessary institutional and organizational arrangements for the establishment of regular mechanisms of such cooperation.
Chapter 2

COMPLIANCE AND ENFORCEMENT MECHANISMS

2.1 Progress since the first Environmental Performance Review

The most important instruments for compliance and enforcement are environmental assessment, permitting, compliance monitoring, compliance promotion, enforcement tools and environmental standards. The analysis in the first EPR of 2000 showed that while the most important environmental laws had already been adopted, their implementation was very weak. Implementing regulations and mechanisms were missing. In 2004, the Organisation for Economic Co-operation and Development (OECD) carried out a Peer Review of Environmental Enforcement in the Kyrgyz Republic and addressed recommendations to the country that focused with a short-term (2005–2006) and medium-term perspective (2007–2011) on the following five objectives:

- Seek improvement of the environmental regulatory framework;
- Acquire adequate powers and raise the institutional status;
- Adopt risk-based and performance-oriented working methods;
- Embrace higher professional standards and foster international cooperation;
- Interact with stakeholders openly and constructively.

The assessment mission for the second EPR found that very limited or no progress has been made in the implementation of the OECD recommendations. Only a few of the recommendations under the short-term perspective have been followed, e.g. “revision of obsolete regulations, in particular those governing environmental standards”. For this reason, most of the unimplemented recommendations made in 2004 by OECD Peer Review are still relevant in the present context and have been reconsidered in this second EPR of the country.

2.2 Environmental enforcement authorities

The organizational structure of the environmental enforcement authorities at national level has been quite unstable in recent years in Kyrgyzstan. Changes have been occurring every two years. Before 2001, the main environmental enforcement agency was the Main Division for Environmental Inspection (MDEI) of the Ministry of Environment Protection (MEP). In March 2001, MEP was merged with the Ministry of Emergencies; following this, MDEI was transformed into the Division of State Environmental Control (DSEC). In 2003, DSEC was merged with the former Division of Ecology and Environmental Monitoring to form the Department of Ecology and Nature Resource Use (DENRU). Within DENRU, the permitting and inspection authority functioned at the divisional level. This low institutional status did not change in 2005, when the environmental authorities were split from the Ministry of Ecology and Emergencies and merged with the forestry authorities to form the State Agency of Environmental Protection and Forestry (SAEPF). The Head of SAEPF is not a member of the Cabinet. In February 2007, DSEC was created within SAEPF.

Responsibilities for compliance assessment and enforcement are broadly determined in the 1999 Law on Environmental Protection (No 53), which was amended in the period 2002–2005. Detailed provisions regarding environmental assessment, permitting and control are included in the recently adopted Government Resolution No 139 (10 April 2008). According to the Resolution, enforcement authorities have control functions vis-à-vis implementation of the measures aimed at environmental protection, biodiversity conservation, rational use of natural resources and coordination of measures for radiological, chemical and biological safety. SAEPF is mandated to carry out State environmental control for the protection of atmospheric air, water resources and land; flora and fauna; fish populations and their living environment; and forests. It also exercises control over the activities performed in protected nature reserves; related to waste management and its transboundary transfer,
including radioactive waste; and also regarding taxation. Natural resources use taxes and environmental expenditures. The structure of the permitting and enforcement authorities in SAEPF is shown in box 2.1.

At the national level, DSEC is the body authorized to carry out inspections, give prescriptions, impose fines and sanctions and prepare reports on the results of the inspections. There is no differentiation between the responsibilities for environmental control at the national and territorial levels concerning large-, medium- and small-scale enterprises. At the same time, inspectors issue most of the environmental permits, which currently are separate permits either for emissions of pollutants in the environment or for solid waste disposal. There is no differentiation in environmental permitting between large and small polluters.

The Division of Environmental Monitoring is responsible mainly for laboratory activities and is engaged in taking samples during the environmental inspections and analysing them. The results are submitted to DSEC for conclusions and prescriptions.

The major task of the Section for State Environmental Expertise (SEE Section) is to review the documentation submitted in order to issue the State environmental expertise (SEE). Depending on the complexity of the case the section seeks the opinion of other divisions in SAEPF. The specialists in the SEE Section also issue permits on import and treatment of hazardous waste (e.g. used car-tyres).

Box 2.1: Permitting and control authorities (as of August 2008)

**Central Office**
- Division of State Environmental Control
- Division of Environmental Monitoring
- Section for State Environmental Expertise

**Territorial Administration**
- Interregional environmental protection administration:
  - Chu-Bishkek-Talas
  - Issyk-Kul-Naryn
  - Jalal-Abad
  - Osh-Batken
- Forestry enterprises: district forestry and hunting ranges
- Rayon environmental protection offices

*Source:* SAEPF, May 2008 and revised in August 2008

According to the new organizational scheme approved in 2008 by Government Resolution No 139/10.04.2008, the seven former regional administrations for environmental protection were transformed into four interregional administrations (see chapter 1 and figure 1.1). Currently, compliance with and administrative enforcement of regulatory requirements is ensured by 185 environmental inspectors employed by SAEPF and its regional administrations (19 inspectors at the central agency). The number has not been changed for some years, and there is no intention to increase it. In each interregional administration, there is a Division of Environmental Control (Control Inspection Office).

The lowest level of environmental enforcement authorities is the rayon level (a rayon administration is responsible for at least 10 settlements, and sometimes more, up to 50 or 60). There are two to three environmental inspectors in each rayon administration. They are subordinated to the interregional administrations for environmental protection.

There are no real environmental authorities at the local (municipality) level. The sanitary-ecological inspection office subordinated to the mayor is responsible only for municipal waste treatment and green zones in the settlement.

In 2005, a Ministerial Order (On the adoption of the Statute of Voluntary Public Inspectors on Environmental Protection, 2005, № 168; see Chapter 3) was issued regulating the use of public inspectors for environmental
protection. Public inspectors work on voluntary and unpaid basis, with a view to strengthening the capacity of the controlling authorities. They are appointed by national and oblast environmental authorities and receive a special certificate indicating their status. This practice has proven some negative aspects because of low level of knowledge and motivation among the volunteers. However, to use volunteers in the inspection activities remains an option.

Over the last few years, environmental inspectors have focused primarily on enforcement of pollution charges collection as a way to compensate for the limited funding of environmental authorities. This focus has reached the point of distorting the very mission and integrity of compliance assurance system and eroding the self-confidence and public credibility of enforcement officers. Inspectors face problems in exercising their mandate due to responsibilities that go beyond the legal duties and the limited human, financial and material resources of the enforcement authority. Much emphasis is given to revenue-raising tasks, and the very low institutional status of the environmental protection authorities contributes to the lack of effectiveness of compliance assurance.

It follows from the above that the current situation is characterised by very limited financial and human resources on one hand and high expectations from inspectors on the other. Under such circumstances and especially at the regional and local levels, regular staff training remains one of the few, if not the only, motivational tools, when adequate resources are devoted to it. A good example are forest inspectors, who benefit from regular and good-quality training, as shown in box 2.2. Unfortunately, the quality of training is not equally good for other categories of inspectors, such as the environmental inspectors, whose current training is clearly insufficient.

Box 2.2. Training for forest inspectors

SAEPF provides one training session annually for 35 inspectors and specialists on forestry. It is a six-day training (35–40 hours) and covers the following topics:

- Calculation of environmental fees
- Procedure of inspector’s checks
- Sanctions for non-compliance with environmental legislation
- Environmental monitoring, determining of efficiency of work of wastewater installations
- Environmental examination, environmental impact assessment, requirements to preparation of conclusions of environmental examination.

Since 2003, approximately 200 inspectors and specialists have been involved in such trainings.

The major challenge for Kyrgyz environmental enforcement authorities is to focus on ensuring compliance with environmental requirements in order to achieve environmental results as opposed to pursuing revenue-raising goals as is frequently the case at present. Although preventative actions have been introduced, they are used neither systematically nor frequently. The regulated community is not treated with consistency, or in a transparent and proportionate manner.

There is no evidence of an established structure at SAEPF for internal quality control of inspectors’ work in the regional administrations and at the national level. Such a structure with the capacity of internal inspectorate could strengthen and complement the existing appeal mechanism. This was recommended in the first EPR\(^1\), but was not implemented.

2.3 Assessment tools, including environmental impact assessment, strategic environmental assessment, state environmental expertise and environmental audits

For the purpose of preventing the negative impacts of economic activities on the environment, a two-stage procedure for decision-making has been established. This procedure applies to specific activities that in general can

\(^1\) Recommendation 7.4 of the first EPR: “An internal audit of the services involved in inspection and control should be organized in order to evaluate the exact needs and to design adequate measures”.
be expected to generate environmental risks. Such activities can be carried out only after conducting an environmental impact assessment (EIA) and obtaining a positive State environmental expertise (SEE) report.

A review of currently implemented legislation, (including, for instance, the Law on Environmental Protection (1999, amended 2002–2005), the Law on Environmental Expertise (1999, amended 2003), the Instruction on Environmental Impact Assessment (1997) and the Instruction on State Environmental Expertise (1997)) shows that the existing EIA and SEE procedures have not been significantly modified since the first EPR of Kyrgyzstan in 2000, and that enforcement of EIA is still weak. Certain steps, such as early announcement of investors, screening\(^2\) (if necessary), consultations with competent authorities and concerned public, an assessment report, public access to the report and public discussion of it, as well as decision-making based on the report and public opinion, do not exist in current EIA practice.

According to data provided by SAEPF (SEE Section), in 2007 SEE was approved for 614 projects concerning, inter alia, new gold processing, rehabilitation of radioactive waste disposal sites, construction of a cement plant and rehabilitation of water supply facilities. The SEE report is usually based on a feasibility study or EIA prepared as part of the project documentation.

Draft normative rules for construction and exploitation of recreational areas, exploratory and geological prospecting works, and ecological passports for operating facilities are also subject to SEE. In 2007, SAEPF and its interregional administrations issued 276 SEE reports on these subjects.

The 2005 OECD report *Environmental enforcement in the Kyrgyz Republic: promoting environmental improvements and enhancing good governance* made the following recommendation: “In the interest of both economic recovery and environmental protection, EIA procedures should not be unnecessarily time-consuming or expensive (for both project developers and environmental authorities); they should be ‘reasonably applicable’ by the environmental inspectors and other managers involved, and they should provide an instrument for effective public participation”. This recommendation has not been implemented and is still fully valid.

The current procedural scheme does not appear to meet all the EIA requirements in line with international practices. The so-called Public Ecological Expertise prescribed by the Law on Environmental Protection has been implemented, but on a voluntary basis; the conclusions of this assessment are not mandatory for the developer. Although the conclusions are sent to the authority that carries out the SEE, most of the time they are not taken into account by the environmental authorities when issuing the conclusions of the SEE.

Another negative aspect is that there is no public participation in the SEE procedure. Therefore, conflicts often arise between the developer and the concerned public or environmental NGOs (which are very active in the country). There have been cases involving construction permits issued by the State Agency of Architecture and Construction (for construction of industrial facilities) and/or permits issued by the State Agency on Geology and Mineral Resources (for extraction and processing of ores).

However, there have been a few cases involving construction of industrial facilities without a prior SEE report (e.g. a ferrous processing plant was approved by a Government Resolution in 2007), or where SEE documentation was submitted after the construction work had started or where the SEE statement was negative.

Transboundary EIA is more complex than national EIA due to its cross-country nature. Nevertheless, the first steps to introduce transboundary EIA have been undertaken. In 2001 Kyrgyzstan ratified the UNECE Convention on Environmental Impact Assessment in a Transboundary Context. The year 2007 saw the start of the OSCE/UNECE project, EIA in a Transboundary Context: Pilot Implementation Project in Central Asia. A workshop was organized

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\(^2\) Regulations also provide a procedure which enables developers to apply to the planning authority for an opinion ("screening option") on whether EIA is needed in a particular case.
and a case study was discussed based on the pilot EIA procedure implemented at the Andash mining site, a site for copper and gold extraction on Kyrgyz territory. Public hearings have taken place in Kazakhstan (as an affected Party according to the requirements of the Convention) with the participation of the representatives of SAEPF and NGOs from both countries.

As a result of the OSCE/UNECE project, the required changes in the procedures regulating public participation have now been included in the draft amending the Instructions on EIA and SEE (which entered into force in 1997). Key elements in this draft include the development of EIA stages – screening and scoping and the introduction of new classification of the projects subject to EIA. Four categories of projects have been identified based on the significance of the impacts on the environment. As of 2008, the two draft instructions were being discussed by the authorities concerned (see chapter 1).

The training of environmental inspectors involved in the screening and scoping phases of the EIA procedure began under the abovementioned OSCE/UNECE project. Follow-up of this project is envisaged for the period 2008–2009. The purpose is to enable the inspection body to easily apply EIA procedures and to ensure harmonized EIA applications across the country.

Strategic environmental assessment (SEA) and environmental auditing are still not implemented in Kyrgyzstan. Procedures for carrying out environmental audits are included in Regulation No 19/15.02.2000, which has not been officially approved (or registered by the Ministry of Justice). However, general provisions for their implementation are included in the draft Environmental Code.

2.4 Environmental permitting and licensing

According to the list of normative acts providing for the environmental permitting, monitoring and control, regulation reform is moving slowly. There are gaps and inconsistencies in the regulations required for the implementation of important environmental and natural resources laws. For instance, the Water Code was enacted in 2005, but the Rules on Protection of Surface Waters, and the Rules on Wastewater Discharge into the Sewage System, which entered into force in 1993 and 1994, are still valid. Another example of inconsistency where legislative acts have not been brought into accord with new laws is the series of three legislative acts on waste: the 2001 Law on Production and Consumption Waste; the 1999 Instruction on the Way to Regulate the Treatment of Waste; and Government Resolution No 193 on the Control of Transboundary Movements of Hazardous Waste and Other Waste. Moreover, a few regulating documents enacted during the Soviet era are still in effect (e.g. GOST 17.2.3.02-78: Rules on determining permissible pollutants release by industrial enterprises).


Operators of large industrial installations need a minimum of six environment-related permits or licenses issued by different national-level authorities. Table 2.1 shows various types of permits issued by SAEPF in 2007:

| Table 2.1: Environmental permits issued by SAEPF in 2007 |
The validity of permits is short compared to most of the developed industrialized countries (for air, only one year; for water, between one and five years). Thus, permits are reviewed every year or every two years (for wastewater discharges), placing a huge administrative burden on both operators and regulators. The approach used to set permit requirements is based on the single environmental media (air, water), stipulating maximum allowable values of specific parameters of emissions to air and discharges to water. This does not correspond with the modern approach of reviewing and assessing the environmental aspects in their integrity and determining emission limit values on a case-by-case basis, taking into account site-specific characteristics. The approach currently applied, combined with the short validity of the permits, results in “end-of-pipe” treatment rather than enterprises exploring and applying innovative measures that are integrated into their production processes (“cleaner production”). Sometimes, excessive “end-of-pipe” requirements tie up an industry’s resources, which could otherwise be invested in modernizing existing technologies. There is no public involvement in the permitting process.

As of 2008, the existing permitting system remains unreformed, with separate permits being issued for air, water and waste. At the same time, there is no differentiation in the environmental permits between large- medium- and small-scale enterprises. Permitting rules are the same for all polluters, whether a cement plant or a thermal power plant, or small industrial activities such as a textile factory or a petrol station.

First steps towards the implementation of integrated permitting have been taken in connection with the Finnish technical assistance project, Environmental Monitoring and Management Capacity-Building (OECD 2006). Three pilot installations were selected in the Chu oblast: a heat and power plant, a brewery and a ceramic building materials factory. Industrial operators were familiarized with the concept of integrated permitting and prepared draft integrated permit applications. Furthermore, an inventory of industrial installations was developed by the project team. This inventory identified a list of installations that fall under the scope of the integrated permitting, but also included other categories that do not fall under the scope of the European Union (EU) Integrated Pollution Prevention and Control (IPPC) Directive (Directive 2008/1/EC), but are in line with the following criteria:

- Large production capacity;
- High risk of pollution of the environment and/or harm to human health as well as significant adverse impact on more than one environmental medium;
- Risk of accidents that can have a significant negative environmental impact (regulated in the EU by Directive 96/82/EC towards the control on major accident hazards);
- Generation of large amounts of hazardous waste.

Without taking into account the size of the installations, the inventory prepared shows that there are 530 facilities in Kyrgyzstan that fall under the categories of the original IPPC Directive. The 32 installations currently regulated at the national level by SAEPF mostly include those that would normally be covered by integrated permitting in the EU, but also some (e.g. production of tobacco goods) that typically lie outside its scope.

As a conclusion of this inventory, which was carried out with the aim of introducing integrated permitting into the national legislation, the recommendation was made to Kyrgyzstan to elaborate a special law on integrated pollution prevention and control. However, despite the good results, there has been no follow-up to the IPPC project and the
integrated permitting system has not been introduced. As mentioned in chapter 1, a draft Environmental Code, containing provisions for an integrated permitting system, is under consideration by the Parliament.

### 2.5 Compliance assurance: monitoring and reporting

One of the major institutional problems of compliance assurance in Kyrgyzstan originates in restrictions to access industrial sites. Any enforcement authority apart from the Tax Inspectorate needs to receive a permission from the Government Commission for Entrepreneurship Development to conduct on-site visits (in accordance with the Regulation on the procedure to carry out inspections of the economic entities and determining the list of the competent authorities who have the right to carry out inspections of the economic entities, approved by Government Resolution № 533/06.11.2007). Only one annual planned inspection is allowed regardless of the risk posed by the industrial site. This results in increased risk of accidents and persistent non-compliance – damaging the rule of law – and a poor understanding of actual environmental performance.

The Law on Environmental Protection (arts.17, 18, 31 and 47) provides that industrial operators must conduct self-monitoring, and this is a very positive feature of the Kyrgyz regulatory framework. In practice, self-monitoring is not implemented systematically as required by law, except for emergency situations and accidents.

On the other hand, no environmental monitoring system exists within the competent national environmental authority (SAEPF) or within other competent authorities, e.g. in the Ministry of Emergencies (Kyrgyzhydromet), the Ministry of Agriculture, Water Management and Food Processing, the State Agency on Geology and Mineral Resources or the Ministry of Healthcare (sanitary-epidemiological stations). After a long period of inactivity due to the lack of appropriate infrastructure for performing analytical tasks, the analytical laboratory of SAEPF resumed operations in November 2007, but only in a very limited way on account of financial constraints. The results of the sampling analysis are submitted to DSEC. Three other laboratories are working within the interregional environmental protection administrations.

### 2.6 Promotion of environmental management in enterprises

In the early 2000s, some steps were taken to facilitate the promotion of environmental management systems (EMS) in enterprises. In 2002, ISO 14001 was issued as a national (KMC3) standard. Two other standards – ISO 14003 and ISO 14005 – were later adopted. Information is neither available on the number of ISO 14000 certified enterprises nor on the existence of accredited national certification office.

As of now, there is no cleaner production centre in the country. Under the 2004–2006 Finnish-sponsored project mentioned above, the recommendation was made to create a national IPPC centre that would handle integrated permitting, cleaner industrial production and environmental management issues. This has not been done yet.

Further development can be expected, based on the approval of two recent strategic documents:

- The Country Development Strategy (CDS) for 2007–2010, approved by Decree of the President of the Kyrgyz Republic on 16 May 2007;
- The Ecological Security Conception (ESC) approved by Decree of the President of the Kyrgyz Republic on 23 November 2007.

ESC identifies environmental hot spots as well as the directions and mechanisms needed to ensure ecological security. A national plan of measures aimed at ESC implementation is under preparation. Some of these measures, although of a general nature, could stimulate the establishment of a clean production centre as in items 24 and 25 of

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3 The set of national metrological standards for Kyrgyzstan.
the “Priority directions to guarantee ecological security of the Kyrgyz Republic for the period 2016–2020” (annex 2).

2.7 Environmental legislation enforcement tools

A number of normative acts regulate the environmental inspections in line with the inventory in annex 2 of Government Resolution No 533/06.11.2007 on the procedure to carry out inspections of the economic entities and determining the list of the competent authorities who have the right to carry out inspections of the economic entities:

- The 1998 Code on Administrative Responsibility;
- The 1999 Forest Code;
- The 1999 Law on Environmental Protection;
- The 2004 Law on Technical Regulations;
- The Regulation on State environmental control, rational use of nature resources and ecological safety, approved by Government Resolution No 295/25.05.2000;
- The Instruction on carrying State control on stationary sources polluting the atmospheric air, approved by Ministerial Order No 114/28.12.1999;
- The Instruction on the organization and implementation of inspections on the use and protection of waters by water users, approved by Ministerial Order No C 806/14.12.2004.

The enforcement activities carried out by the Division of State Environmental Control and its territorial branches in 2006–2007 expanded during this period, as did the number of inspections concerned (see table 2.2). However, the current system of response to non-compliance focuses on penalizing the industrial operators repeatedly rather than bringing them into compliance with their environmental obligations in efficient ways, and thus averting future violations. Furthermore, the legally fixed ceiling for the imposed fines, which is low, does not encourage enterprises to invest in environmental measures. Too often, paying the penalty is the cheapest option for the operator.

Table 2.2: Comparison of enforcement activities in 2006 and 2007

<table>
<thead>
<tr>
<th>Activity</th>
<th>2006</th>
<th>2007</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspections</td>
<td>6'215</td>
<td>7'015</td>
<td>13%</td>
</tr>
<tr>
<td>Prescribed fines</td>
<td>1'746</td>
<td>1'839</td>
<td>5%</td>
</tr>
<tr>
<td>Requested fines</td>
<td>1'349</td>
<td>1'534</td>
<td>14%</td>
</tr>
<tr>
<td>Prescribed sanctions</td>
<td>1'023</td>
<td>1'212</td>
<td>18%</td>
</tr>
<tr>
<td>Requested sanctions</td>
<td>872</td>
<td>1'057</td>
<td>21%</td>
</tr>
</tbody>
</table>

Source: Division of State Environmental Control, May 2008.
Note: Out of 3,780 prescriptions issued in 2007, 3,337 (or 88%) were fulfilled.

In 2007, 176 cases were submitted to the court. Of these, 70 were positive decisions, 25 were negative, 3 were returned and 31 are still in the review process.

The environmental inspectors are responsible for checking the correctness of initial data that serve to calculate environmental charges and penalties, and also for executing the collection of taxes and charges. Nowadays, the law allows environmental authorities to retain a large percentage of the pollution charges and damage compensations. This encourages them to concentrate their efforts on maximizing revenues rather than on addressing environmental problems.
Because of financial constraints and recommendations given by specialized international organizations (OECD in particular) to prevent unnecessary burdens for the regulated community, the different inspection authorities have to work together and coordinate their activities, e.g. environmental enforcement authorities can combine their inspections with the health authorities (State Sanitary-Epidemiological Control) and also use their laboratories, which are better equipped than those of SAEPF. Nevertheless there is still ways for improvement. As there is no clear differentiation between the national body and the territorial administrations in carrying out inspections, this creates risks of internal duplication of tasks.

**Box 2.3 Violation of the environmental legislation in the Issyk-Kul biosphere reserve**

The region of the Lake Issyk-Kul is famous for its natural beauty and the richness of its biodiversity. As a result, it traditionally attracts tourists, and tourism is an important source of revenues both for the region and the country. In 1999, the Government decided to put this natural heritage under protection and created the Issyk-Kul biosphere reserve. It is therefore subject to strict protection rules. The *Law No 48/09.06.1999 on biosphere reserves* and *Law No 115/13.08.2004 on sustainable development of ecological-economic system Issyk-Kul* define the priorities, protection rules and management restrictions for the area. In particular, they prescribe the exact number of tourists allowed into certain areas, and regulate landscaping and other human activities and practices.

However, 99.9 per cent of new constructions in the Issyk-Kul region contradict this existing legislation. Moreover, these new constructions do not comply with the *Law on Environmental Expertise* (No 54/1999, changed and amended as No 102/2003 and No 21/2007). Here are just a few examples of the numerous infringements of this legislation:

- **Village Chock-Tal, Hotel Royal Beach.** The sauna of the hotel is constructed just 5 metres from the shore and 100 metres from the restaurant. According to article 19 of the *Law on sustainable development of ecological-economic system Issyk-Kul*: “Constructions in a distance less than 100 metres of the coastline are forbidden”. In addition, “It is forbidden to build and operate constructions at less than 500 metres from the shore of Lake Issyk-Kul, unless they are recreational buildings.”
- **Village Bulan Sogottu.** The holiday resort Meredian was built right inside the protected area in the relict shrubberies of sea backthorne, and within the specially protected water zone of the Lake Issyk-Kul, This is in violation of the *Law No 1561/28.05.1994 on Specially Protected Natural Territories*.
- **Kara-Oi village, Ak Bermet Hotel.** The bar is just 50 metres from the shore.
- **Bozteri village.** The Talisman resort has its bar right on the beach.
- **Kaji-Sai town.** A huge architectural complex, Aalam Ordo, is built right on the lakeside on unique, undeveloped landscape.

Government Resolution No 91/04.04.2007 on adoption of master plans of the resorts Cholpon-Ata, Kara-Oi, Bozteri, approval of the schemes for territorial development of the recreational zones Tory-Igyr, Kosh-Kol, Sary-Oi and Chok-Tal and on measures for improving construction of the resort-recreational territory in Issyk-Kul oblast was not subject to ecological analysis and expertise, however, as required by Ministerial Order N°6 of 5 January 2005 on Approval of Normative Legal Acts.

**2.8 Emission and ambient standards and their enforcement**

The existing environmental permitting system is single-medium and not based on the concept of best available techniques (BAT). In practice, emission limits (e.g. for air or water) for a given facility are calculated taking into account the background pollution and the ambient quality standards (i.e. maximum allowable concentrations (MACs)). The ambient quality standards follow the updated standards applied in the Russian Federation since 2003. In 2004, they were approved in Kyrgyzstan by the *Law on Technical Regulations*.

Some of the air and water quality standards, however, are excessively strict compared to international standards, and sometimes they are not even measurable with existing analytical equipment. The system for environmental quality standards covers hundreds of parameters and sometimes sets limits on very low concentrations of pollutants
compared with World Health Organization guidelines and other international benchmarks. The excessive and unrealistic stringency of a large number of MACs often results in polluters merely neglecting the set standards.

Under the existing approach, ambient quality standards are regarded as regulatory requirements but not as a policy goal. Thus, the requirement of monitoring a large number of the polluting substances and practically all pollution sources, irrespective of size, goes beyond the competent authorities’ institutional capacity.

### 2.9 Conclusions and recommendations

The low status of the environmental authorities, as a State Agency, weakens the management of the environmental issues at the national level, especially the enforcement of the environmental legislation. In addition, because of the very recent institutional restructuring at the regional level (May 2008) and the establishment of interregional environmental protection administrations (April 2008), the distribution of competencies and the implementation of efficient environmental control is quite unclear (see chapter 1). It seems that the environmental control authorities at the regional level remain both understaffed and overloaded at present.

The current structure of SAEPF includes a relative strong State Environmental Control Division, but functions covering permitting and control (inspections) are still mixed. According to internationally recognized best practices, these functions should be split, even if the regular exchange of information between the staffs charged with the two functions needs to be assured. Such an exchange of information should be mutually supportive and serve as a basis for improving permitting and enforcement practices. In parallel, the SEE Section is also responsible for issuing some environmental permits. Considering the linkages between EIA and environmental permitting, the SEE Section could take on the tasks of both the future EIA and permitting functions. SAEPF should aim to separate permitting and inspection at the department level, at both the national and regional levels.

**Recommendation 2.1:**

(a) The State Agency of Environmental Protection and Forestry should separate the inspection and permitting functions at both the national and regional levels. An information exchange mechanism needs to be established to ensure feedback between environmental permitting and inspection.

(b) The State Agency of Environmental Protection and Forestry should ensure that the inspection staff at regional level adjusts their skills to the advanced enforcement requirements. For this purpose, the Agency should provide regular training to inspectors, using the support of international projects as well.

Although the legislative framework with respect to assessment tools has not been revised substantially since the first EPR, Kyrgyzstan has made a progress in terms of achieving greater transparency in decision-making. An important step in this direction is the implementation of the *Convention on Environmental Impact Assessment in a Transboundary Context* in connection with some large-scale projects. This experience should be analysed and incorporated in the regulations, which are currently being updated. Public participation in EIA and SEE should be further improved, by providing full public access to documents and inviting the public’s comments.

On the other hand, full application of assessment tools (i.e. SEE, EIA and public environmental expertise (PEE)) as required by law is very complicated and will lead to major constraints for developers. The procedural and technical aspects of the three instruments need to be revised and simplified. The general goal of the reform of the EIA system must be to reduce the gap between the SEE system (inherited from the Soviet era) and internationally accepted EIA standards.

**Recommendation 2.2:**
(a) The State Agency of Environmental Protection and Forestry should ensure that the draft amended Instructions on EIA and SEE are in line with best international practices, and should adopt them as soon as possible;

(b) The State Agency of Environmental Protection and Forestry should use the results of the OSCE/UNECE project (EIA in a transboundary context: pilot implementation project in Central Asia) to regulate and implement the three existing environmental assessment instruments (SEE, EIA and PEE) in a more systematic and transparent, but simplified, manner.

The environmental permitting system is still based on individual permits for different resource uses and single-media impact. There is no differentiation between large and small pollution sources. The large number of regulated substances based on MACs, uniform permitting rules for all polluters irrespective of their size and impact and the short period of validity of permits all make it difficult to effectively monitor and enforce compliance with permits. The existing permitting system puts a heavy burden on the environmental administration and the regulated community and hampers public participation. Permitting needs to be streamlined and used as a tool to achieve environmental targets that are well balanced with both economic development objectives and interests of concerned public.

These kinds of difficulties could be solved with the introduction of an integrated permitting system based on BAT and limited to industrial installations with significant negative impact on human health and the environment. Initial steps have been taken under the 2004–2006 Finnish technical assistance project, Environmental Monitoring and Management Capacity-Building. The project’s positive results need to be followed up and taken further. SAEPF should play a leading role in developing the necessary conditions for issuing the IPPC permits. It should work closely with the Ministry of Agriculture, Water Management and Processing Industry, the Ministry of Health and the Ministry of Industry, Energy and Fuel Resources.

Moreover, integrated permits would allow for public participation in environmental permitting. For instance, in the EU Member States there is mandatory public access to the application materials for the integrated permit; in some, it is required that public access be made possible during the drafting of the integrated permit.

Recommendation 2.3:

The State Agency of Environmental Protection and Forestry should:

(a) Differentiate the permitting approaches and procedures used for large industry and small and medium-sized enterprises (SMEs), with a view to simplifying the permitting procedure for SMEs with no significant environmental impact;

(b) In parallel, differentiate the responsibilities of the regulating institutions so that major industry falls under the jurisdiction of the central authority and SMEs fall under the jurisdiction of the interregional administrations;

(c) Increase the duration of permit validity to 5–10 years and formulate permit conditions more precisely, with a possibility to review them whenever significant changes are introduced in production processes and volumes, or when regulatory requirements are amended;

(d) Introduce gradually the integrated permitting system, based on the concept of BAT.

The functioning of the compliance monitoring system is undermined by the paucity and weak capacity of both inspection staff and laboratories under SAEPF. Environmental self-monitoring and reporting does not exist in practice, as only a few companies monitor their emissions properly. Continuous online monitoring is absent in the industry. Since good international practices entail open access to self-monitoring data and other environment-related information, unless there is a well-documented, legally based reason for keeping it confidential, new
regulations for self-monitoring, self-reporting and handling confidential industrial data need to be introduced. Confidentiality should be limited to commercial secrets. Facility-specific information of environmental significance should be publicly available.

SAEPF needs to improve the system for collecting and managing information about the regulated community. Data that are fragmented at the moment need to be collated. SAEPF needs to review and consolidate the monitoring system in order to exclude overlaps, and share data. For this purpose, internal networks should be put in place and monitoring systems should be integrated and optimized.

**Recommendation 2.4:**

The State Agency of Environmental Protection and Forestry, in cooperation with concerned sectoral ministries and the National Statistics Committee and in dialogue with business and industry, should develop an appropriate system of environmental monitoring and reporting by enterprises, using as a basis the UNECE Guidelines for Strengthening Environmental Monitoring and Reporting by Enterprises. Together with this process, current legal requirements for self-monitoring system should be implemented.

Sanctions against environmental violators are not yet efficient enough to modify violators’ behaviour towards care for the environment. Sanctions should encourage better and more effective enforcement: a system should be developed in which they are more likely to prompt industrial operators to take appropriate environmental measures. One option would be to increase sanctions when the violation continues over a given period or is repeated.

The rates of the fines should be increased to enhance their deterrent effect, while feasible and enforceable compliance objectives should be set and implemented in a transparent and accountable manner. In this process, there is a need to follow the recommended EU Minimum Criteria for Environmental Inspection (2001/331/EC).

Appropriate assistance (methodological support, staff training, etc.) should be provided to enforcement authorities working at the regional level to enable them to cope with the functions delegated to them. In addition to providing expert support, national-level authorities should exercise stricter quality control of inspection and ensure cross-country uniformity and fairness of regulation. At the moment, there is no organizational structure to promote internal audit of inspection and control services and no practical experience with implementing such auditing, a situation that may change with the recent adoption of Resolution No 139/2008.

One of the major challenges facing the Government and the legislature is to see that inspectors are granted adequate access to industrial sites so that the regulated community can be inspected with the appropriate frequency. In severe and emergency cases, especially when the industrial operator remains reluctant to comply, it might be appropriate to give the inspection authorities the legal mandate to implement the required environmental measures at the company’s expense.

To eliminate possible duplication and unnecessary administrative burden on the regulated community responsibilities for inspection of SMEs should be delegated to regional administrations. Staff at the national level could carry out inspections of large polluters, or support regional administrations in carrying out such inspections.

**Recommendation 2.5:**

To improve the efficiency in the environmental protection enforcement and compliance system:

(a) The Government should increase the level of the environmental fines. Another option would be to increase penalties when violations continue over a given period or are repeated.
(b) Enforcement authorities should define sector-specific frequencies of inspection and a methodology to follow to adjust facility-specific frequencies of environmental risk rather than having inspections be fixed once a year for all sites. Inspections without prior notice should also be made possible.

(c) The State Agency of Environmental Protection and Forestry should introduce internal auditing practices for the services involved in inspection and control.
Chapter 3

INFORMATION, PUBLIC PARTICIPATION AND EDUCATION

3.1 Introduction

The first Environmental Performance Review (EPR) of Kyrgyzstan in 2000 emphasized that raising awareness of environmental matters among decision makers and the general public was a challenging but necessary step to achieving sustainable development. The country needs to build adequate environmental observation networks and data management systems for transforming environmental data into powerful policy messages and for mobilizing strong public pressure on both the polluters and public authorities to improve environmental performance. For this purpose, the first EPR made the following recommendations to Kyrgyzstan:

• To enforce satisfactory environmental monitoring in all areas and to develop an integrated information system strategy;
• To launch public information campaign in cooperation with NGOs and ensure public participation in all aspects of environmental protection;
• To combine investments in the technical infrastructure with public education and health promotion campaigns.

The assessment below demonstrates that Kyrgyzstan has made progress since the first EPR in the above-mentioned areas to a certain extent. However, much still needs to be done by the authorities in terms of making environmental monitoring a powerful information and policy tool, which in turn will help them gain the confidence and active involvement of NGOs and educated citizens for the cause of sustainable development.

3.2 Environmental monitoring

The Main Directorate on Hydrometeorology (Kyrgyzhydromet) of the Ministry of Emergencies, the major environmental monitoring institution in the country, has slightly expanded its monitoring networks since the first EPR. Its Environmental Monitoring Division carries out air-quality, surface water-quality and radioactivity monitoring. It has not been able to renew monitoring of soils and pesticide use, which ceased in the 1990s. No plan has been developed (or requested) for the modernization and upgrading of the current monitoring network. Additionally no single automated station in the country has the ability to measure pollution levels continuously.

Monitoring results are compared against an extensive set of ambient environmental standards (MACs) that cover hundreds of pollutants. The Ministry of Health adopted revised MACs in 2003 and 2007 using Russian MACs as reference (see also chapter 2). National environmental authorities were not consulted in this process. The system of standards is overambitious, mandating very low concentrations of pollutants in many cases. At the same time, only a limited number of pollutants is covered by regular or sporadic measurements. When exceedance is reported, the data are not compared with emissions data, and thus neither establish causal relationships, nor serve to inform environmental decision-making.

The development of monitoring networks is demonstrated in table 3.1. The location of stations/posts is presented on map 3.1. The situation with key monitoring networks is described below.

Air-quality monitoring

Kazhydromet monitors air quality at 14 fixed monitoring stations/posts in four cities in the north of the country: Bishkek (seven posts), Kara-Balta (two), Tokmok (two) and Cholpon-Ata (two) and in one city in the south: Osh (one). The network density is far lower than the requirements of national monitoring
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regulations (one station per 50,000–100,000 city dwellers) and there are no plans for expanding and modernizing it. In Bishkek, for instance, there should be three more stations according to these regulations.

While the regulations themselves need to be reviewed and made consistent with good international practice, emissions reported to the State Environmental Control Division of the State Agency of Environmental Protection and Forestry (SAEPF) during its inspections, prove the urgent need to start monitoring air quality in the Botken Oblast (because of pollution from tailings) and in the Jalal-Abad oblast (pollution from the Tashkumyr electric-bulb plant and boilers). Better monitoring of transport emissions in cities is another concern. Ad hoc samplings demonstrate high concentrations of nitrogen oxides and formaldehyde in main cities due, in particular, to an illegal use of leaded petrol (which destroys catalytic converters) and low-quality diesel (see chapter 5).

The monitoring programme covers only five pollutants: nitrogen dioxide, sulphur dioxide, nitrogen monoxide, formaldehyde and ammonia. Measurements of dust (total particulate matter), carbon monoxide, benzo(a)pyrene, soluble sulphates, phenols, cyanides and heavy metals, discontinued in the early 1990s, have not resumed. Air concentrations of a number of other pollutants identified by the international community as most harmful to human health and the environment – ground-level ozone, particulate matter (PM2.5 and PM10), volatile organic compounds and persistent organic pollutants (POPs) – are not measured in Kyrgyzstan.

Table 3.1: Development of the Kyrgyzhydromet environmental monitoring networks, 2000–2008

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<td>Ground water monitoring</td>
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<td>Radiation monitoring</td>
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<td>Stations measuring daily gamma-radiation exposure</td>
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Note: n/a - no data available.

Measurements are done manually three times a day in Bishkek and once a day in other cities. This means the measurements programme is incomplete compared to the requirements in the national monitoring regulations (four samples per day).

The Ministry of Health, through its sanitary and epidemiological service, monitors air quality at its analytical laboratories, in sanitary protection zones of enterprises and in workplaces.

There are no plans in Kyrgyzstan to install transboundary air monitoring stations at its borders. Kyrgyzstan does not participate in the International Cooperative Programmes under the Convention on Long-range Transboundary Air Pollution, to which it is, however, a Party.
Map 3.1. Main environmental monitoring networks in Kyrgyzstan, 2008

Legend:
- International boundary
- Oblast boundary
- Capital
- Main cities
- Other cities
- Air-quality observation point
- Surface water quality monitoring point
- Radioactivity monitoring point

Source: Kyrgyzhydromet, 2008

The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Source: Kyrgyzhydromet 2008
Inland water monitoring

Kyrgyzhydromet currently monitors hydrochemical parameters of surface water quality at 24 gauges on 11 rivers, as compared with 134 gauges at 54 rivers and lakes in 1990. The network monitoring glaciers and snow level in the mountains, which served as the basis for hydrological forecasts and natural disaster prevention, was drastically reduced in the early 1990s and has not been restored since that time.

The number of observation points (see map 3.1) is far below the requirements of the applicable water monitoring regulations. The observation points are located only on large water bodies in the north of the country (except for one on the Naryn River on the border with Uzbekistan). An additional background observation point was established in 2007 to supplement the only one that remained since 1990s. At least six more background monitoring points need to be established without delay according to Kyrgyzhydromet. Discharges reported to the State Environmental Control Division during its inspections call for regular (if not continuous) monitoring of water quality in the Botken oblast (pollution from mercury and antimony production plants and from agriculture), on a tributary to the Naryn in Jalal-Abad oblast (pollution from gold mining) and on the Lake Issyk-Kul (pollution from tourism installations and houses on the coastline). Diffuse pollution of surface waters is not monitored in Kyrgyzstan.

The current network provides data on a total of 35 (39 in 1990) parameters and assesses chemical composition and the presence of suspended and organic matters, main pollutants and heavy metals. Samples are taken manually four times a year. Kyrgyzhydromet considers it important to increase the frequency of observations to once a month, at least in gauges where high pollution levels have been continuously detected (e.g. in Bishkek and on the Ak Suu River). Hydrobiological observations have never been conducted in the country and are not planned.

In 2007, Kyrgyzhydromet participated jointly with SAEPF in ad hoc monitoring of water quality on the Issyk-Kul Lake. Samples were taken three times at 74 points over the period of three months. Kyrgyzhydromet recognizes the need to establish permanent observation points to measure pollution from coastal areas under tourism development. No assessment has been made, however, either of the number and location of such points, or of possible funding sources.

There are other institutions involved in inland surface water monitoring. For instance, the Committee on Water Resources monitors water abstraction. The Ministry of Health monitors microbiological and chemical parameters, including with respect to pesticides, sewage, drinking water and bathing water.

Kyrgyzstan does not cooperate with its neighbors in the water-quality monitoring of transboundary waters, although cooperation is taking place on their use and protection (See more details in chapter 4 and box 4.7).

Since 2000, the number of groundwater observation sites has decreased by some 200 sites. The current network operated by the State Agency for Geology and Mineral Resources focuses on sites with a significant environmental impact, as one third of the wells are used for water supply. Groundwater observation sites are primarily intended to assess groundwater levels (water availability) and natural geochemistry. Samples are generally taken once a year. At points where pollution has been detected earlier (“specific network” points), samples are taken from 2 to 12 times a year depending on the pollution level. All samples undergo so-called reduced chemical analysis, which covers 13 to 14 parameters (nitrates, PH, heavy metals and several other parameters). In samples taken from specific network points, three to four additional parameters are analysed. Analyses of pesticides used in agriculture in the south of the country were discontinued in the 1990s, and have not recommenced since then. The current monitoring programme does not allow for establishing causal links between the groundwater quality and pollution sources to develop pollution abatement measures.

Soil monitoring

Kyrgyzhydromet ceased monitoring soil pollution in 1993 due to a shortage of funds. There are no plans to start this monitoring anew. It is impossible to gauge the impact of soil pollution by chemicals on surface waters, as concentrations of pesticides in surface water are no longer monitored in the country.
The State Environmental Control Division takes sporadic soil samples at industrial sites during inspections.

The Ministry of Health takes sporadic soil samples in residential and recreational areas in cities, at industrial sites, at sites allocated for construction and in villages. Concentrations of nitrates, heavy metals and microbial contamination are analysed. Together with the Ministry of Agriculture, Water Management and Processing Industry, the Ministry of Health recently completed an inventory of POPs in Kyrgyz territory.

According to the Ecological Security Conception of 2007 (see chapter 1), comprehensive and reliable information is lacking on land degradation processes in the country. Furthermore, the land inventory ("cadastre") prepared by the National Academy of Sciences has not been published due to lack of financing.

**Radioactivity monitoring**

Kyrgyzhydromet monitors radioactive contamination of the atmosphere through daily measurements of gamma radiation exposure. It has managed to reactivate measurements in some abandoned monitoring sites thanks to the acquisition of battery cells for measurement devices. Radioactive fallout from the atmosphere in cities is not measured.

The Ministry of Health monitors radioactivity of drinking water and surface water samples.

The Ministry of Emergencies sporadically measures radiation exposure near some tailing sites. In 2001 the State Agency for Geology and Mineral Resources compiled a map of radioactive and other hazardous man-made disposal sites that has been used thereafter for monitoring purposes. Additionally, the Ministry of Emergencies together with the State Agency for Geology and Mineral Resources compiled a State Registry of Tailing and Mining Disposal Sites in 2006. The Ministry of Emergencies is implementing international projects with the World Bank and other international financial institutions and bilateral donors to build country capacity and preparedness to tackle radioactive contamination from tailings and natural disasters such as avalanches, land slides and earthquakes.

**Monitoring of biodiversity, including in forests**

SAEPF conducts forest management surveys every five years and comprehensive surveys every 10 years. Data on areas under main forest types was published in the state-of-the-environment reports. In 2008, the preparation of a national forest inventory was launched under a project funded by the Food and Agriculture Organization of the United Nations. No inventory of other plants has ever been prepared in Kyrgyzstan.

Eighty-four (of total 94) game husbandries together with SAEPF and experts from the National Academy of Sciences prepare annual inventories which cover in total the populations of five mammal and four bird species for which hunting quotas are established. In addition, they report on populations of seven threatened mammals. By its Decree of 7 April 2004, the Government adopted a Programme to Study, Conserve and Rationally Use Populations of Mountain Argali in 2004–2008. This programme has not been implemented because of the reorganization of the Ministry of Ecology and Emergencies. SAEPF is preparing a new programme for 2009–2012 to improve knowledge and protection of all three argali species living in Kyrgyzstan.

The Law of the Kyrgyz Republic “On Animal Kingdom” of 17 June 1999, № 59 and the Law of the Kyrgyz Republic on Flora Use and Protection of 20 June 2001, № 53 oblige the State environmental authority to prepare and regularly update a comprehensive inventory (“cadastre”) of wildlife. This has never been done in Kyrgyzstan. According to the country’s third (2006) report to the United Nations Convention on Biological Diversity, a full assessment of the state of biological diversity and pressures on it has not been conducted in the country. In some cases, only the state of specific taxonomic groups is known. The Ecological Security Conception of 2007 acknowledges that (a) scientific data on biodiversity are lacking in the country; (b) data are insufficient on invertebrates, flora and fauna of southern Kyrgyzstan, the interior Tien-Shan; and (c) current monitoring neglects species groups and communities.
The management of each protected area (nine reserves, seven national parks and one biosphere reserve) is obliged to compile an inventory of flora and fauna on its territory and to report data to the State environmental authority in the form of “Nature Chronicle”. The former Ministry of Ecology and Emergencies, by its Order of 12 May 2004, adopted a new methodology for the compilation of Nature Chronicles to cover populations of main mammals and rare birds, rodents and insects. In 2007 only eight reserves and four national parks reported this data. In 2008, SAEPF for the first time presented this data in a single data sheet, covering 22 mammal and bird species.

SAEPF, the Institute for Biology and Pedology of the National Academy of Sciences and the “Aleyne” Environmental Movement of Kyrgyzstan jointly published in 2006 a new edition of the country Red Book, covering rare and endangered species including 95 plants, 26 mammals, 53 birds, 2 amphibians, 8 reptiles, 7 fishes and 18 insects.

Analytical laboratories

Kyrgyzhydromet has three central laboratories in Bishkek specializing in observations of air pollution, inland water pollution and radioactivity. Its two regional laboratories located in Cholpon-Ata and Osh are responsible for air pollution observations only. Kyrgyzhydromet has not certified and accredited its laboratories. They do not meet the requirements of the recommended international standard in the joint ISO/IEC\(^1\) publication 17025:2005, General requirements for the competence of testing and calibration laboratories. However, measurement devices are certified.

The central analytical laboratory of SAEPF renewed its activities in 2008 after two years of inaction due to the lack of premises. In May 2008, it received national accreditation. It analyses air, water and soil samples taken at major pollution sources in Kyrgyzstan and provides methodological guidance to the territorial laboratories on Lake Issyk-Kul (accredited) and the cities of Osh and Jalal-Abad (both non-accredited). In the early 2000s, it conducted joint integrated expeditions (inspections) with relevant laboratories of the Ministry of Health and of Kyrgyzhydromet at troublesome pollution sites, e.g. the Manas military base, the Minkush miners’ village and radioactive tailings in Maily-Suu (on uranium production, see chapter 7, box 7.3). The central analytical laboratory conducts intercalibration exercises with laboratories at major industrial enterprises e.g. the Kumtor Operating Company, the Bishkek power plant, the Kant cement plant, the Tokmak glass-making plant and the Bishkek wastewater treatment plant. All these laboratories have been accredited.

The Ministry of Health operates laboratories in every rayon and oblast (some 50 in total). The oblast laboratories serve as coordinating centres. The process of the laboratory modernization and accreditation is under way under the national programme of health reform (Manas Taalimi) for the period 2006–2010.

The State Agency for Geology and Mineral Resources has accredited its single geological and hydrochemical laboratory. Badly lacking financing, it survives thanks to contracts from the private sector.

3.3 Information management and reporting

Information systems and pollution reporting

Kyrgyzhydromet started to convert its data into electronic format in 2006 thanks to the support from the Asian Development Bank (ADB). By mid-2008, it has completed electronic databases on air quality in Bishkek and water quality in the Chu River and its tributaries, with data sets from 1997.

There is neither an integrated nor interconnected environmental electronic database in Kyrgyzstan. The Kyrgyz Republic Environmental Management Capacity-Building Project which ADB implemented in the country in early 2000s helped equip the central environmental authorities with computers, train civil servants in data management and establish a pilot environmental data management system at the central

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\(^1\) International Organization for Standardization and the International Electrotechnical Commission.
environmental authority. No follow-up appears to have taken place with respect to the progress made by this project.

Until recently, polluting enterprises were obliged to report annually to the regional environmental authorities on their emissions, discharges and waste on the basis of so-called enterprise environmental passports. This data was treated, thereafter, by the Environmental Monitoring Division of SAEPF and used by the Agency for policymaking. In 2007, data submission to the Monitoring Division was discontinued. Kyrgyzstan is facing the challenge of establishing, without delay, legal requirements and operational procedures for regular environmental reporting to environmental authorities, at least by its larger enterprises (some 500 at present).

Only one company in Kyrgyzstan, Kumtor Operating Company, publishes a (voluntary) annual environmental report.

**Environmental statistics**

The National Committee on Statistics has harmonized the national statistical classifications of environmental expenditures and waste with those of Eurostat and OECD. Since 2007, reported environmental expenditure data have been divided into “end-of-pipe” expenditures and pollution prevention expenditures. Sections on environment-related expenditures have been introduced into some other statistical forms (e.g. on sewerage, forestry and game husbandry). Since 2008, a revised statistical form on waste requires separate data reporting on the generation of household and industrial waste and on disposal of wastes from markets and total communal waste.

The National Committee on Statistics published a statistics compendium (*Environmental Protection in the Kyrgyz Republic*) in 2001. In 2008, it published a new such compendium in both Russian and English. It covered data on biodiversity, air pollution, land resources, water, waste, environmental expenditures, training of environmental specialists and key social and economic indicators. A short section with environmental data is included in the annual publications *Kyrgyzstan in Numbers* and *Social and Economic Development of the Kyrgyz Republic*. Many environmental data that is collected by the Committee are not published. The Committee is not uploading environmental data on its website.

There is no consistency between similar environmental data series that are collected by the National Committee on Statistics and relevant public authorities in Kyrgyzstan. These relate, for instance, to data on water collected by both the Committee and the Ministry of Agriculture, Water Management and Processing Industry, and data on forests collected by both the Committee and SAEPF.

According to the *Ecological Security Conception of 2007*, environment statistics data are not used for decision-making, as not all emission sources report data and the data reported are not reliable.

**State-of-the-environment reporting**

National reports on the state of the environment were published regularly until 2004. The last report covered data and information for the period 2001–2003. Three hundred copies were published in 2004 in Russian and circulated for free. The report was also uploaded to the website of central environmental authorities. No report has been published since 2004, although concise information on the state of the environment has been periodically uploaded to the website of central environmental authorities ([www.nature.kg](http://www.nature.kg)). As of 2008, the latest data there related to 2006.

SAEPF completed an integrated state-of-the-environment assessment report for publication in late 2008 in both English and Russian in an edition of approximately 1,000 copies. This report uses a modern analytical scheme, Driving Forces-Pressure-State/Trends-Impact-Response. Although this represents an advance from previous, largely descriptive reports, Kyrgyzstan is a long way from producing genuine assessments based on internationally agreed indicators as required by the UNECE Guidelines for the Preparation of Indicator-Based Environment Assessment Reports in Eastern Europe, Caucasus and Central Asia endorsed at the Sixth Ministerial Conference “Environment for Europe” (Belgrade, 2007). The report remains a compilation of information submitted by various ministries and agencies. The information was not verified and no quality
assurance was done with regard to data reported. As a result, the use of report findings for environmental policymaking would be limited.

Sustainability of state-of-the-environment reporting in Kyrgyzstan is at risk because report production is the responsibility of SAEPF itself (rather than an expert institution), and SAEPF sorely lacks staff resources and expertise for the purpose.

Overall, the results of environmental monitoring and data collection are not sufficiently used to prepare integrated environmental assessments at the national and oblast levels, nor are they used effectively for making decisions, elaborating policy or raising public awareness in Kyrgyzstan.

### 3.4 Public participation

#### Civil society and awareness-raising

Kyrgyzstan has established a favourable legal and regulatory framework for the creation and functioning of NGOs. For instance, NGO registration is carried out by Ministry of Justice and its territorial bodies for free.

Based on the assessment by Milieukontakt-Kyrgyzstan, a country NGO, 365 civil society organizations were working on environmental issues in Kyrgyzstan in 2006.

NGOs play a significant role in extracurricular environmental education. They organize an annual national festival of environmental journalists. In 2006, a group of Kyrgyz NGOs developed a strategy of civil initiatives in the field of education for sustainable development.

SAEPF has been indirectly supporting financially environmental NGO activities since 2007. It has provided grants from its Environmental Funds for several initiatives by governmental institutions that involved the participation of NGOs in their implementation. The NGOs themselves do not favour direct financing of their initiatives by SAEPF, as NGOs are concerned that such direct financing might compromise their independence.

Since 2006, SAEPF has been publishing an environmental newspaper (*Jer Ene*) two to three times a year. Some 1,000 copies are circulated in the country for free. SAEPF is actively implementing a Strategy on the Dissemination of Information on Forestry, which includes a publication of a popular journal (*Les-Tokoj*), bulletins, books and brochures, and broadcasts of a regular radio programme and TV programme (*Jashil Dujno* and *Ata-Jurt Ajary*, respectively).

To raise awareness of decision makers and the general public, experts from SAEPF and other agencies prepared, with UNDP support, the following environmental publications:

- *Kyrgyzstan: environmental protection and natural resources for sustainable development;*
- *The dialogue at the local and national levels – contribution of sustainable development;*
- *Access of men and women to natural resources.*

Kyrgyzstan is developing an e-Government mechanism to facilitate access to information held by public authorities. The Government Decree on the Adoption of Unified Requirements for the Creation and Operation of Websites of Public Authorities and Institutions of Local Self-Governments of 14 December 2007 promotes this mechanism.

Since 2005, a dedicated environmental website has been hosted by a central environmental authority in Kyrgyzstan ([www.nature.kg](http://www.nature.kg)) with support from the UNDP office in Bishkek. The website is a major official source of environmental information in the country. Kyrgyzdromet maintains its own website ([www.meteo.ktnet.kg](http://www.meteo.ktnet.kg)). The site presents monthly results of monitoring of air and water quality as well as of radioactivity.
The Internet portal CARnet, created by UNDP and operated by a network of civil society representatives as part of the Digital Network on Environmental and Sustainable Development Practice and Policy in Central Asia and the Neighboring Regions of the Russian Federation (http://www.caresd.net), is a far more informative and regularly updated source of environmental information on Kyrgyzstan.

It should be noted that the possibilities for the general public to access environmental information in Kyrgyzstan through communication means are very limited, especially in rural areas (see table 3.2).

Table 3.2: Telecommunications development in 2000-2006, per 100 inhabitants

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet users</td>
<td>1.1</td>
<td>3.0</td>
<td>3.0</td>
<td>4.0</td>
<td>5.2</td>
<td>10.5</td>
<td>12.2</td>
</tr>
<tr>
<td>Personal computers</td>
<td>0.5</td>
<td>1.3</td>
<td>1.3</td>
<td>1.5</td>
<td>1.7</td>
<td>1.9</td>
<td>n/a</td>
</tr>
<tr>
<td>Telephone lines</td>
<td>7.7</td>
<td>7.9</td>
<td>7.9</td>
<td>7.9</td>
<td>8.2</td>
<td>8.4</td>
<td>8.6</td>
</tr>
</tbody>
</table>


*Note*: n/a – no data available.

Kyrgyz NGOs complain that other barriers to public access to information in Kyrgyzstan include: (a) the lack of information on sources of environmental data as well as information focal points in ministries and agencies other than SAEPF; (b) the ad hoc character of most environmental publications by public authorities; and (c) the absence of a regular TV programme on environment. As a result, the public in Kyrgyzstan are not sufficiently informed about troublesome environmental issues such as drinking water quality, litter disposal, forest-cutting, pollution from tailings, degradation of pastures, pollution of Lake Issyk-Kul and environmental impacts from mining.

Public participation in environmental decision-making

By its Order N°6 of 1 February 2006, SAEPF established a Consultative Council at the Agency. It is composed of seven senior officials of the Agency and eight representatives of Kyrgyz NGOs and the scientific community. The main task of the Council is to promote cooperation between the Agency and NGOs on environmental and sustainable development issues. It meets several times a year and serves as a forum for the exchange of information and discussions of draft policy documents prepared by the Agency. An NGO representative was included in the Board of the Environmental Fund at the Agency.

There is no national council on sustainable development in Kyrgyzstan. There is a National Council on Strategic Development of Kyrgyzstan led by the President of the Republic. Although according to its Statute (Decree of the president of 5 April 2007, N°157), the work of the Council is based on principles of a constructive partnership of all branches of the Government and civil society, the private sector is the only major group represented.

Examples can be found of involvement by NGOs and the general public in the discussions on such draft policy documents as the *Country Development Strategy*, the *Ecological Security Conception of 2007* and the *Governmental Decree on Ecological Posts and Environmental Code*. Thanks to a strong NGO campaign, Kyrgyzstan ratified the Stockholm Convention on POPs in 2006. The Parliament, the Government, the Ministry of Justice and SAEPF are uploading draft legal acts and regulations to their websites for comments by the public, but they do not inform the public about how its comments have been taken into account in the final texts.

The legislation does not provide for public participation in environmental permitting. The Agency and its regional bodies, upon request, grant access to information on permits to members of the public. The regional administrations of SAEPF involve representatives of the public as voluntary inspectors in their inspection work on the basis of the Resolution of the former Ministry of Ecology and Emergencies of 6 April 2005, N°168 On the Adoption of the Statute of Voluntary Public Inspectors on Environmental Protection. For instance, the Chu-Bishkek-Talas Interregional Environmental Protection Administration has 20 voluntary
inspectors (seven of which are actually active) who are enlisted in field inspections and report on non-compliance cases such as poaching.

When a project is under development, documentation submitted to the State ecological expertise (SEE) for decision-making must include the results of public hearings organized by the project developer. The instruction on environmental impact assessment (EIA) procedure of 27 September 1997, N°386 provides detailed requirements for the provision to the public of information on the project, for the EIA statement and documentation as well as for the organization of public hearings. Neither this instruction nor its practical application ensure that the public should be or has actually been informed about the reasons for not reflecting its comments or proposals in the summary of public comments that the developer is submitting to SEE. Nor does the instruction oblige the SEE authority to inform the public about its decisions. Nevertheless, the Agency is uploading concise information on decisions taken by SEE authority. A draft revised instruction is being discussed with NGOs at a series of round tables.

Examples of active NGOs involvement in public hearings that have influenced project revision include those on the Taldybulak-Levobereszhniy gold mine in Chu oblast and the construction of the Kaskelen-Issyk-Kul road. Independent Environmental Expertise (IEE) and Milieukontakt are among the most active NGOs in terms of mobilizing public participation in SEE.

The legislation also offers a possibility for the public and its NGOs to organize their own public ecological expertise (PEE). There is little, if any, evidence of PEE organized by NGOs. PEE conclusions are treated as recommendations in SEE decision-making.

In several recent cases, the Government decided to authorize the development of large economic projects without undergoing the mandatory EIA through the following Governmental Decrees: On the Construction of a Cement-Producing Plant in Kyzyl-Kyia City of 23 December 2005, № 611; On the Construction of a Cement- and Slate-Producing Plant in Nookatskom Rayon of Osh Oblast of 27 March 2006, № 199; and On the Construction of a Ferroalloy Plant of 23 August 2007, № 360.

Kyrgyz NGOs – on their own or jointly with NGOs in neighboring countries – have succeeded in reversing some Government decisions that violated environmental legislation. IEE has been particularly assertive in this regard. Jointly with the Kazakhstan NGO Green Salvation, it interrupted the implementation of a transboundary project to build a Chyrpykyt-Chon-Kemin motorway, as no positive decision by the SEE had been rendered. It also initiated, jointly with Kazakhstan Eco-Forum (an NGO coalition), a transboundary EIA procedure for the Andash copper and gold mining project (see chapter 2). Box 3.1 describes a recent court decision in favour of IEE.

**Box 3.1: Independent Environmental Expertise vs the Government: The case of the construction of ferroalloy plant**

IEE appealed to the Bishkek Intra-rayon court to cancel the Governmental Decree On the Construction of a Ferroalloy Plant in Kyrgyzstan of 23 August 2007, № 360. It claimed that approval by the Government of the proposal of the Avinien company to construct in Tash-Kumyr city of Jalalabad oblast a ferroalloy plant with a capacity of 200,000 ton of ferrocilicate aluminium per year violated several pieces of national environmental legislation. In compliance with the Laws on Environmental Protection and on Environmental Expertise and other relevant legal acts, the developer (Avinien) was obliged to ensure a positive conclusion by the SEE of its project proposal prior to receiving a building permit. Contrary to legal requirements, the Government authorized the developer to start construction prior to the completion of the project design, preparation of EIA documentation and its submission to the SEE, providing the public with the opportunity to undertake, at its own initiative, a PEE of the project and the obtainment of positive conclusions of the SEE. IEE asserted, furthermore, that the project would have a significant environmental impact across the border and should, therefore, be subject to a transboundary EIA procedure according to the requirements of the UNECE Convention of Environmental Impact Assessment in a Transboundary Context (Espoo Convention).

The Government informed the court that the construction work had not yet begun and that it prepared amendments to the Governmental Decree of 23 August 2007, № 360, recommending that the developer undertake the reviews required by the national legislation.

In view of the recent Government action, the court, by its judgement of 20 June 2008, partially accepted the IEE claim and ruled to exclude from the Governmental Decree of 23 August 2007, № 360 the authorization to start construction work in parallel with the project design.

**Source**: SAEPF website and the IEE website (www.eco-expertise.org), 2008
Environmental education and education for sustainable development

Preschool and school education

Environmental aspects have been embedded into educational standards for preschool educational institutions. In primary and secondary schools, mandatory courses on the natural and social sciences cover environmental issues to a varied extent. There is no ecology or environment course as such except in selected (specialized) classes (in the fifth, seventh and eleventh grades) and specialized environmental schools (there are more than 20 in the country) that provide more in-depth teaching of environmental issues. Some environmental subjects (e.g. ecology, human ecology and fundamental geo-ecology) are provided in secondary schools on a voluntary basis within a set of “additional” courses. The Kyrgyz Academy of Education is implementing a research project on approaches to integrating education for sustainable development (ESD) principles in country school programmes.

The lack of a conceptual approach to environmental education and the broader issues of ESD in schools makes it doubtful that the majority of school graduates gain a holistic understanding of environmental concerns. The lack of a mandatory environmental curriculum at schools leads to employment problems for the many teachers in Ecology that graduate annually from the Pedagogical University named after Arataev.

Professional and higher education

Table 3.3 presents the numbers of students that graduated with a concentration in environment-related subjects from educational institutions of various levels in Kyrgyzstan from 2000 to 2006.

A number of vocational schools in Kyrgyzstan provide training in specific environment-related curricula. Basic vocational schools train foremen in land reclamation and forestry. Higher vocational schools train technicians for environmental installations and accident prevention.

From 1991, the number of higher education institutions in Kyrgyzstan has grown from 9 to 47, and in 2008 accounted for 230,000 students in more than 200 specialties. The quality of training provided by many of these institutions is questionable according to the opinion of many national and international professional educators, however.

Training in the fundamentals of ecology is provided to students in all universities in Kyrgyzstan. Since 2007, a new curriculum (Fundamentals of Biodiversity Conservation and Sustainable Development) has been introduced in several national universities.

Table 3.3: Training of environmental specialist in 2000-2006 (in numbers by level of training)

<table>
<thead>
<tr>
<th>Level of training</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities</td>
<td>246</td>
<td>566</td>
<td>583</td>
<td>806</td>
<td>824</td>
<td>849</td>
<td>813</td>
</tr>
<tr>
<td>Higher vocational training</td>
<td>17</td>
<td>82</td>
<td>88</td>
<td>120</td>
<td>60</td>
<td>61</td>
<td>52</td>
</tr>
<tr>
<td>Basic vocational training</td>
<td>n/a</td>
<td>252</td>
<td>202</td>
<td>140</td>
<td>127</td>
<td>107</td>
<td>127</td>
</tr>
</tbody>
</table>

Note: n/a – no data available.

In 2008, 17 State universities in Kyrgyzstan were training some 3,280 environmental experts on eight curricula (mainly on natural sciences and engineering) in total. In 2007, 620 environmental specialists graduated in the country. Kyrgyz National University, Kyrgyz State Technical University, Kyrgyz Agrarian University, Kyrgyz State University in Bishkek, Osh Technical University and Talas State University train most environmental experts. There appear to be no curricula on important subjects such as environmental management, environmental law and environmental monitoring. The lack of training in these subjects does not provide the public and private sectors with the specialists needed in a country with polluting industries. No assessment has ever been made of the demand in environmental experts in the country. Nor are data available on job occupation by those trained in environmental issues by Kyrgyz universities.
There seems to be overproduction of environmental experts in some specialties. The closure of the Ecology Department at the Kyrgyzstan International University in 2008, partly for this reason, serves as evidence of the situation.

Some universities provide curricula on gender issues and HIV infection. Overall, the promotion of ESD as a holistic approach in education is in its infancy in Kyrgyz universities, however.

**Training**

SAEPF is conducting in-service training courses for its staff. Annually, two inspectors from each interregional administration and new staff members are retrained at a weeklong course. The Kyrgyz Academy of Education runs retraining courses for teachers that cover environmental issues. The Academy of Management under the President of Kyrgyzstan, the main institution responsible for retraining of civil servants, does not include environment issues in its training courses.

The Ministry of Education and Science operates 12 adult education centres in all oblast centres. There is no evidence that either the Ministry itself or its centres raise environmental awareness among the country’s adults. Non-formal and informal adult education is carried out by NGOs (e.g. BIOM, Bigl and Tabiat-Life) and CAREC. Their projects greatly depend on contributions from external donors, and therefore do not have a long-term nature.

A number of international projects implemented in Kyrgyzstan in the 2000s had prominent components on promoting environmental education. For instance, Kyrgyzstan, with the support of the United Nations University, established in May 2007 a Center on ESD Expertise in Bishkek to promote ESD initiatives as well as stakeholder involvement. A Kyrgyz-British project on developing educational module on ESD and its integration into the curriculum of three high schools of Kyrgyzstan is under way. Kyrgyzstan hosted a Subregional (Central Asian) Conference on ESD, organized by CAREC (Bishkek, October 2006).

### 3.6 Policy-making and institutional frameworks

**Monitoring and information**

A new Law on Hydrometeorological Activity of 8 June 2006 has raised the profile of ambient environment monitoring, to some extent. There is no evidence, however, that the Law has influenced the impoverished status of environmental monitoring networks in the country.

Since the split of the former Ministry of Ecology and Emergencies and the detachment of Kyrgyzhydromet to the Ministry of Emergencies, Kyrgyzhydromet is no longer connected with SAEPF, the central environmental authority, through any operational links. The Ministry of Emergencies, by its mandate, focuses on monitoring of emergency events such as avalanches, storms and earthquakes rather than of ambient environment quality.

SAEPF has abolished the key responsibility of its Environmental Monitoring Division, namely management of environmental information and data flows for the purpose of decision-making. At present, this Division consists, practically speaking, of an analytical laboratory.

It appears that neither the former Ministry of Ecology and Emergencies nor SAEPF have been developing the much needed regulations, procedures and guidance to (a) restore and modernize environmental monitoring and data collection in the country, (b) harmonize relevant national procedures, approaches and methods with good international practices and (c) improve, drastically, environmental reporting to decision makers, the general public and the international community. Policy documents with environmental objectives that were adopted by Kyrgyzstan in the 2000s either did not contain any environmental monitoring and information objectives at all or set such objectives that subsequently remained unattained.
The Regional Environmental Action Plan for Central Asia, jointly adopted by Kyrgyzstan and other Central Asian States on 21 September 2001, listed for implementation in the period 2002–2007 important objectives and short-term measures with respect to monitoring and information. There is no evidence that the following planned measures were implemented by Kyrgyzstan:

- Upgrading the system to monitor transboundary movement of air pollutants and improving the emission monitoring system;
- Setting up an online information exchange system and computer databanks;
- Restoring national systems to monitor surface water quality in transboundary rivers;
- Creating hydrologic and hydrochemical posts for cooperative inspections of transboundary rivers, including the Naryn, Chu and Talas;
- Restoring a monitoring system to assess desertification processes and their impact on the environment;
- Restoring and improving a monitoring system to track degradation processes in mountain ecosystems in the mountain ranges of Pamir-Alay and northern Tien-Shan.

The Country Development Strategy for 2007–2010 sets specific goals in developing the country’s economy sector by sector and region by region (see also chapter 1). No effort has been made by public authorities to assess possible environmental impacts of these developments and their implications for environmental monitoring networks in the country including requirements for additional observation points and parameters measured.

Moreover, the Country Development Strategy mentions environmental monitoring among the policy measures to promote environmental security in the country. Furthermore, to ensure safety of the population and territory in the case of natural disasters, the Country Development Strategy foresees:

- The establishment of an integrated monitoring and forecasting system based on GIS\(^2\) technologies and remote reconnaissance to forecast landslide processes;
- The establishment of an integrated monitoring network to observe hydrogeological and seismic movements of the Earth’s crust;
- Enhancing monitoring of environmental conditions and the establishment of a single system of fast detecting and forecasting of dangerous ecological situations.


Consistent with the Country Development Strategy, the Ecological Security Conception was adopted in 2007 as the main strategic document for the implementation of the State policy in the field of environment protection and rational nature management. In particular, it called for:

- Introduction of mandatory data collection to assess individual aspects of biodiversity in all categories of land and water bodies irrespective of the ownership;
- Development of early warning indicators and systems for monitoring transboundary problems;
- Monitoring of the state of transboundary rivers;
- The provision of environmental inspectorates with up-to-date mobile devices to monitor environmental pollution.

According to the Ecological Security Conception, the main directions for strengthening environmental monitoring and information system in the country should include:

- The creation of a unified system of country environmental monitoring in the period 2011–2015;
- Revision of regulations to ensure coordination of central environmental monitoring institutions and the creation of environmental databases;

\(^2\) Geographic information system.
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- Improvement of indicators and the development of unified monitoring methods to improve data comparability;
- Preparation of a full inventory of flora and fauna in protected areas, in the period from 2011–2015;

There is no evidence that Kyrgyzstan has initiated a preparatory work, at least in these important areas.

Public participation

The Regional Environmental Action Plan for Central Asia of 2001 listed a set of objectives that Kyrgyzstan and other Central Asian States had agreed to promote public access to environmental information and public participation in decision-making on environmental measures. Some progress has been made to meet these objectives. Strong effort is needed in areas where no or only slight progress has been made. These relate to the following objectives:

- To provide consulting assistance with regard to implementing basic provisions of the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention);
- To involve the local public in broad discussion when a development project is at the drafting stage;
- To involve the public in discussing draft laws.


However, procedures are not sufficiently detailed to make these legal provisions applicable in practice. Time frames are frequently not established for individual stages of public participation. No obligation has been established in the legislation to inform the public about decisions taken, along with the reasons and considerations on which they are based, although the direct effect of the Aarhus Convention itself could be said to entail such an obligation.

The legislation provides for public participation in SEE and PEE of draft laws, regulations, programmes and concepts. However, owing to the absence of detailed procedures, draft sectoral strategic and legal documents of relevance to the environment are not submitted for public input. While there are cases of ad hoc public involvement in discussions on some draft laws, strategies and concepts, these efforts are not systematic and as such do not establish a transparent and clear framework as required by article 7 of the Aarhus Convention.

The Country Development Strategy underlines the need for the openness of the ecological information and the active participation of civil society, local self-governance bodies and business circles in environmental decision-making to reach the objective of ensuring environmental security of the country.

The Ecological Security Conception of 2007 is based, among others, on the principles of public access to environmental information and active public participation in the preparation, review, adoption and the implementation of environmental decisions. It calls for:

- The creation of a national council for sustainable development with participation of representatives of the public, business and academic communities;
- Public participation in issuing integrated environmental permits.
Chapter 3: Information, public participation and education

This Conception listed the main directions for strengthening public participation in environmental decision-making in the country, namely:

- Preparations for the accession to the Aarhus Convention’s Protocol on Pollutant Release and Transfer Registers in the biennium 2008–2009;
- Organization of public hearings on large projects with significant environmental impact;
- Raising public awareness on environment security issues;
- Resumption of public control over compliance with environmental legislation;
- Creation of environmental information and visitors’ centres and nature museums in the period 2011–2015;
- Ensuring access to and transparency of information on environmental conditions and risks;
- Wide dissemination of information on environmental security among the public, with the active involvement of the mass media;
- Development of environmental websites and publication of environmental newspapers and journals.

However, the country does not have a detailed strategy or an action plan for the implementation of the Aarhus Convention, even though such strategies and action plans have proven to be useful policy instruments for other Parties to the Convention with similar legal and institutional systems as well as social and economic heritage as Kyrgyzstan. Civil servants and the general public are not sufficiently informed about obligations under the Convention. Weak compliance and insufficient training of many civil servants hinder public involvement in decision-making.

Environmental education

The 1999 Law on Environmental Protection as amended in 2002, 2003 and 2004, introduced article 48 on environmental education and awareness-raising. The Law on Education of 30 April 2003, № 92 does not mention environmental education or ESD. It provided schools with a possibility to introduce additional courses, at their own initiative. This allowed some schools to introduce an additional course on Ecology.

Agenda 21 in the Kyrgyz Republic (Action Programme to 2010), approved by Government Decree on 2 August 2002 № 411-p, set two specific targets with respect to ESD: (a) to increase, by 2005, the number of publications of electronic mass media on issues of sustainable development by 30 per cent by providing incentives in the form of grants and soft credits; and (b) to reorient 30 per cent of school educational curricula to sustainable development by 2007. There is no evidence that these targets have been achieved. No reporting is available in the country to assess the implementation of targets. It seems that the target on mass media, at least, is far from being met. According to the 2007 country report on ESD: “The level of broadcasting in the sphere of sustainable development in mass-media in Kyrgyzstan is very low, total amount of newspaper publications, broadcasts and television programmes does not exceed 1 per cent in relation to total amount of the information in Kyrgyz mass media”.


The Ministry of Education and Science, by its Order of 23 October 2003, # 961/1, and the former Ministry of Ecology and Emergencies, by its Order of 27 October 2003, #C498, jointly adopted a Concept of Continuous Environmental Education in Kyrgyzstan. The Concept introduced general principles and directions to serve as basis for the development of regulations regarding relevant education standards, curricula and educational and training materials. When adopting the Concept, the Ministry of Education and Science adopted a programme of urgent measures to implement the Concept covering such issues as: (a) the
introduction of ESD standards into the national education system; (b) establishing sustainable development curriculums; (c) setting requirement and quotas for training experts on specific sustainable development issues; and (d) setting requirements for training and re-training of civil servants in environmental and sustainable development issues. As both the Concept and the programme have not been made operational since their adoption, their actual impact on the educational process in the country seems to be negligible.

Kyrgyzstan participates in international ESD processes including the regional initiative that resulted in 2005 in the UNECE Strategy for ESD. To help implement this Strategy at the national level, the Government, by its Decree of 11 February 2005, №74, established an interdepartmental Coordinating Council on ESD with the participation of major groups and under the chairmanship of the Minister of Education and Science. The actual composition of the Council has never been established, and hence it has never met due to continuous reorganizations within governmental institutions concerned.

Surprisingly, major policy documents on education development in Kyrgyzstan have no reference to either environmental education or ESD, e.g. the National Action Plan on Education for All of the Kyrgyz Republic approved by Government Decree of 30 June 2002, № 504, the Concept of Education System Development in the Kyrgyz Republic till 2010 approved in 2002, PR KR N 259, the education section of the Country Development Strategy of the Kyrgyz Republic for 2007–2010 and the Education Development Strategy of the Kyrgyz Republic (2007–2010) approved by the Ministry of Education and Science on 19 October 2006 (Order № 658/1) to implement the education section of the Country Development Strategy. Only in 2008 did this Ministry designate its focal point on ESD.

On the other hand, SAEPF has actively promoted both environmental education and ESD. The Agency provides financial support for the publication of educational materials and guidebooks on environmental education. Some KGS 400,000 were provided for the purpose in 2007. According to the Ecological Security Conception of 2007, which the Agency prepared and the Government approved, the principal objectives for strengthening environmental education are:

- Inclusion of environmental and sustainable development issues in curricula at all levels to form a system of continuous environmental education;
- Training and retraining of environmental experts for all levels of mandatory and supplementary education;
- Introduction of new and improvement of existing environmental education education plans and programmes;
- State support for the environmental education system.

SAEPF included ESD principles in a separate section in the draft Environmental Code now under discussion by the Government.

3.7 Conclusions and recommendations

Since 2000, Kyrgyzstan has slightly expanded its monitoring networks. The network density is far from the requirements of national monitoring regulations. Concentrations of a number of pollutants identified by the international community as being most harmful to human health and the environment are not measured. The current networks are unable to link pollution levels with emission patterns. There is neither an integrated nor interconnected environmental electronic database in the country. Kyrgyzstan has not developed much-needed regulations, procedures and guidance to restore and modernize its monitoring networks. The results of environmental monitoring are not sufficiently used for making decisions, elaborating policy or raising public awareness in Kyrgyzstan. The policy documents with environmental objectives adopted by Kyrgyzstan in the 2000s either did not contain any environmental monitoring and information objectives at all or, where set, such objectives remain unattained.

Recommendation 3.1:
The Government should review, without delay, the situation with regard to environmental monitoring in the country, to develop a strategy with an action plan for urgent modernization and upgrading of the...
monitoring networks in line with international guidelines and best practices. Such an action plan should establish time frames and specify budgets:

(a) To restore soil monitoring and to bolster and expand air- and water-quality monitoring networks linking monitoring objectives with priority environmental problems;
(b) To increase the number of parameters measured, in particular, ground-level ozone, PM$_{10}$, heavy metals and persistent organic pollutants in ambient air and biological parameters in water;
(c) To switch, step by step, to automatic measurement, and improve data quality control and storage procedures;
(d) To link environmental quality data with emission data by enterprises;
(e) To establish an integrated environmental database at the central environmental authority, which is interlinked with environmental databases of the other public authorities operating environmental monitoring programmes.

Kyrgyzstan has harmonized the national statistical classifications of environmental expenditures and waste with those of Eurostat and OECD. It published environmental statistics compendiums in 2001 and 2008. National state-of-the-environment reports in Kyrgyzstan were published regularly until 2004. No report has been published since that time although concise information on the state of the environment has been periodically uploaded on the website of the central environmental authorities. The State Agency for Environmental Protection and Forestry completed an integrated state-of-the-environment assessment report for publication in late 2008. Although this constitutes progress from previous, largely descriptive reports, Kyrgyzstan is still far from producing genuine assessments based on internationally agreed indicators. There is no consistency between similar environmental data series collected by different public authorities. Not all emission sources report data, and the data that are reported are not reliable.

Recommendation 3.2:
The State Agency for Environmental Protection and Forestry, together with the National Committee on Statistics, should develop proposals for adoption by the Government to strengthen environmental reporting in the country. These proposals should address legal requirements and operational procedures for regular environmental reporting by the principal polluting enterprises to the environmental and statistical authorities, and for the regular publication of indicator-based environmental assessment reports at the national and territorial levels. UNECE Guidelines for environmental reporting endorsed at the Belgrade “Environment for Europe” Ministerial Conference (2007) should be used as guidance to this end.

To inform the public on environmental matters, SAEPF publishes an environmental newspaper and hosts a dedicated environmental website. Nevertheless, the mechanism of access to environmental information in Kyrgyzstan is not transparent. There is a lack of information on sources of environmental data. Excluding SAEPF, those ministries and agencies that possess environmental information do not actively disseminate this information to the public. Environmental publications by public authorities have an ad hoc character. As a result, members of the public are not sufficiently informed about troublesome environmental issues in Kyrgyzstan such as drinking water quality, litter disposal, forest-cutting, pollution from tailings, degradation of pastures, pollution of Lake Issyk-Kul and environmental impacts from mining.

Recommendation 3.3:
To improve considerably public access to environmental information:

(a) The State Agency for Environmental Protection and Forestry should establish operational procedures obliging its structural units to prepare, on a regular basis, environmental information inputs for uploading on the Agency’s website, and prepare annual plans for environmental publications to be financed from the Environmental Fund;
(b) The Ministry of Emergencies, the Ministry of Health and the other ministries and agencies that possess environmental information should establish information focal points and develop mechanisms for active dissemination of environmental information to the public.

SAEPF established a Consultative Council at the Agency to promote cooperation between the Agency and NGOs. An NGO representative was included in the Board of the Environmental Fund at the Agency. The
legislation provides for public participation in State and public ecological expertise of projects, draft laws, regulations, programmes and concepts. A number of public hearings were held under the EIA procedure that influenced project revisions on environmental grounds. However, owing to the absence of detailed procedures, draft sectoral strategic and legal documents of relevance to the environment are not submitted for public input. While there are cases of ad hoc public involvement in discussions of certain draft laws, strategies and concepts, these efforts are not systematic and as such do not establish a transparent and clear framework. Time frames are frequently not established for individual stages of public participation in environmental decision-making. No legal obligation has been established to inform the public about the a given decision, along with the reasons and considerations on which it is based. Kyrgyzstan does not have a detailed strategy or an action plan for the implementation of the Aarhus Convention.

**Recommendation 3.4:**

The State Agency for Environmental Protection and Forestry and the Ministry of Justice should complete the adjustment of the national legislation to the requirements of the Aarhus Convention, so as to promote its practical implementation by authorities as well as application by the courts of the Convention’s provisions, especially at the local level. The Agency, in cooperation with other public authorities and NGOs, should prepare a detailed strategy for the implementation of the Aarhus Convention aimed, in particular, at building the capacities of civil servants to promote public access to environmental information and public participation in environmental decision-making.

Kyrgyzstan embedded environmental aspects into educational standards for preschool educational institutions. Some environmental subjects are provided in secondary schools on a voluntary basis. A number of vocational schools in Kyrgyzstan provide training in specific environment-related curricula. Training in the fundamentals of ecology is provided to students in all universities in Kyrgyzstan. The Ministry of Education and Science established an interdepartmental expert council that adopted or prepared for adoption standards on some environmental curricula. The Ministry of Education and Science and the former Ministry of Ecology and Emergencies jointly adopted a *Concept of Continuous Environmental Education in Kyrgyzstan*. As both the Concept and the programme have not been made operational since their adoption, their actual impact on the educational process in the country seems to be negligible. The Government established an interdepartmental Coordinating Council on ESD with the participation of key stakeholders. This Council has never met due to continuous reorganizations within governmental institutions concerned.

**Recommendation 3.6:**

The Ministry of Education and Science, in cooperation with the State Agency for Environmental Protection and Forestry and other stakeholders, including NGOs and the mass media, should establish, without delay, the composition of the Coordinating Council on ESD to help promote and facilitate the implementation at the national level of the UNECE Strategy for ESD at the earliest appropriate level of schooling as well as in non-formal and informal education.
Chapter 4

INTERNATIONAL AGREEMENTS AND COMMITMENTS

4.1 General framework for international cooperation

Since the first EPR in 2000, and particularly after political events in March 2005 (the “Tulip Revolution”), major governmental reforms took place in Kyrgyzstan, including a new version of the Constitution (2007) and the Country Development Strategy (2007). Kyrgyzstan declared its commitment to achieving the Millennium Development Goals at the Millennium Summit. Consequently, the country aims to establish new approaches in strategic planning and policies that take into account sustainable resources management as well as economic and social development. The fragile ecosystems of Central Asia, in particular the mountains, are especially susceptible to global environmental threats. In this context, the country takes an active part in international cooperation to address common global and regional environmental issues. It recognizes that participation in multilateral environmental agreements (MEAs) and adoption of compliance measures are priorities for the Kyrgyz environmental policy. Since 2000, international cooperation has been strengthened through greater participation in agreements at the global and regional levels.

4.2 Policy framework for international cooperation in environmental protection

Priorities and objectives

The general framework and priorities for international environmental cooperation are not outlined in one single document. The country’s commitment to sustainable development and international cooperation is reflected in several key legal and policy documents, in particular the 1999 Law on Environmental Protection, the 2007 Country Development Strategy for 2007–2010 (CDS), the 2007 Ecological Security Conception (ESC) and the 2002 National Agenda 21: Action Programme to 2010 (also referred to as the Concept of Transition to Sustainable Development or CTSD).

The CDS Action Plan includes a number of measures to ensure environmental sustainability, e.g. the improvement of environmental policy, legal harmonization with international obligations and development of a strategy to solve transboundary ecological problems with neighboring States. Both CDS and ESC have reportedly improved frameworks for international cooperation. An overall target stipulated in CTSD is to increase the effectiveness of MEAs’ implementation. Analysis of relevant policy documents, including laws, strategies, action plans and implemented projects shows that the country’s priorities for global and regional cooperation are focused on certain key areas (see box 4.1).

<table>
<thead>
<tr>
<th>Box 4.1: Priorities for international environmental cooperation</th>
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<tbody>
<tr>
<td>• Desertification: land and soil management</td>
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<td>• Biodiversity and forest conservation</td>
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<td>• Water resources management</td>
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<td>• Climate change</td>
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<td>• Risk management</td>
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<td>• Energy efficiency</td>
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<td>• Ozone layer and air protection</td>
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<td>• Chemicals and hazardous waste management</td>
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Within these areas, specific objectives for international cooperation and measures to achieve them have been identified. They include: (a) strengthening environmental legislation and policies, institutions, monitoring, infrastructure, and capacities at the institutional and technical levels; (b) promoting participation of all stakeholders in decision-making processes; (c) attracting private and
foreign investment, (d) exchanging international experience with respect to environmental issues; and (e) improving cooperation and coordination between sectors and agencies. Bilateral and regional cooperation is especially strong with the other Central Asian countries.

Institutional and legal frameworks

The adaptation of environmental legislation is contingent upon processes of economic transition and the integration of international norms and commitments into the national legislation. The Law on Environmental Protection ensures the application of international agreements. International legislation prevails over national legislation, except when national legislation is stricter.


Most of the responsibilities in the area of international environmental cooperation lie with the State Agency of Environment Protection and Forestry (SAEPF), including development of strategic documents, plans and programmes and of legislation for compliance with international agreements and for ratification of MEAs (see box 4.2).

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<tr>
<th>Box 4.2</th>
<th>Responsible bodies for the implementation of MEAs</th>
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<tr>
<td>SAEPF</td>
<td>Aarhus Convention</td>
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<td>Basel Convention(^1)</td>
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<td></td>
<td>Cartagena Protocol</td>
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<td>CITES</td>
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<td>CLRTAP Convention</td>
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<td>Convention on Biological Diversity</td>
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<td>Espoo Convention</td>
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<td>Kyoto Protocol</td>
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<td>Montreal Protocol</td>
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<td>Ramsar Convention</td>
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<td></td>
<td>Rotterdam Convention(^2)</td>
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<td>Stockholm Convention</td>
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<td>United Nations Framework Convention on Climate Change</td>
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<td></td>
<td>Vienna Convention</td>
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<tr>
<td>Ministry of Agriculture, Water Resources and Processing Industry</td>
<td>Convention to Combat Desertification</td>
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<td></td>
<td>Agreements on transboundary water pollution</td>
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<tr>
<td>Ministry of Emergencies</td>
<td>Convention on Transboundary Effects of Industrial Accidents.</td>
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<tr>
<td>Ministry for Foreign Affairs</td>
<td>Coordinating agency with international organizations</td>
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<tr>
<td>Ministry of Finance</td>
<td>Responsible body for international financial assistance</td>
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</table>

4.3 International assistance

\(^1\) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

To fulfill its obligations under MEAs, Kyrgyzstan has been developing action plans and technical measures for implementation in cooperation with numerous international stakeholders including the Global Environment Facility (GEF), the European Union (EU) TACIS\(^3\) programme, the Global Mechanism, the World Bank, the Asian Development Bank (ADB), the International Fund for Agricultural Development (IFAD), the European Bank of Reconstruction and Development (EBRD), the United Nations Environmental Programme (UNEP), the World Health Organization (WHO), the Organisation of Economic Co-operation and Development (OECD), the Organization of Security and Co-operation in Europe (OSCE), the United Nations Institute for Training and Research (UNITAR), the World Wide Fund for Nature (WWF), the non-governmental organization (NGO) Independent Environment Expertise (IPEN), the Convention secretariats, Germany, United Kingdom of Great Britain and Northern Ireland, Switzerland, Japan, United States of America, Canada and other donor countries. As coordination was a complicated issue, in 2003 the 18 major donors created the Donor Coordination Council (DCC) to improve the coordination of international technical assistance. DCC meets regularly (once a month) to discuss the implementation of these partner programmes. This helps with harmonizing dialogue with the Government and reaching consistent positions in response to possible deterioration in performance or delays in reforms. A DCC specialist manages donor coordination and maintains a website with updated information on external partner activities (www.donors.kg). The creation of DCC was an important step towards assistance coordination and has led to improvements in important areas, e.g. increasing the number of joint reviews, enhancing joint analyses and providing the Government with joint policy messages. All of these contribute to the harmonization agenda and to reducing transaction costs for the Government. Since then, good progress has been achieved among the key international financial institutions vis-à-vis harmonization in areas such as procurement procedures, financial management, monitoring and reporting requirements, and common project implementation units. Still, cooperation with State bodies and relevant stakeholders is not sufficient to ensure a needs-oriented approach.

Also in 2007, seven of the development partners joined efforts to elaborate a Joint Country Support Strategy (JCSS) to support the Kyrgyz’s development agenda for the period 2007–2010. Programmes are focused on the four areas identified in the CDS, e.g. to ensure environmental sustainability and natural resource management. JCSS is a first step to further harmonization efforts and achieving results based on the principles framed in the Paris Declaration on aid effectiveness. The partners are ADB, the Swiss Cooperation, the United Kingdom Department for International Development, the World Bank Group, United Nations agencies, the German Society for Technical Assistance (GTZ) and the European Commission. Approximately $80 million will be available from JCSS partners annually. Donors and the Government will regularly monitor and evaluate their performance relative to actions, indicators, and targets outlined in the JCSS matrix so as to assess their progress toward achieving the CDS goals. Monitoring and evaluation will take the form of a joint annual review of the CDS, available to all stakeholders.

External assistance is an important source for: (a) pilot project implementation; (b) exchange of best practices; (c) promoting procedures and mechanisms for sustainable natural resources management; (d) building institutional, technical and human capacity; and (e) achieving compliance with commitments related to international treaties. Assistance is provided in the form of grants, technical assistance and long-term loans. Technical assistance takes the form of equipment to help use natural resources in a sustainable way and also for monitoring the environment. More than 80 international environment projects have been developed in Kyrgyzstan in the period 2000–2006.

According to SAEPF, international environment and natural resources management projects (amounting to a total of $451.5 million) between 1995 and 2008 have been implemented in the following areas:

- Agriculture ($207.1 million)
- Water ($94.2 million)
- Energy ($61.3 million)

\(^3\) Technical Assistance programme for the Commonwealth of Independent States.
- Environment policy ($24.3 million)
- Biodiversity ($28.3 million)
- Desertification/land degradation ($28.4 million)
- Science and technology ($5.3 million)
- Climate ($2.3 million)
- Waste disposal and management ($0.3 million)

(UNDP, Kyrgyz Republic Environment and Natural Resources for Sustainable Development, 2007)

The GEF Small Grants Programme (SGP), implemented by UNDP, was launched in 1992 to support activities of NGOs and local communities. The maximum grant per project is $50,000. Since 2000, 184 SGP projects have been implemented in Kyrgyzstan in the following areas: biodiversity, land degradation, climate change, persistent organic pollutants (POPs) and international waters protection.

**Box 4.3: Promoting environmentally sustainable transport**

Talas Business Incubator is a Kyrgyz NGO. Under the Small Grants Programme, it initiated a project to provide rural people access to bicycle transport, capitalizing on the fact that working migrants come to Talas town to sell agricultural products and look for temporary jobs. GEF provided a grant of $7,200 and Talas Business Incubator co-financed $1,770 in cash and $1,083 in kind. Between 2002 and 2004, 60 bicycles were purchased and distributed to several hiring locations. Furthermore, a small repair enterprise was established. The population of Talas directly participates in the project through propagation and rent of bicycles. Transport expenses for the migrant population have decreased since the project has started and the project's stability is supported through the economic interests of both those who hire and those who rent and repair the bikes. Results are seen in the enhanced public awareness of global environmental problems, reduction of carbonic gas emissions and the creation of a new area of workplaces and services. These are positive signs that such projects can be replicated in other towns or villages with asphalt roads.

4.4 International cooperation on environmental issues of national importance

Main priorities for international environmental cooperation (listed in box 4.1) are in general managed through participation in worldwide conventions, while water resources management is by nature of more regional character (See section 4.5).

**Land degradation and desertification**

Given the high percentage of land affected by desertification in Kyrgyzstan, sustainable land management is one of the key issues for environmental safety policy (see chapter 8). Since 1997, Kyrgyzstan has been a party to the United Nations Convention to Combat Desertification (UNCCD). In 2004, a Working Group on Partnership Development for CCD Implementation was established, comprised of members of the Parliament, the Ministry of Agriculture, Water Management and Processing Industry, the Ministry Of Emergencies, the Ministry of Finance, the Ministry of Economic Development and Trade, SAEPF, the State Agency on Registration of Real Estate Ownership, NGOs and a number of international donor organizations. Under the umbrella of Ministry of Agriculture, Water Resources and Processing Industry, two bodies were established for implementing the Convention: the National Coordination Council (NCC) with representatives of the Government, donors and the civil society, and the Kyrgyz Irrigation Research Institute, which acts as focal point for the Convention. A National Action Plan on Combating Desertification (NAP) was approved by the Ministry of Agriculture, Water Management and Processing Industry in 2000, and embedded into the National Framework Programme on Land Management 2006–2016 (NFP) in 2006. NPF is a comprehensive programme to aims to address land degradation with a particular focus on strengthening policy, legislative and institutional frameworks, and on capacity-building and the promotion of sustainable land, water and natural resource management. It has been established under the Central Asian Countries Initiative for Sustainable Land Management (CACILM; see also section 4.4.2). NCC will be the main coordination mechanism for the CACILM/NPF National Investment Programme. While NAP includes only a few concrete investment programmes, the Comprehensive Development Framework until 2010, Country Development Framework until 2015, the National Forest Programme 2005–2015, Strategy and Action Plan for Development of Mountain Territories
and the Agrarian Policy Concept until 2010 contain investment programmes covering the Convention’s provisions (see the 2006 third national report to the UNCCD).

Nine of the 19 approved GEF projects, (three at the national, four at the regional and two at the global level) concern land degradation. The projects were recently initiated in the framework of NAP/CACILM/NFP; “Community-Based Rangeland Management in Temir Village”, implemented agencies by the Canadian International Development Agency, Global Mechanism and UNDP; and “Integrated Management of Agriculture and Land Improvement”, sponsored by ADB. Recently, the national project “Demonstrating Sustainable Mountain Pasture Management in Susamyr in the Kyrgyz Republic under CACILM Partnership Framework Phase I” has been approved and will be implemented by UNDP with a budget of $2 million. A positive sign of interest was the financial support from the State budget given to a scientific-research programme on monitoring desertification processes of irrigated land under NAP. In general, however, the volume of domestic investment for the prevention of land desertification does not meet the real needs. Therefore, international assistance prevails for financing UNCCD implementation. Lack of financial resources and capacities of the major agencies and stakeholders at the national and local levels remain the main obstacles for the Convention’s implementation.

**Biodiversity conservation**

Kyrgyzstan is a biodiversity hot spot for Central Asia, as it possesses a high density of endemic species. This rich endowment of biological resources is currently under threat from habitat degradation, conversion and the introduction of exotic species (see chapter 8). Kyrgyzstan is a Party to a number of MEAs related to biodiversity and nature conservation including the Convention on Biological Diversity and its Cartagena Protocol, the Ramsar Convention, CITES and the Convention Concerning the Protection of the World Cultural and Natural Heritage (acceded 1995). It has not yet ratified the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), and there is no plan for accession.

By resolution, in 2002 the Government endorsed the Biodiversity Strategy and Action Plan from 1998. This document identifies specific measures to address key biodiversity problems, based on analysis of species and ecological diversity and the economic, institutional, legal, educational and scientific capabilities of the country (see chapter 8). Among other measures, the Strategy stipulated the enlargement of protected areas up to 4.8 per cent of the total territory until 2004.

According to the Ecological Security Conception, in 2007 protected areas covered 447,800 ha, or 2.24 per cent of total Kyrgyz territory. According to GEF, there are 672,900 ha now protected in nine State nature reserves and eight national parks. However, implementation of the Strategy and the Convention’s commitments is hindered by shortages of financial resources, qualified staff (as well as frequent staff turnover), methodological literature and equipment. It is also hampered by the population’s reticence to create more protected areas. There is little scientific information on the state of biodiversity and deforestation. Furthermore, the spatial heterogeneity of biodiversity and anthropogenic pressures are not taken into account in national economic programmes.

Two sites are on the list of wetlands of international importance: State Reserve Issyk-Kul and Lake Issyk-Kul (since 2002) and Lake Chatyr Kul (since 2005). To preserve wetlands, a National Strategy on Wetlands 2008–2013 has been developed that includes an implementation plan for the Ramsar Convention.

With international assistance, several projects on biodiversity protection have been realized, e.g. projects regarding legislative harmonization or local biodiversity conservation. GEF has financed seven projects, two at the national and five at the regional level, with a total of $42,994,000, of which $25,351,000 have been co-financed.
Kyrgyzstan hosts a number of endangered species that are subject to poaching. Among them are snow leopards and the Marco Polo sheep. Results from the implementation of CITES are expected starting this year, as the country has ratified the Convention only in September 2007.

**Forests**

Forests cover only 4 per cent of the territory, although they play a critical role in the maintenance and sustainability of the environment and biodiversity. As a political reaction to the significant forest losses of 10 per cent in the period 1990–2001, Kyrgyzstan aims to increase forest and protected areas.

There is a long tradition of cooperation between Kyrgyzstan and Switzerland in sustainable management and the protection of forests. The Kyrgyz-Swiss Forestry Support Programme (KIRFOR) started in 1995 with a total budget of $17 million. It is currently in its last phase of generating support for communal forest management principles based on the forestry sector reform. The overall goal of the project is to establish the necessary capacities of various institutions and private individuals, acting in the forestry sector, to ensure a sustainable use of forests thereby contributing to their conservation and their biodiversity. Within the framework of the KIRFOR project, the 1999 Forestry Code, the National Action Plan for 2001–2005, the 2004 Concept for Forestry Sector Development until 2025 and the 2004 National Forest Programme 2005–2015 (NFP) have been developed and adopted (see the third national report to the Convention on Biological Diversity (2006)).

The regional ministerial Forest Law Enforcement and Governance (FLEG) initiatives were launched by the World Bank to combat the threats posed to forests by illegal logging, trade, poaching and corruption. By signing in 2005 the St. Petersburg Declaration on Forest Law Enforcement and Governance in Europe and North Asia (ENA FLEG), the Government committed itself to take measures to improve forest governance and combat illegal logging. In the framework of KIRFOR, Kyrgyzstan is establishing a national action plan for FLEG with participation of all stakeholders in the process.

The KIRFOR project is reported to be a successful long-term project that involved local expertise and capacities from the beginning, leading to concrete and implemented results.

**Box 4.4: Some results of the KIRFOR project**

The largest walnut forests in the world are located in the south of Kyrgyzstan. This ecosystem is famous for its biodiversity, and more than 200,000 people who live in this zone of the Fergana Valley depend on these forests for their survival. One of the main components of the KIRFOR project is field implementation of the national forestry sector reform in the walnut-fruit forest area. The reform aims for more social and production-oriented forest management with a focus on sustainability and biodiversity conservation. Accordingly, a new model of community forestry management has been introduced. Local populations and administration, forest rangers and the private sector work together and make joint decisions on how the forest is managed and used. Ownership rights of more than 3,000 ha of forest have been temporarily transferred to the local families who live in the area. As a result, people are acting as responsible forest owners, with an interest in efficient growth. This model of community forestry management will be further adopted in other forested areas in the country, helping people to alleviate poverty, preserve forests and strengthen civil society in rural areas. New Phase activities will focus on enforcement of new actors’ roles in sustainable participatory forest management, widening the actual individual/family approach system.

**Climate Change**

In 2004, Kyrgyzstan accounted for 5.7 million tons of carbon dioxide (CO₂) emissions in total, with an average of 1.1 tons of CO₂ per person. These emission levels are below those of Central Europe and Eastern Europe, Caucasus and Central Asia (EECCA). Greenhouse gas (GHG) emissions from energy production constitute about 35 per cent of the total GHG emissions, with considerable potential for emission reduction concentrated in this sector. While the country is not a big GHG contributor, it is seriously threatened by climate change (see box 4.5). In the twentieth century, the average annual temperature in the country taken over a 100-year period has risen by 1.6° C, which is much higher than the global average.
Box 4.5: Predicted effects of climate change in Kyrgyzstan

By 2100, warming scenarios predict:

- **Temperature**: a 1.8–4.4°C rise in average annual temperature.
- **Precipitation**: an increase of 10–40 per cent compared to 1961–1990 levels.
- **River flows**: a change of the total flow of the main rivers from 0.7 to 1.8 times, depending on the degree of temperature and precipitation increase.
- **Glaciers**: a continuation of their melting, with smaller ones possibly disappearing. The decrease in glaciers will ultimately lead to reduced river water, mainly at the expense of reducing summer flows in the irrigation period. As a result, the capacity of irrigated land may significantly decline, thus reducing agricultural outputs.
- **Biodiversity**: the impact of climate change on the biodiversity of the country has only been estimated and requires additional research, but it is expected that the upper altitudinal limit of the desert eco-zone will move up by 200–400 m, steppes by 200–250 m, forest-meadow eco-zone by 120–150 m and the sub-alpine belt by 100 m.
- **Natural disasters**: increased intensity and frequency of landslides, floods and avalanches.

Kyrgyzstan ratified the *United Nations Framework Convention on Climate Change* (UNFCCC) in 2000. To implement the Convention’s requirements, the Government adopted the *Resolution on measures for the implementation of UNFCCC* in 2001 and released the *Resolution on establishment of the National Committee on Mitigation of Climate Change Consequences* in 2005. As a non-Annex I Party to the *Kyoto Protocol*, the country is not bound by specific targets for GHG emissions. The National Climate Change Committee has been designated as the coordinating body for the clean development mechanism (CDM). Although there is a new *Law on State Policy and Regulation in the Sphere of Emission and Absorbing Greenhouse Gases* (2007), more specific regulatory measures are still needed, as at the moment national standards do not establish limitations on CO₂ emissions.

A project funded by GEF (“Enabling Activities for the Preparation of the Second National Communication to UNFCCC”) is expected to finish in August 2008. Projects implemented in recent years have resulted in a GHG cadastre for 2000–2004, an analysis of climate change impacts in the provinces, the preparation of the *National Self-Assessment for Global Environmental Management of 2004* and improvement with respect to energy efficiency in buildings. Round tables in the Parliament and trainings are dedicated to capacity-building on energy efficiency and CDM. Special climate funds, GEF and the UNFCCC Secretariat are the main financing bodies. Main obstacles to implementation are the lack of domestic resources, monitoring of GHG emissions and of statistics. International assistance is still needed, especially for monitoring and elaboration of a national action plan for climate change adaptation.

*Protection of the ozone layer*

Kyrgyzstan acceded to the Vienna Convention, the Montreal Protocol and the Amendments of Montreal, London, Copenhagen and Beijing in 2003. The coordinating agency is SAEPF, but due to lack of capacity, work relating to the Convention is undertaken by the Ozone Centre. This Centre acts under the Inter-ministerial Commission, which consists of representatives of several ministries, SAEPF and the Government. The *State Programme on Elimination of Use of Ozone-Depleting Substances until 2005* was realized. Kyrgyzstan does not produce ozone-depleting substances and consumption of chlorofluorocarbons decreased from 53 tons in 2001 to 4.2 tons in 2007. The rate of consumed bromide methyl fell from 13.8 tons in 2001 to 0 tons in 2007. The consumption of hydrochlorofluorocarbons increased from 0.2 tons in 2000 to 15.5 tons in 2007. In 2006, the *Law on Ozone Layer Protection* was endorsed. Kyrgyzstan has carried out a number of projects with the assistance of UNDP and the UNEP Ozone Secretariat of the Multilateral Fund of the Montreal Protocol. These projects focused on institutional strengthening and capacity-building, monitoring plan of refrigerant management, training customs staff and raising awareness. Financial assistance is provided by international funds. Implementation is reported to work smoothly.

*Chemicals and waste management*
Chemicals

Kyrgyzstan has been a Party to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention) since 2000. In 2001, the Government adopted the Resolution concerning measures of protecting the environment and the population’s health from the harmful effects of hazardous chemical substances and pesticides. This resolution regulates control and registration of the transportation of persistent organic pollutants (POPs) in compliance with obligations under the Rotterdam Convention. Kyrgyzstan has sent information on the national regulations for pesticide application and the list of prohibited or controlled pesticides to the Convention secretariat as well as notifications on final regulatory measures concerning 15 substances and 25 notifications concerning the import of substances included in annex 3 of the Convention. At the first Conference of the Parties to the Rotterdam Convention in 2004, Kyrgyzstan became a member of the Committee on Chemical Substances, to be included in annex 3 for a period of two years.

In 2006, Kyrgyzstan joined the Stockholm Convention on POPs. A national implementation plan, prepared as a GEF/UNEP project, was completed in 2005 ($518,000). Priority measures as defined in the national implementation plan include the legal harmonization with international laws on POPs, the creation of a National Coordination Committee and Chemical Safety Centre, the establishment of a POPs inventory, national capacity-building on monitoring and evaluation, elimination of stockpile sites, improvement of public awareness and education, and promotion of research. The implementing agency of the Convention is SAEPF, but other ministries are involved as well, e.g. the Ministry of Emergencies, the Ministry of Health, and the Ministry of Agriculture, Water Management and Processing Industry. The implementation of the Convention requires strong cooperation with industry and further efforts due to divergent interests. A working group that was established in March 2008 comprised representatives of the Ministry of Health and the Ministry of Emergencies, SAEPF, laboratories and others. International assistance is needed for the elaboration of an inventory of places where POPs are concentrated and for implementation of the Convention in general. The GEF/UNDP project “To Enhance the Technical Capacities for Proper Management and Disposal of PCBs\(^4\) in the Kyrgyz Republic”, has a budget of $2.14 million and is currently under way.

The Strategic Approach to International Chemicals Management (SAICM) is an international policy framework to foster the sound management of chemicals. Kyrgyzstan supports the SAICM approach and is represented by a national focal point from the Institute of Chemistry and Chemical Technology.

A joint project (“Development of an Action Plan to Address Primary Mercury Mining in the Kyrgyz Republic\(^5\)”) of UNITAR, UNEP and UNEP/GRID-Arendal, with financial support from Switzerland and the United States of America, is being carried out in the context of the UNEP Global Mercury Partnership Programme, established in 2003 to reduce the risks to human health and the environment from anthropogenic mercury releases worldwide. The overall objective of the project is to reduce risks associated with primary mercury mining in the Khaidarkan area, Batken oblast, by assessing the mercury mine and smelter, including its environmental, technical, and socio-economic aspects, and developing an action plan to address identified gaps and challenges, including options to replace the present mercury mining operations in the area by environmentally less harmful activities.

Transboundary movements of hazardous waste

Kyrgyzstan has been a party to the Basel Convention since 1996. The Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal and the Ban Amendment are not yet in force, as they are not ratified. The implementing agency of the Basel Convention and authority for special import permissions is SAEPF. The national definition of hazardous wastes is in accordance with the annexes I and II of the Convention. Restriction on transit, import and export of hazardous wastes and other wastes for final disposal and for recovery is determined by the 1999 Regulation on State Control of Transboundary Movements of

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4 Polychlorinated biphenyls.
Hazardous and Other Wastes. Data on the generation and transboundary movements of hazardous and other wastes have not yet been reported. National policy aims to reduce transboundary movements of hazardous and other wastes by charging licenses for corresponding activities.

4.5 Regional cooperation

“Environment for Europe” process

Kyrgyzstan actively participates in the “Environment for Europe” process. At the Fifth Ministerial Conference “Environment for Europe” (Kyiv, 2003), the ministers adopted the Environment Strategy for Countries of Eastern Europe, Caucasus and Central Asia (EECCA Environment Strategy). This document provides a basis for strengthening bilateral and multilateral cooperation among the EECCA countries and other UNECE countries, as well as different sectors of society. Its objectives are to improve environmental conditions and to implement the World Summit on Sustainable Development Plan of Implementation in EECCA by developing action plans and partnerships. Priority areas for cooperation are:

- Environmental legislation
- Policy and institutional frameworks
- Pollution prevention and control
- Sustainable natural resources management
- Integration of environmental considerations into development of key economic sectors,
- Financial resources mobilization
- Identification and addressing of transboundary problems
- Strengthening of cooperation within the framework of international conventions.

So far, Kyrgyzstan has been engaged in 37 projects in the framework of the EECCA Environment Strategy.

Cooperation in the framework of UNECE

Air pollution

Air pollution, in particular from the energy sector and transport, is a significant problem in the country. In urban areas, pollution levels are high and have a significant impact on the health of the population. Kyrgyzstan has been a party to the Long-Range Transboundary Air Pollution Convention (LRTAP Convention) since 2000, but has not ratified any of its eight protocols. The first national report on emissions into the atmosphere (1990–2000) was sent to the LRTAP Convention secretariat and a database of national emissions is being developed. The country has so far not drafted a national action plan for the LRTAP Convention. The Law on Air Protection was endorsed in 1999 and amended in 2003. Work is reported to be underway on joining the Convention’s Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP Protocol), but there are no concrete plans for ratification. Industry does not support the ratification of the EMEP Protocol because of its obligations. Kyrgyzstan is observing the ratification process in Kazakhstan, where an EMEP programme pilot project is being implemented.

The Capacity-building for Air Quality Management and the Application of Clean Coal Combustion Technologies in Central Asia (CAPACT) project, funded by UNEP ($680,000), was carried out between 2004 and 2007. A possible ratification of the Protocol on Heavy Metals would require a preliminary study on heavy metals with international assistance. Further assistance is also needed as well for cooperation with industry and to enhance capacity-building and monitoring.

Water resources protection
UNECE has sought to improve regional cooperation on water management in Central Asia through the United Nations Special Programme for the Economies of Central Asia (SPECA). The *Strategy on strengthening cooperation for rational and efficient use of water resources* was adopted in 2004 by four of the five Central Asian member countries of SPECA, including Kyrgyzstan. The Strategy outlines the needs for action in the water and energy sectors, in the longer and shorter term, for the benefit of the whole region.

Kyrgyzstan has not ratified the UNECE *Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention)* and is not planning to do so in the near future. Since August 2008, however, the country has been taking steps to examine the implication of the ratification of the Protocol on Water and Health and to prepare for a governmental decision in the course of 2009. Of the Central Asian countries, only Kazakhstan and Uzbekistan have ratified the Water Convention (see the section on Central Asia below as well as chapter 6 on water).

**Industrial accidents**

Industrial facilities are old and there is little investment in their modernization. Therefore, risk of accidents is high. The country has not ratified the UNECE *Convention on Transboundary Effects of Industrial Accidents*, but is reporting on the issue. According to the third report on the implementation of the Convention (2006–2007), there are many obstacles for implementation at the institutional, management, legal and financial levels. Several bodies are involved in the issue, e.g. the Ministry of Emergencies, SAEPF, and local authorities, but their responsibilities are not clearly defined. Kyrgyzstan supports a common policy involving all neighboring countries with respect to meeting the key provisions of the Convention prior to accession.

**Public participation**

Kyrgyzstan has been a party to the UNECE *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)* since 2001. Kyrgyzstan published national implementation reports in 2005 on the occasion of the second meeting of the Parties in Almaty, Kazakhstan, and in 2008 as preparation for the third meeting of the Parties in Riga. Most of the Convention’s provisions are reflected in the national legislation and there is no need to pass new laws in order to implement them. However, it is necessary to develop separate implementing mechanisms and to establish financial constraints on the full implementation of individual provisions of the Convention. Cooperation between different stakeholders is ensured by an ecological expertise through publication on the Internet, where draft legislation should always be submitted to public discussion. However, time frames for this process are often very short and hinder full participation. In order to implement the Convention’s obligations, Kyrgyzstan is undertaking further actions, such as holding seminars at the local and national levels. Two projects are under way with the assistance of OSCE, UNITAR, USAID\(^5\) and UNEP. An Aarhus Centre has been established in Osh within the framework of the Environment and Security (ENVSEC) Initiative. The centre’s work focuses on four major areas: (b) awareness-raising with respect to the Aarhus Convention; (b) raising the environmental awareness of youth and enhancing their involvement in environmental protection activities; (c) promoting environmental journalism; and (d) fostering dialogue between the Government and civil society on environmental issues (see chapter 3).

**Convention on Environmental Impact Assessment in a Transboundary Context**

Kyrgyzstan ratified the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) in 2001 but has not acceded yet to the *Protocol on Strategic Environmental Assessment*. The main legislative act relating to environmental impact assessment (EIA) is the 1999 *Law on Environmental Expertise*. The 1999 *Law on Environmental Protection* provides detailed regulations on the main requirements for EIA.

\(^5\) United States Agency for International Development.
Box 4.6: Guidelines on environmental impact assessment in a transboundary context for Central Asian countries

In 2004, representatives of the five Central Asian countries (although only Kazakhstan, Kyrgyzstan and Tajikistan have acceded to the Convention) developed Guidelines on EIA further to an initiative of Kyrgyzstan, to strengthen subregional cooperation and to implement the Convention’s work plan. This work was done in cooperation with the Espoo Convention secretariat, Switzerland, the Ministry of Emergencies and the Regional Environmental Centre for Central Asia (CAREC). The Guidelines are a further implementation of the subregional initiative on sustainable development established within the framework of the preparatory process for the World Summit on Sustainable Development (see section 4.4).

A transboundary EIA pilot project involving Kazakhstan and Kyrgyzstan began in 2006. The project, which concerned the Jeroy gold and copper mine in the Talas River basin in Kyrgyzstan, was funded by Norway and managed by OSCE and UNECE in cooperation with SAEPF. In addition to the implementation of the pilot EIA, the two countries will also have an opportunity to revise their EIA procedures. A regional workshop, planned to be held in Kyrgyzstan at the end of 2008, will finalize the project, with the aim of revising the Guidelines on the basis of the pilot project’s conclusions.

Central Asia cooperation

The five Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) launched the Regional Environmental Action Plan (REAP) in 2001. REAP is based on the national environmental action plans developed by each country, and focuses on actions that require a coordinated subregional approach. Air and water pollution, waste management, land degradation and mountain ecosystems degradation are the priority issues. Implementation of REAP is regulated by the Inter-State Commission for Sustainable Development (ICSD), which is supported by GEF.

Water resources management

Water resource management and sharing is a complex issue in Central Asia. Three major transboundary rivers (the Naryn, the longest river in Kyrgyzstan, and the Chu and the Talas) originate in Kyrgyz territory. Regional cooperation on water allocation has been the subject of active regional and bilateral negotiation processes and projects in recent years, often resulting in formal agreements, joint commissions (see box 4.7), and the development of policies and measures for joint water management.

Box 4.7: Participation in bilateral and regional agreements and bodies for the use and protection of transboundary waters

- The Inter-State Council for the Aral Sea, created in 1993 by all Central Asian States: the members of the Council established the Inter-State Commission for Water Coordination (ICWC) and the International Fund for Saving the Aral Sea (IFAS). IFAS is an inter-State organization whose goals are (a) to fund and credit joint subregional environmental and research programmes and projects to save the Aral Sea; (b) to improve the environmental situation in the areas affected by the drying up of the Sea; and (c) to solve regional socio-economic problems.

- Agreement on the Use of the Water Energy Resources of the Naryn-Syr Darya Basin: this 1996 agreement between Kyrgyzstan and Uzbekistan regulates use of water from the Naryn and Syr Darya.

- Agreement between the Government of the Kazakh Republic and the Government of the Kyrgyz Republic on the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas from 2000. Based on this agreement, in 2006 Kazakhstan and Kyrgyzstan established the Chu-Talas River Commission with the assistance of UNECE, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and OSCE. The two countries have equal standing in the Commission, share the responsibility for common water infrastructure and report to its water management agency. As part of the bilateral agreement, Kazakhstan has agreed to pay part of the operating and maintenance expenses for a number of Kyrgyz dams and reservoirs that supply water to both countries. The creation of a bilateral Commission on water resource management is an important step towards improving cooperation on a highly delicate transboundary environmental issue.

- Agreement between All Central Asian States on Cooperation in Joint Management, Use and Protection
Water relations and limits on water use between the countries of Central Asia are still based on provisions for water sharing of the 1980s set out by Gosplan (State Committee for Economic Planning) and the Ministry of Water Resources of the former Soviet Union. The inter-State limit on water resources use is set at 24 per cent for Kyrgyzstan and the rest for downstream neighboring States. SAEPF assumes that there will be an increase in water shortages and an extension of arid areas in Central Asia due to climate change. The main body concerned with water issues in Kyrgyzstan is the Ministry of Agriculture, Water Resources and Processing Industry. Due to the predicted effects of climate change on water quantity and regime, as well as the impact of transboundary pollution, the discussions on water-sharing are ongoing in the subregion.

Since 2001, Kyrgyzstan has adopted a number of laws related to water, e.g. the Law on Intergovernmental Use of Water Objects, Water Resources and Water Economy Facilities in 2001. The Law’s key objectives are: (a) the conservation, protection and management of water resources of Kyrgyzstan, as a principle source of water supply for Central Asian countries; and (b) the control and regulation of the principles of inter-State water-sharing in a mutually beneficial manner. The Water Code, adopted in 2005, includes an entire chapter for international cooperation on water issues that refers to regulations in the Constitution as well as national and international laws and agreements. The integrated water resource management project, funded by Swiss Cooperation, is an ongoing project implemented by ICWC with the goal of improving and reorganizing institutional arrangements for water management in the Fergana Valley, involving Kyrgyzstan, Tajikistan and Uzbekistan.

**Land protection**

Land protection is also a critical issue of common concern in Central Asia. The Central Asian Countries Initiative for Land Management (CACILM) was formed in 2005 as a partnership between Central Asian countries and the international donor community. This 10-year initiative (2006–2016) supports development and implementation of national programmatic frameworks for a comprehensive, integrated approach to combating desertification through sustainable land and water management. Total anticipated financing for CACILM is approximately $700 million: GEF will contribute $100 million, ADB will fund $450 million, the Central Asian countries $100 million, and other bilateral and multilateral development partners $50 million. The CACILM Knowledge Network facilitates information-sharing and knowledge exchange stakeholders connected with sustainable land management. It is also a tool for monitoring and coordinating CACILM project activities.

**Biodiversity conservation**

Biodiversity conservation is the subject of several regional projects. A draft of the Intergovernmental Agreement on the Creation of the Transboundary Protected Territory has been prepared by Kazakhstan, Kyrgyzstan and Uzbekistan, and is currently being approved by the relevant ministries and agencies in the three countries (see chapter 8).

Specific structures have been created at the subregional level to facilitate cooperation between Central Asian countries and help them to carry out jointly:

- CAREC, formed in 2001, is a not-for-profit, independent, non-political organization operating under a charter signed by representatives of the five Central Asian States. It aims to strengthen partnerships and cooperation among NGOs, national and regional government, the business community, donors and the general public, for the purposes of sustainable development.

Together with CAREC, the Central Asian Inter-State Commission for Sustainable Development (ICSD) is the leading partner in the Central Asian Initiative for Sustainable Development, created in 2005 and is the coordinating and management body of subregional...
environmental cooperation. Kyrgyzstan has chaired ICSD since 2007. The Scientific-Information Centre, established at the Institute of Deserts, Flora and Fauna of the Ministry of Nature Protection of Turkmenistan, provides information and expert support to ICSD. The Central Asian Initiative for Sustainable Development focuses on creating the necessary political, institutional and economic conditions for achieving sustainable development goals. It supports regional cooperation and the transfer of international experience as well as promoting sustainable development with respect to the environmental agenda (www.europe&cis.undp.org).

- The ENVSEC Initiative, launched in 2002, facilitates a collaborative process whereby key public officials and development partners motivate cooperative environmental action to address links between environment and security. The Initiative works closely with Governments, defense and environmental ministries, national experts and NGOs. In Central Asia, the Initiative particularly promotes regional cooperation in transboundary pollution and water resource management. Among the priority geographic areas are the Fergana Valley, the basin and tributaries of the Aral Sea and the Amu Darya basin. The Fergana Valley programme includes a series of regional and subregional projects focusing on environmental and health risk assessment at industrial hot spots. With the assistance of UNDP, Kyrgyzstan, Tajikistan and Uzbekistan are planning the regional project for improved land and water resource management in the Upper Syr Darya basin in the context of sustainable development. The project will address transboundary integrated land and water management by preparing a transboundary diagnostic analysis to help develop a set of eco-system quality objectives. These will serve as the basis for the regional strategic action programme and the national action plans (ENVSEC projects 2006). At the regional level, the Initiative is supporting EECCA and South-Eastern European countries in preparing the implementation of the Espoo Convention. It has undertaken preparatory missions in several countries, including Kyrgyzstan.

4.6 World Summit on Sustainable Development and the Millennium Development Goals

**World Summit on Sustainable Development**

To meet the requirements of Agenda 21 and the World Summit on Sustainable Development (Johannesburg, 2002), the Kyrgyz Government adopted a national strategy for sustainable development: the *Agenda of the Kyrgyz Republic for the XXI century* and the *Programme of actions until 2010*. The country’s priorities for transition to sustainable development are: (a) to reduce the population below poverty level by half before 2010; (b) to secure food needs with ecologically sound products and to increase the country’s export potential for these products; and (c) to preserve fresh water resources and preserve biodiversity by increasing the area of protected territories to up to 30 per cent of the whole territory. The *Agenda of Bishkek City for the Twenty-first Century* and the *Local Action Plan until 2010* have been developed and local agendas for rural areas are under way. Other measures for achieving the envisioned goals are strengthening institutions, harmonizing national laws with international conventions and supporting integration processes on the regional, interregional and global levels.


**Millennium Development Goals**
After a process of broad consultation with government bodies, civil society representatives and international organizations, Kyrgyzstan has adjusted some of the Millennium Development Goals (MDGs) and related targets to its situation (see box 4.6). MDG 7, on ensuring environmental sustainability, is in full compliance with the objectives reflected in the Kyrgyz Constitution, the Country Development Strategy, the Concept of Environmental Safety and the Law on Environmental Protection. In 2003, with UNDP assistance, Kyrgyzstan published the Millennium Development Goals Progress Report and is currently preparing the report due for 2007. According to this document, Kyrgyzstan is on track to achieve target 9 on sustainable development, in the area of environmental legislation. But there are weaknesses in enforcement due to low staff morale, poor public sector governance and eroding skills. Target 10 on access to safe drinking water is regarded as unlikely to be achieved. The Government plans to substantially improve access to clean water in rural areas. ADB and World Bank are assisting the Government in its efforts by supporting a nationwide programme of water supply. Kyrgyzstan is on track for target 11 on housing conditions. The Government plans to reduce inequality and increase the average dwelling space per capita to 14.2 m² by 2010.

Box 4.8: Targets and related indicators of Millennium Development Goal 7 for Kyrgyzstan

**Target 9**
Integrate principles of sustainable development into country policies and programmes, and reverse the loss of environmental resources
- Increase the proportion of land area covered by forests
- Increase of percentage of protected areas
- Reduce emissions of carbonic acid gas
- Reduce GHG emissions (CO₂ equivalent tons per capita)
- Reduce emissions of ozone-depleting substances (tons)

**Target 10**
Halve, by 2015, the proportion of people without sustainable access to safe drinking water.
- Increase the proportion of population with sustainable access to safe drinking water
- Increase the proportion of population with access to improved sanitation

**Target 11**
Ensure significant improvement of dwelling conditions of the population

4.6 Conclusions and recommendations

Since the first EPR in 2000, Kyrgyzstan has made significant progress in terms of international environmental cooperation. It has expanded participation in MEAs by joining seven international conventions and three protocols, and by taking part in a number of bilateral and regional agreements. To comply with the requirements under the MEAs, Kyrgyzstan, assisted by the international community, has developed policies and strategies and has implemented many environmental projects. The Country Development Strategy for 2007–2010 and the Ecological Security Conception are pivotal instruments that outline the main directions for international cooperation with respect to environment protection. However, these documents do not define clear priorities and objectives regarding those agreements that are of highest importance for the country.

Moreover, an effective implementation of commitments to MEAs have often been hampered by the lack of financial resources and capacities of the major implementing agencies at the national and local levels. Kyrgyzstan has received international financing and technical assistance from abroad, but they have not been used as efficiently as they should be for many reasons. National priorities for foreign funding have not been thoroughly studied and no clear strategy defined to guide foreign donors. There are many ministries and agencies involved in environmental protection, with no single common vision of problems and little coordination of their respective actions. And last, despite the donors have set up their own Country Development Strategy until 2010 to improve the efficiency of their assistance to the country, too often they follow their own development strategies, which are not always country-needs oriented. Better assessment and prioritization of needed actions by the country would make the assistance by the foreign partners more efficient.

Recommendation 4.1:
To improve the implementation of MEAs and to optimize international assistance, the Government should bolster its participation in coordination efforts of donors and international organizations, local institutions, NGOs and the private sector in order to:

(a) Identify the priorities and objectives of highest national importance in the international conventions and agreements and their related tasks; make them known to the foreign donors so that they can adjust the Joint Country Support Strategy accordingly;

(b) Identify and evaluate resources needed for achieving these objectives from both domestic and external sources;

(c) Establish common guidelines for the implementation of projects to ensure their steady implementation, better coordination between national implementing agencies and efficient collaboration with foreign partners.

Kyrgyzstan has continued activities related to the global and regional environmental agreements it has not yet ratified. At regional level, preparatory work is under way to join the EMEP Protocol and the Protocol on Heavy Metals to the LRTAP Convention. Preparations have been done as well for ratification of the Espoo Convention. However, there are no action plans for ratification, and preparatory work has not been completed in all cases. By joining MEAs, Kyrgyzstan would take advantage of implementation programmes and development of capacities with the assistance of the secretariats of the MEAs and donor countries. Work has just started for preparing the ratification of the UNECE Water Convention’s Protocol Water and Health.

Moreover, Kyrgyzstan needs to secure the financing of MEAs implementation. In recent years, the country has in general fulfilled its financial obligations to the MEAs to which it is a Party. However, as of now the State budget does not include a specific budget line for the obligatory contributions to MEAs and the contributions are still paid by the Environmental Fund.

Recommendation 4.2:
The Government should:

(a) Prioritize the MEAs that still need to be ratified and establish action plans for the accession procedure, including the drafting of implementing laws;

(b) In particular, proceed with preparatory work for ratification of the UNECE Convention on Industrial Accidents and the protocols to the LRTAP Convention, in particular the EMEP Protocol and the Protocol on Heavy Metals;

(c) Ratify the Protocol on Water and Health;

(d) Ensure that sufficient and stable funding is allocated to the implementation of the international environmental conventions that have been ratified.

Agreements on the use and protection on transboundary waters were established mainly before 2000 and are focused on regulating the use of water resources. The agreement between Kazakhstan and Kyrgyzstan On the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas (2000) includes provisions for the protection of transboundary water resources and is an important step towards a common approach on this issue.

Recommendation 4.3:
Recognizing the importance of the sustainable use, sharing and protection of water resources in the region, the Government should:

(a) Strengthen its participation in the regional cooperation on the sustainable management of transboundary water resources and in negotiations of future agreements on shared water use;

(b) Establish a national strategy for joint action with the neighboring States, to ensure the sustainable use and protection of these waters.
Chapter 5

ECONOMIC INSTRUMENTS AND EXPENDITURES FOR ENVIRONMENTAL PROTECTION

5.1 Use of economic instruments for environmental objectives

Legal, institutional and policy frameworks

The system of regulatory and economic instruments for environmental purposes described in the first EPR of 2000 has remained basically unchanged. Available instruments include emission charges (e.g. for air pollution, water discharges and waste generation), user charges (water supply, sewerage, sewage treatment and waste management), taxes on the extraction and use of natural resources, deposit refund schemes, penalties and compensation for environmental damage. No new instruments have been introduced in the period under review.

The legal basis for environmental revenues, including both pollution charges and taxes on the special use of natural resources can be found in article 15 of the Law on Environmental Protection of 16 June 1999 (N 53).

A new methodology for the calculation of pollution charges was introduced in 2004 by a government resolution. A revised Law on Payment Rates for the Use of Fauna and Flora was adopted in August 2008. There have been no modifications in payments for the use of surface and ground waters.

Responsibility for implementing the environmental economic instruments is spread over a number of State authorities. The State Agency of Environment Protection and Forestry (SAEPF) is the leading body responsible for State policy and coordination of other ministries and departments on environmental issues. The supervision and control of waters used for irrigation is under the purview of the Department of Water Resources of the Ministry of Agriculture, Water Management and Processing Industry. Competencies for the use and control of subsoil fall to the State Agency of Geology and Mineral Resources. The State Agency of Registration of Immovable Property Rights (Gosregistr) monitors land use, with the exception of forest and reserve areas. Licensing for the use of groundwater is handled by State Agency of Geology and Mineral Resources, while the Department of Water Resources is responsible for all other payments for water.

Municipal waste issues are dealt with by local authorities. There is no independent regulator for setting electricity prices. The adjustment of tariffs and fees to cost-recovery levels in sectors with a significant environmental impact has been slow, and payment collection rates remain poor.

The Country Development Strategy (CDS) 2007–2010 includes environmental sustainability as one of its pillars. The CDS envisages an improvement of economic mechanisms and a simplification of the permitting system as part of future directions in environmental policy.

In line with these goals, the 2007 Ecological Security Conception underlines the importance of economic instruments for better use of natural resources and as having a role in the formulation of policy.

Environmentally-related taxes

In Kyrgyzstan, natural resource taxes have a primarily revenue-raising aim, i.e. collecting part of the rents involved in the exploitation of these resources. Receipts accrue to the budget and are to be used for environmental purposes. The influence of these taxes in resources management is limited.
Payments are levied on the use of fauna, flora and forest resources on the basis of the enabling provisions established by the Law on Environmental Protection, as developed by a government decree of 7 July 1995 (N 269). The new Law on Payments Rates for the Use of Fauna and Flora, which was approved in August 2008, eliminates previous references to the minimum monthly wage to set the basic rates for each type of animal. As in the previous version of the Law, additional corrective coefficients are applied depending on the type of intended use (e.g. private or commercial) and who performs the activity (e.g. local users or foreigners). While more rare species attract higher effective rates, revenue-raising considerations predominate and payments are based on commercial value and ability to pay. Rates for the use of flora are differentiated according to the type of plant. While there is no general distinction between users to define the rates (unlike regulations concerning animals), only locals benefit from a zero rate for scientific uses. Use of these natural resources presupposes the existence of a licence.

The basic rates of the land tax are defined by the Kyrgyz Parliament, are set out in the Law of 23 March 2005 (N 57). In line with the principles contained in the article 8 of the Land Code, rates are differentiated according to use (higher for irrigated areas, lowest for pasture) and geographical area. For non-agricultural uses, population size is used as an additional criterion. The basic rates defined by this Law have remained in force up to 2008 (Law of 28 April 2008, N 76). The new Tax Code, which will enter into force in January 2009, sets the basic rates, while the calculation of payments reflects also the level of inflation.

Data on payments for the use of natural resources (including land, fauna, flora, forest and other resources) are available, as an aggregate, for 2007, accounting for 2.4 per cent of total revenue of the consolidated budget or 0.63 per cent of GDP.

Kyrgyzstan joined the Extractive Industries Transparency Initiative in 2004. Although compliance remains incomplete, statistical information on the taxes and other payments made by a number of large resource companies is available. In 2004–2007, these companies accounted on average for 5.5 per cent of total State revenues (tax and non-tax).

A charge on the development and regeneration of mineral raw materials is levied on resource companies. Effectively, this is a royalty on gross revenues, with rates ranging from 2 per cent to 10 per cent. Despite the Initiative’s name, its aim is only to raise revenue for the general budget, and revenues are not earmarked for any particular use. The main payer is the Kumtor gold mine (which paid about 80% of the total in 2007). Overall, revenues from this charge accounted for an average of 2.2 per cent of total budget revenues in 2004–2007, equal to 0.3 per cent of GDP in 2007. The new Tax Code defines the rates for a royalty tax on the use of underground resources, which varies according with the type of material; with gold, silver and platinum, it increases with the size of the deposits.

Excise taxes are charged on the import of oil products. However, applicable rates discriminate against less polluting forms of fuel. Charges on diesel (KGS 200 per ton in 2008) are only one fourth of those levied on gasoline and other types of fuel. In 2006, excise taxes on jet fuel were abolished (previously, they were KGS 2000 per ton) and the charge on heavy fuel oil was reduced to KGS 200 from KGS 600.1

Emission charges

Emission charges are levied on air emissions from both fixed and mobile sources, water discharges and waste disposal. Both physical and legal persons are liable for these payments. The payment of emission charges does not relieve polluters from responsibility for environmental damages. The Law on Rates for Pollution Charges of 10 March 2002 (N 32) established a single rate of payment for all substances, fixed at KGS 1.2 per equivalent ton of pollutant. A Government decree of November 2004 (N 823) defined a detailed procedure for the calculation of pollution charges, allowing for the effective differentiation of rates according to various criteria including toxicity.

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Basic charges are modified by coefficients that take into account the ecological significance and geographical location of the territories and water bodies affected. Permits specify emission limits. Rates for emissions above these limits are increased fivefold. This creates a significant discontinuity in marginal rates. In the absence of permits, higher rates are applied. Charges have been indexed to inflation, with quarterly adjustments indexed to a 2002 base.

Pollution charges on emissions from mobile sources are levied directly from energy traders or companies that have their own deposits, on the basis of the volume of sales. They are differentiated according to the type of fuel. In 2006, a Government decree (18 February 2006, N 107) modified the 2004 methodological instruction, transferring the responsibility for payment of pollution charges from those who generate waste to those who disperse it in the environment.

Actions to mitigate or prevent environmental damage by polluters may be taken into account by environmental authorities when determining the amount of pollution charges to be paid. Assessment of measures proposed and determination of payments is undertaken centrally by environmental organs. Energy companies are exempted from the payment of charges for the part of their output that it sold to organizations financed by the public budget or households, provided emissions remain within certain limits.

### Box 5.1: Pollution charges in Kyrgyzstan

Pollution charges are levied on the emission of pollutants to air from mobile and fixed sources, discharges to water and disposal of waste. Charges are closely associated with the system of permits, which establishes emission limits for each industrial facility. Rates are increased fivefold if emissions exceed the threshold defined in the permit. The Law on the Rate of Payment for Environmental Pollution of 10 March 2002 (N 32) defined a basic payment rate equal to KGS 1.2 per ton of pollutant substance. A Government decree of 10 October 2004 (N 823) defined a methodological instruction for the calculation of payments, as enabled by article 40 of the Law on Environmental Protection. The instruction identified various differentiating criteria, depending on substance, ecological situation and significance of the territories and water bodies affected. These coefficients can also be below one. For example, disposal of toxic waste in especially designated areas is not subject to charges if appropriate insurance has been contracted. If not, the applicable co-efficient is only 0.5.

The number of substances subject to charges is very large (122 from emissions to air from fixed sources and 30 from discharges to water). Emissions to air from mobile sources are calculated on the basis of sales or use of various types of fuel. However, they are not strictly product charges as they are levied directly from energy traders and not added to the price of products. Revenues accrue to local environmental funds. They are collected by environmental inspectors and occupy a central role in the financing of public environmental expenditures.

Emission charges are levied on a large set of substances. Polluting enterprises calculate payments on a self-assessment basis. Rates are low. Pollution charges are considered part of the costs of a company (i.e. they are not paid out of profits) but they represent a negligible amount of the costs of the largest polluters. A study conducted by SAEPF among a sample of large polluters in 2002 showed that these charges accounted for only 0.0001 –0.06 per cent of total enterprise costs. In May 2008, the charge on gasoline represented only 0.1 per cent of the retail price. Emission charge revenues are used for environmental purposes, but they have practically no impact in terms of prompting a change of behaviour.

Product charges, which are suitable for products that pollute when they are consumed or are a good proxy for difficult-to-monitor emissions, are not actively used as an environmental policy instrument.

### Table 5.1: Revenues from pollution charges
Part II: Mobilizing financial resources for environmental protection

### Pollution charges revenues, thousand KGS

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-fixed</td>
<td>10'971</td>
<td>8'755</td>
<td>10'960</td>
<td>15'676</td>
</tr>
<tr>
<td>Air-mobile</td>
<td>3'096</td>
<td>6'567</td>
<td>4'364</td>
<td>12'131</td>
</tr>
<tr>
<td>Water</td>
<td>1'957</td>
<td>2'460</td>
<td>2'370</td>
<td>986</td>
</tr>
<tr>
<td>Waste</td>
<td>1'921</td>
<td>6'198</td>
<td>6'018</td>
<td>4'790</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17'946</td>
<td>23'979</td>
<td>23'712</td>
<td>33'582</td>
</tr>
</tbody>
</table>

### Pollution charges revenues, percent

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Air-fixed</td>
<td>61.14</td>
<td>36.51</td>
<td>46.22</td>
<td>46.68</td>
</tr>
<tr>
<td>Air-mobile</td>
<td>17.25</td>
<td>27.38</td>
<td>18.40</td>
<td>36.12</td>
</tr>
<tr>
<td>Water</td>
<td>10.91</td>
<td>10.26</td>
<td>10.00</td>
<td>2.93</td>
</tr>
<tr>
<td>Waste</td>
<td>10.71</td>
<td>25.85</td>
<td>25.38</td>
<td>14.26</td>
</tr>
</tbody>
</table>

### Memo

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollution charges, million US$</td>
<td>0.421</td>
<td>0.585</td>
<td>0.591</td>
<td>0.900</td>
</tr>
<tr>
<td>As % of GDP</td>
<td>0.019</td>
<td>0.024</td>
<td>0.021</td>
<td>0.024</td>
</tr>
</tbody>
</table>


Revenues from pollution charges have risen of 87 per cent in national currency and 114 per cent in the period 2004–2007, although their dynamics have been volatile. After a sharp increase of 30 per cent in 2004, revenues remained flat over the next two years and then jumped by more than 50 per cent in 2007. This out-turn reflects significant gains in pollution charges from air emissions, in particular from mobile sources, which almost tripled. Altogether, revenues from air emissions accounted for more than 80 per cent of the total revenues from pollution charges in 2007. Revenues from other sources declined. This volatile pattern of revenues reflects problems in payments compliance.

The recent increase in revenues was the result of a stronger drive on the part of environmental authorities to improve collection. Environmental inspectors play a critical role in enforcing payments of pollution charges. Pollution charges are earmarked for environmental purposes (see section 5.3) and partially contribute to environmental authorities’ revenues; as per article 15 of the *Law on Environmental Protection*, the charges are transferred to special accounts of State off-budget environmental funds. This creates a system of incentives that may lead to an excessive emphasis on revenue-raising rather than on addressing environmental problems (see chapter 2).

There has not yet been an attempt to determine the appropriate level and structure of charges, which would lead to more efficient instruments. Economic instruments are not linked with specific environmental targets, as part of larger policy packages that combine also regulatory elements.

*Other financial sources*

Besides taxes and charges, there are other sources that can be mobilized to address environmental problems. Voluntary contributions have played a meagre role in Kyrgyzstan. Resource companies have undertaken environmental expenditures directly or, in the case of the Kumtor gold mine, channelled resources to public environmental funds (see section 5.5).

The clean development mechanism (CDM) of the Kyoto Protocol represents a source of potential revenue that has been already explored with international support. The Joint Country Support Strategy (JCSS, see section 5.7) envisages further donor backing to initiatives using the CDM to obtain grant funding for energy efficiency and carbon sequestration activities. However, Kyrgyzstan has not yet prepared the suitable portfolio of projects that could be financed through the CDM.
An agreement with the Paris Club on debt forgiveness and debt rescheduling, concluded in March 2005, established the possibility of conducting debt swaps, including debt-for-environment swaps. The amount potentially affected included total bilateral Official Development Assistance and 20 per cent of non-concessional debt owed to Paris Club members. The government of Kyrgyzstan received international assistance to assess the possibility of using external debt for the internal financing of priority environmental protection projects. A pre-feasibility report mapped out a strategy for implementing debt for sustainable development swaps, including discussion of setting up a fiduciary structure to manage the funds. However, no debt-for-environment swaps have taken place so far.

5.2 Environmental impact of prices and subsidies

Agriculture

Agriculture is the main user of water in the country (93% in 2006) and irrigated agriculture accounts for about 90 per cent of agricultural output. Inappropriate practices in irrigated farming have led to the loss of arable land. Water users’ associations have been created, giving responsibility to users for operating and managing some irrigation networks. The formation of these associations has addressed the need to administer water quotas to the small farm units that emerged after privatization of agriculture. In addition, the main irrigation structures remain under the purview of the Department of Water Resources of the Ministry of Agriculture, Water Resources and Processing Industry (see chapters 6 and 7).

Kyrgyzstan is one of the few countries in EECCA that imposes charges for the use of water for irrigation purposes, but tariffs have not been revised annually and therefore have been eroded by inflation. Tariffs charged for State services have remained unchanged since 1999 (KGS 30 per 1,000 m$^3$, being lower for some regions and the growing season). Usually, tariffs below cost recovery encourage excessive consumption and undermine the maintenance of the irrigation infrastructure, thus preventing efficiency-enhancing improvements.

At the moment, tariffs cover only 30–37 per cent of the value of the services provided. In addition, water users’ associations have benefited from debt forgiveness for liabilities incurred in the period 1995–2000 (KGS 18.2 million) and 2000–2004 (KGS 8.4 million). Pricing practices among water users’ associations include both volumetric and flat-rate systems. According to United Nations Development Programme reports, tariffs are below cost, but there are plans to increase them in 2007–2010, with full cost recovery to be achieved in 2010–2020. Payment collection rates are at about 80 per cent largely explained by the way the WUAs operate (chapter 6) and a policy objective is to increase them to no less than 95 per cent by 2010.

Energy

The country largely depends on imports for its energy needs, in particular gas, oil and coal, but it also has a significant hydropower potential.

Despite some reforms in the electricity sector, including the unbundling of the State-owned monopoly KyrgyzEnergo into seven companies in 2001, substantial problems remain. In addition to poor payment discipline, tariffs below full cost recovery have resulted in large subsidies to energy users, while damaging the financial position of the energy companies and their ability to invest. The financial problems of the electricity sector have led it to run tax arrears and defer payments to companies in other sectors.

2 OECD, Pre-feasibility analysis, project pipelines and institutional support for debt-for-environment swap in the Kyrgyz Republic, 2005.
4 OECD, Policies for a better environment. Progress in Eastern Europe, Caucasus and Central Asia
7 ADB, Technical assistance 4405-KGZ, Study on pricing systems and cost-recovery mechanisms for irrigation, 2005.
The energy-related quasi-fiscal deficit (the implicit financial gap due to tariffs below cost recovery) reached about 5.1 per cent of GDP in 2007 and is expected to be reduced to 4.8 per cent in 2008. The reduction of this imbalance has been one of the structural benchmarks of the three-year Poverty Reduction and Growth Facility agreed with the International Monetary Fund in 2005. This deficit does not need explicit financing; its counterpart is the deterioration of existing infrastructure, with a negative impact on future reliability and efficiency.

Low energy prices are not conducive to increased efficiency and undermine projects aimed at encouraging energy savings and developing renewable energy sources.

Cost-reflective tariffs are a precondition to attracting investment that could arrest the deterioration of existing infrastructure and develop the untapped potential of hydropower, a clean form of energy. The energy sector receives a much emphasis in the CDS as growth engine. Legal reforms under consideration envisage the establishment of an independent regulator, which would contribute to better conditions for investment in the sector.

The medium-term electricity tariff policy introduced in April 2008 envisages increases in electricity prices every six months in the period 2008–2010 to reach cost-recovery levels by the end of this period. Household tariffs are projected to more than double. A social safety net will be provided by the budget to attend to the poorest households. However, tariff increases will not be sufficient to address existing problems, as it is also necessary to increase collection rates and reduce electricity losses (more than one third of electricity production in 2006).

Gas is mostly imported. Price increases have been passed on to the population (see table 5.2) and the use of meters is widespread, thus encouraging efficient use. Tariffs on heating and hot water were increased in 2007 to reflect the higher cost of gas imported from Uzbekistan. However, differentiation of rates according to type of users remains in place, implying cross-subsidization. For households that have no meter, estimates based on the number of persons per household are applied.

<table>
<thead>
<tr>
<th>Table 5.2: Consumer price index growth, year end, percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>CPI</strong></td>
</tr>
<tr>
<td>Electricity, gas and other fuels</td>
</tr>
<tr>
<td>Of which:</td>
</tr>
<tr>
<td>Gas</td>
</tr>
<tr>
<td>Solid fuel</td>
</tr>
<tr>
<td>Water supply</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

*Source: National Statistics Committee of the Kyrgyz Republic, UNECE secretariat calculations, 2008.*

The domestic coal sector, which covers about 20 per cent of national consumption needs, benefited in the past from producers’ subsidies, but these have been now practically discontinued. The increase in gas prices and the problems of the hydropower sector have encouraged a shift toward the use of domestic coal and fuel wood, with a negative environmental impact.9

**Transport**

There are a number of taxes and duties with significance for the transport sector, including emission charges on pollution to air from mobile sources and excises on imported oil products (see section 5.1). Officially, leaded petrol has been phased out since 2003.10 Kyrgyzstan is not an oil producer, but has much lower fuel prices than neighbouring Tajikistan, where income levels are lower. According to the GTZ International Fuel Prices Survey, in 2006 retail prices for diesel and super gasoline were, respectively, 54 and 64 USD cents per


10 OECD, Policies for a better environment. Progress in Eastern Europe, Caucasus and Central Asia.
litre, against 74 and 80 in Tajikistan. The more polluting diesel fuel enjoys a price advantage vis-à-vis gasoline, although this has declined (table 5.3).

While diesel enjoys a more favourable tax treatment (see section 5.1) no consumption subsidies are in place. The authorities organize bulk purchase of diesel during low consumption months and pass the savings onto agricultural producers.

### Table 5.3: Fuel retail prices, US$ cents per litre

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>27</td>
<td>33</td>
<td>25</td>
<td>43</td>
<td>54</td>
</tr>
<tr>
<td>Super-Gasoline</td>
<td>47</td>
<td>44</td>
<td>39</td>
<td>48</td>
<td>64</td>
</tr>
<tr>
<td>Ratio</td>
<td>1.74</td>
<td>1.33</td>
<td>1.56</td>
<td>1.12</td>
<td>1.19</td>
</tr>
</tbody>
</table>

*Source: GTZ, 2008.*

Vehicle taxes depend on engine power, but discriminate against new cars, thus discouraging the introduction of less polluting models. This bias against the renewal of the fleet appears also in the new *Tax Code*. Custom tariffs are currently the same for old and new cars. The import of cars of any age is authorized.

Increased car ownership (up by 10% in 2003–2006) underlines the role of the transport sector as a growing source of air pollution, particularly in urban areas. The breakdown of the public transport system and the proliferation of diesel-run microbuses have further contributed to growing emissions levels. Economic instruments need to be complemented by regulatory measures, e.g. emissions testing, to address this mounting environmental concern.

#### Municipal utilities

Water supply and sanitation are provided by companies regulated by local authorities. The tariff levels of user charges are approved by local councils (*keneshi*), at the request of the companies, after being reviewed by the Anti-Monopoly Committee, according to the provisions of the *Law on Drinking Water*. The situation varies across municipalities, but tariffs below cost recovery (including depreciation costs) are prevalent. In rural areas, access to potable water is limited and collection rates are low (less than 60%).

Tariffs are differentiated according to type of user. By the end of May 2008, Vodokanal Bishkek charged 1.9 KGS per m³ to households, 2.45 to budgeted organizations and 3.95 to other categories. Cross-subsidization allows charging tariffs to households below cost-recovery levels, estimated at 2.31 KGS per m³. Political instability and the reluctance to increase tariffs undermined the financial position of the company but the situation has improved since 2006. Projected increases in the price of electricity, which accounts for about 40 per cent of total costs, will make necessary further water tariff adjustments.

New buildings are obliged to incorporate water meters, but these are largely absent in old constructions. Households are charged a flat rate depending on the type of building and number of dwellers. As a result, there are no incentives for water saving, amid reports that drinking water is diverted for alternative uses such as irrigation.

The existing framework for tariff-setting does not provide general guidelines or mechanisms that isolate them from political interference. There is no independent regulator and the situation is not conducive to private-sector involvement. Overall, tariffs are too low to ensure sufficient revenues to address the maintenance of infrastructure.

Waste collection is also carried out by municipal companies, with only one recorded instance of private involvement (city of Osh). The main problem undermining the operators’ financial performance is low payment rates, e.g. only about 30 per cent in Bishkek. Lax enforcement mechanisms limit scope for use of economic instruments for waste management. In rural areas, there is practically no system for waste collection.

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and removal. In the cities, household waste is dumped in landfills and unofficial sites without separation. Landfills do not have proper protection.

Insufficient funding has severely impaired local authorities’ ability to deal with waste management issues. Legal provisions allow borrowing by local authorities, subject to the consent of the local council and the Ministry of Finance. However, the Ministry of Finance has not yet defined the criteria informing decisions on this matter and there are no instances of actual borrowing by local authorities.

A National Programme (2006–2010) for Recycling and Re-use of Production and Consumption Waste was introduced in 2005. The programme relies significantly on external financing (about 54% of total resources) to carry out the measures outlined. The involvement of private sector in waste management requires a stronger enforcement of legislation, with stiffer penalties for illegal dumping.

5.3 Funds for environmental protection and the sustainable development of forestry

Overview

Earmarked funding plays an important role in protecting environmental financing from the pressures derived from a difficult overall budgetary situation. Revenues from pre-specified sources are automatically allocated to the financing of environmental expenditures. Environmental funds provide the main source for the financing of public environmental expenditures in Kyrgyzstan. The Republican Environment Protection and Forestry Development Fund\(^\text{12}\) was established by a presidential Decree in 2006, merging the operations of the former Republican Fund of Environmental Protection and the Fund of Development of Forestry.

<table>
<thead>
<tr>
<th>Box 5.2: Chronology of the system of environmental funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992: Establishment of Local and Republican Funds of Environmental Protection</td>
</tr>
<tr>
<td>1999: Creation of the Fund for the Development of Forestry</td>
</tr>
<tr>
<td>2006: Merger of these two funds and establishment of the system of Local and Republican Funds of Environmental Protection and Forestry Development</td>
</tr>
<tr>
<td>2008: The number of local funds is reduced from seven to four</td>
</tr>
</tbody>
</table>

The system of environmental funds includes the national fund and a number of local funds. The number of local funds was reduced from nine to seven in 2005, with further consolidation into four funds (Chu-Bishkek-Talas, Issyk-Kul-Naryn, Osh-Batken and Jalal-Abad) The mergers aimed to lower overall management costs, as some of these funds were too small to justify this independence.

The national fund has no formal independent staff from those of SAEPF. Decisions are taken by a board chaired by the director of SAEPF. There is no independent consultative council, but an NGO representative sits on the board. Before 2006, the previous system of environmental funds had no board. The board also oversees the activity of local funds, including appointment of key staff. Local funds are under the supervision of the interregional administrations of SAEPF (see chapter 1).

Resource and expenditure (table 5.4) planning is carried out annually by the management of the national fund, in collaboration with the Ministry of Finance. Local funds provide estimates of resources and expenditures that are monitored and endorsed by the national bodies, including by the Division of Finance and Economy of SAEPF. Given the limited staff available, however, this control is largely limited to the financial aspects of the plans presented, not to the substance of the measures proposed.

| Table 5.4: Environmental funds: total revenues and expenditures, 2003-2007 |

\(^{12}\) The official name as stated in the presidential Decree. Hereafter, national fund.
Chapter 5: Economic instruments and environmental expenditures

<table>
<thead>
<tr>
<th>Year</th>
<th>Local in thousand KGS</th>
<th>National in thousand KGS</th>
<th>Total in thousand KGS</th>
<th>Total as percentage of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revenues</td>
<td>Expenditures</td>
<td>Revenues</td>
<td>Expenditures</td>
</tr>
<tr>
<td>2003</td>
<td>15'875</td>
<td>14'341</td>
<td>8'824</td>
<td>8'623</td>
</tr>
<tr>
<td>2004</td>
<td>17'097</td>
<td>16'671</td>
<td>5'505</td>
<td>5'208</td>
</tr>
<tr>
<td>2005</td>
<td>19'342</td>
<td>18'740</td>
<td>5'555</td>
<td>6'035</td>
</tr>
<tr>
<td>2006</td>
<td>22'026</td>
<td>22'250</td>
<td>19'734</td>
<td>13'961</td>
</tr>
<tr>
<td>2007</td>
<td>31'260</td>
<td>30'887</td>
<td>26'303</td>
<td>26'476</td>
</tr>
</tbody>
</table>


**Revenues**

Revenues (table 5.5) from pollution charges accrue to local funds, accounting for almost 80 per cent of total revenues in 2007. This was in line with the average for the period 2003–2006. In the case of branches or subsidiaries of companies, payments are allocated to the funds where the units responsible for the pollution are located, while the responsibility for paying may rest on the headquarters of the group.

Since 2006, local funds have received 5 per cent of revenues from the use of forest resources, which represents about 6 per cent of the total available funding in 2006–2007. Payments resulting from lawsuits involving the non-observance of environmental legislation have increased in relative importance, accounting for 14.2 per cent of revenues in 2006–2007, as against 4.1 per cent in 2003–2005.

The national fund receives 25 per cent of the total revenues of the local funds, which account for the bulk of its resources. The second largest payer is the Kumtor gold mine: an agreement concluded with the then Ministry of Environment in 2003 fixed annual payments, including pollution fees, at $300,000. However, the status of this agreement is now being considered as part of a more general discussion of the Government participation in the equity of the company exploiting this mine (see box 5.3).

**Box 5.3: Kumtor gold mine**

Production in the Kumtor gold mine started in 1997. At that time, Kyrgyzaltyn, a State-owned company owned two-thirds of the company, and Cameco, a Canadian company, the remaining third. The restructuring of the ownership of Kumtor was announced in December 2003. Kumtor became a subsidiary wholly owned by a new company, Centerra Gold, which is publicly traded in the Toronto Stock Exchange. The share of Cameco in the equity of Centerra Gold is just above 50 per cent, Kyrgyzaltyn owns about one sixth and investors account for the rest.

Public concern has been expressed as to whether Kyrgyzstan was receiving a fair share of revenues from Kumtor. In August 2007, a new agreement with the Government increased the share of Kyrgyzaltyn in Centerra Gold to about 30 per cent. In addition, the existing tax regime would be replaced by a single charge on gross revenues at the rate of 10 per cent in 2008, 11 per cent in 2009 and 12 per cent in 2010. In addition, Kumtor’s concession would be expanded to include other neighboring areas. Output in Kumtor peaked in 2001, so finding new deposits is an important issue. However, the agreement has not been yet ratified by Parliament. A new law on mineral resources is under consideration that would introduce a new tax, regulatory and licensing framework. Overall budget revenues from extractive industries are small, in sharp contrast with the weight of gold in total exports (about one quarter). Payments from Kumtor are a significant source of revenues for the National Environmental Fund.

Other sources of revenue include voluntary contributions, grants and income from investments and payments for the use of fauna and flora – in particular hunting, which rose to account for a significant 7.5 per cent of total revenues in 2007. In addition, the national fund benefits from 10 per cent of the revenues of the “Issyk-Kul” biosphere zone.

The funds cannot borrow and have no separate legal personality.

**Table 5.5: Structure of revenues of environmental funds, percent, 2007**
Part II: Mobilizing financial resources for environmental protection

<table>
<thead>
<tr>
<th>Local</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>100</td>
</tr>
<tr>
<td>Pollution charges</td>
<td>78.4</td>
</tr>
<tr>
<td>Forestry revenues</td>
<td>6.2</td>
</tr>
<tr>
<td>Environmental lawsuits</td>
<td>11.8</td>
</tr>
<tr>
<td>Use of natural resources</td>
<td>3.3</td>
</tr>
<tr>
<td>Other</td>
<td>0.3</td>
</tr>
<tr>
<td>Targetted revenues</td>
<td>4.5</td>
</tr>
</tbody>
</table>


Expenditure

Resources accruing to the funds can be used (including on a co-financing basis) for a variety of environmental measures (table 5.6), including: (a) the construction and repair of technical equipment; (b) financing of environmental programmes (including in connection with the fulfilment of international agreements); (c) addressing the consequences of environmental accidents; (d) development of forestry and national parks; (e) research; (f) preventive measures and monitoring; and (g) awareness activities. In addition, funds contribute to the financing of law enforcement and inspection bodies connected with environmental protection activities and staff remuneration, with a combined ceiling up to 5 per cent of fund revenues. The negative effects of this practice is also mentioned in chapter 2. Unspent revenues are rolled over to the next year.

In the absence of clear guidelines, funds have been established without sufficiently well-defined expenditure programmes. Expenditures have been defined on an annual basis, without provisions for multi-year programmes. A number of programmatic documents have been approved recently, which could provide a more clear guidance for the identification of concrete spending priorities, in particular the adoption of the Ecological Security Conception in 2007. However, there is not yet a concrete action plan that translates the broad directions of the ESC into more specific proposals. Effective priorities have been in place only regarding forestry, where an action plan already exists.

In line with this more specific guidance, spending in forestry accounted for the largest share of total actual expenditure in 2006–2007 and that planned in 2008 (between one third and one quarter of the total) of the national fund. Water, animal protection and biodiversity represented about 40–50 per cent of spending in 2006–2007. The national fund contributes to the maintenance of national reserves and parks, since the regular budget does not allocate any resources for these purposes. Membership fees in environmental conventions are paid out of the national fund.

Table 5.6: Environmental funds expenditures on environmental measures, 2007

<table>
<thead>
<tr>
<th>Activity</th>
<th>Total thousand KGS</th>
<th>per cent of total</th>
<th>Local thousand KGS</th>
<th>per cent of local</th>
<th>National thousand KGS</th>
<th>per cent of national</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>9'556</td>
<td>26.4</td>
<td>5'459</td>
<td>30.1</td>
<td>4'098</td>
<td>22.6</td>
</tr>
<tr>
<td>Forestry</td>
<td>9'362</td>
<td>25.9</td>
<td>3'963</td>
<td>21.8</td>
<td>5'399</td>
<td>29.8</td>
</tr>
<tr>
<td>Animal protection</td>
<td>2'984</td>
<td>8.2</td>
<td>0.0</td>
<td>0.0</td>
<td>2'984</td>
<td>16.4</td>
</tr>
<tr>
<td>Biodiversity and natural reserves</td>
<td>2'010</td>
<td>5.6</td>
<td>272</td>
<td>1.5</td>
<td>1'738</td>
<td>9.6</td>
</tr>
<tr>
<td>Waste</td>
<td>5'340</td>
<td>14.7</td>
<td>5'340</td>
<td>29.4</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Monitoring</td>
<td>3'689</td>
<td>10.2</td>
<td>1'980</td>
<td>10.9</td>
<td>1'709</td>
<td>9.4</td>
</tr>
<tr>
<td>Membership fees</td>
<td>196</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>196</td>
<td>1.1</td>
</tr>
<tr>
<td>Dissemination</td>
<td>2'129</td>
<td>5.9</td>
<td>1'131</td>
<td>6.2</td>
<td>998</td>
<td>5.5</td>
</tr>
<tr>
<td>Harmonization of legislation, publications</td>
<td>764</td>
<td>2.1</td>
<td>0.0</td>
<td>0.0</td>
<td>764</td>
<td>4.2</td>
</tr>
<tr>
<td>Capacity building</td>
<td>176</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>176</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>36'205</td>
<td>100</td>
<td>18'145</td>
<td>100</td>
<td>18'060</td>
<td>100</td>
</tr>
</tbody>
</table>

Available information shows that total spending is roughly equally shared between the national and local funds on water, forestry and monitoring and dissemination activities. In other activities, such as capacity-building or harmonization of legislation, funding is provided by the national fund almost exclusively, with the exception of biodiversity. By contrast, spending on waste is mostly executed with local funds.

The national fund can provide resources to support the activities of local funds. External demands for funding are assessed in terms of the efficiency of the measures proposed, in consultation with the relevant departments of SAEFP. However, there is no clear or well-established methodology for the appraisal of projects. In practice, the main criterion used by the national fund vis-à-vis external requests for resources has been the availability of co-financing.

Assessment

Earmarking has served to protect revenue streams from being diverted to alternative non-environmental uses when there were other urgent budgetary demands. The first EPR recognized the value of this principle, given the difficult financing situation for environmental activities. This approach remains valid. However, the benefits of the current system of earmarked financing depend on effective use being made of funds received. In the first place, this requires that management expenditures are kept to a minimum. In the second, procedures for the selection of projects must guarantee that choices are made consistent with strategic environmental objectives and reflect rigorous project appraisal techniques.

The current set-up of Kyrgyz environmental funds falls short of the requirements established by the St. Petersburg Guidelines. In particular, there has been no well-defined identification of environmental priorities. There is neither an overall financing strategy in place nor clear procedures for selecting projects or effectively monitoring and evaluation practices. There is also scope for increasing transparency and accountability for the actions of the funds in relation to other stakeholders.

Some of these shortcomings arise from the serious resource constraints faced by the funds, which have prevented the elaboration of a longer-term view and allocating revenues for more effective monitoring. However, there has been some progress in increasing administrative efficiency, and as a result, the financing of environmental measures accounts in recent years for an increased share of total expenditures (63% in 2007 as opposed to 45% in 2005).

5.4. Main trends in environmental expenditure

Environmental expenditures (table 5.7) averaged 0.42 per cent of GDP in the period 2000–2006, reaching 0.46 per cent in 2006. Despite some improvement after 2003, this is one of the lowest ratios observed in EECCA. Capital spending, which on average accounted for 21.5 per cent of total spending over this period, has been quite volatile. The low level of expenditure results in a somewhat erratic spending patterns due to the influence of single projects. The high share of current expenditures partly reflects the cost of operating old and expensive environmental infrastructure.

| Table 5.7: Environmental expenditures, percent of GDP, 2000-2006 |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                         | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Total                   | 0.42 | 0.44 | 0.40 | 0.36 | 0.45 | 0.40 | 0.46 |
| Capital                 | 0.10 | 0.06 | 0.06 | 0.05 | 0.17 | 0.06 | 0.15 |
| Current                 | 0.33 | 0.38 | 0.34 | 0.32 | 0.28 | 0.34 | 0.31 |
| Memo:                  |
| Per capita, constant 2003 dollar, US$ | 1.30 | 1.52 | 1.39 | 1.39 | 1.92 | 1.81 | 2.31 |
| Capital expenditures as percentage of total investment | 0.58 | 0.47 | 0.46 | 0.44 | 1.60 | 0.60 | 0.90 |

Spending by environmental funds in the repair of environmental infrastructure represents almost half of capital spending in 2006–2010. In current terms (in $US), environmental spending was practically flat in 2000–2003, but rose strongly in 2004–2006 (almost 70 per cent in comparison with the previous four years), reaching $12.9 million in 2006. On a domestic currency basis, the increase was almost 50 per cent. Despite these positive developments, environmental spending in 2006 was still only at the level of $2.50 per capita.

Table 5.8: Capital environmental expenditure by media, percent, 2000-2006

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>11.7</td>
<td>12.9</td>
<td>17.4</td>
<td>17.4</td>
<td>5.5</td>
<td>1.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Air</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>8.8</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Land</td>
<td>88.3</td>
<td>87.1</td>
<td>82.6</td>
<td>82.6</td>
<td>85.9</td>
<td>98.9</td>
<td>90.8</td>
</tr>
<tr>
<td>Waste</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>9.2</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.2</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>


Total expenditures are dominated by water protection and sanitation, a common pattern in EECCA, in particular for countries with low spending levels. These accounted for 55.1 per cent of total spending in the period 2000–2006. This is explained by the large share of this category in current expenditures (almost 70%).

The available breakdown of capital expenditures (table 5.8) shows a very strong concentration pattern, with almost 90 per cent of total spending in 2000–2006 allocated to land. Spending on land includes not only preventive measures, such as rehabilitation and restoration of tailing sites and irrigation systems, but also those that were necessary to address emerging problems, e.g. landslides. Investments in waste treatment and air protection are only reported in one year (2006 and 2004, respectively). Capital spending on water accounted for almost 15 per cent of the total in 2000–2003 but dropped sharply afterwards. No investments in this area were recorded in 2006. The detailed analysis of capital spending suggests that, despite the growth of headline figures, critical sectors are starved of investment. Overall, as a share of total investment, environmental investment is low (0.7% on average in 2000–2006, increasing to 1.0% in 2004–2006). This is in line with the levels observed in the Republic of Moldova (0.63% of GDP in 2000–2003 and 1.1% in 2003) and above Kazakhstan’s ratios (0.3% in 2002–2005), but below what can be observed in more advanced European countries.

The National Statistics Committee routinely collects information on overall environmental spending. However, figures reported so far present some differences with regard to the OECD/Eurostat definitions of pollution and abatement control (PAC) expenditures. Information on waste treatment is limited and there are a number of expenditures that are not included (radiation, noise vibration, general management of environmental protection and administration). The sampling of enterprises does not include specialized producers of environmental services, with the exception of waste. There is little information available on environmental expenditures by household.

Generally speaking, the level of aggregation is high (no distinction between water drainage/water supply, and only partial coverage of waste-related expenditures). There is no distinction between investments in “end-of-pipe” and integrated technology.

On the basis of a pilot project carried out by OECD in 2005, significant changes in collecting information on environmental expenditures were introduced in 2008. These addressed the differences with the OECD/Eurostat definitions. The results are not yet available but new statistical forms have been circulated and the sample of enterprises has been widened, now including those that carry out environmental services and those operating in the forestry sector. More detailed information on expenditures on waste is now being collected.

Prior to 2008, the reporting system provided information on the abater principle basis, (i.e., identifying who carries out the spending). In the future, complementary data will be also presented on a financing basis (i.e. providing details on who pays for this spending). Improving the monitoring of environmental expenditures
through internationally recognized standards will increase the ability to effectively design policies and channel resources where they are needed most.

5.5. Public spending

Environmental funds, which were considered in section 5.3, play a critical role in public environmental spending. They account for practically all capital spending, with ordinary budget financing being limited to salary payments and social contributions.

The overall budget of SAEPF represented 0.17 per cent of GDP in the period 2005–2007, amounting to $7.3 million in 2007. Only 44 per cent comes from the regular State budget, while the rest is covered by so-called special means, i.e. earmarked resources such as pollution charges, forestry revenues and income from national parks that accrue directly to the environmental fund.

After the introduction of a new classification of budget expenditures in 2007, based on the best practice reporting of government finances (IMF Government Finance Statistics 2001) environmental spending has started to appear as a separate line in the State budget. Total environmental spending in 2007 amounted to $2.7 million, representing 0.07 per cent of GDP and 0.28 per cent of public expenditures. However, there are still problems with the consistent application of these classifications across government units.13

The Country Development Strategy defines medium-term priorities for the country’s development of the in an integrated framework. This document marks a significant progress in relation to previous programmatic initiatives, given its level of detail and the link with domestic resources. For instance, financial needs pertaining to environmental safety over the period 2007–2010 amount to $60 million. However, the Strategy identifies a large financing gap, equivalent to more than 80 per cent of the resource requirements. This implies that the implementation of the Strategy in the area of environment largely relies on the mobilization of external resources, including donor funding.

The Medium-Term Budgetary Framework (MTBF), regularly updated on a rolling basis, provides a financial envelope for development strategies in key sectors. However, the link between annual budgets and the MTBF has been inconsistent in the past. Future policy directions, including on the donors’ side, point to reforms in public financial management that seek to strengthen transparency and the use of the MTBF to prioritize expenditures.14 It is therefore important that environmental concerns are appropriately reflected in the MTBF.

The Country Development Strategy envisages $10.6 million of financing for environmental purposes to be included in MTBF in 2007–2010. Environmental authorities’ participation in the preparation of MTBF is marginal. Environmental sustainability is recognized as one of the priority areas, in accordance with Strategy. SAEPF is not included in the list of eight ministries making proposals for consideration in the MTBF.15

The mainstreaming of environmental policies, i.e. their integration into economic and sectoral policies requires appropriate reporting of expenditures, to assess the efficiency of spending in view of the objectives pursued and the existing trade-offs between targets. Sectoral strategies in areas, e.g. agriculture, water supply and sanitation and energy should explicitly incorporate environmental dimensions. Integrating environmental concerns into decision-making has largely been done on an ad hoc basis.

Performance-based indicators of environmental expenditure are not widely used. This concerns not only environment but applies generally to the budgetary process. Moving towards a performance-budget system would require increased emphasis on policy and programme objectives and the support of an appropriate classification system. The existing reporting system limits the scope of analysis, since information is presented in an aggregated way that does not allow for identifying different types of environmental spending in the State budget.

A recurrent weakness of environmental plans in the past was inappropriate assessment of their financial implications. The proliferation of initiatives negatively affects the implementation capacity. This prevents their effective integration into budgetary processes and resulting in unfunded programmes. Inter-ministerial coordination initiatives are currently being developed to address this weakness and to ensure closer alignment between planning and financing.

Enhancing the quality of environmental programmes and projects would increase the environmental authorities’ ability to effectively participate in budget discussions in a convincing manner, which would in turn attract external financing.

5.6. Domestic private spending

According to OECD figures, public spending (not including publicly-owned specialized providers of environmental services such as collection and treatment of sewage, waste treatment and sanitation and remediation activities) accounted for about 10 per cent of environmental protection expenditure on average over the period 2000–2005. Thus, the bulk of environmental spending has been carried out by the private business sector. This is consistent with the low levels of public environmental funding.

Overall expenditures in environmental protection are low. In consequence, a small effective market discourages the private provision of environmental services. Effective enforcement of environmental regulations is a critical element to the emergence of demand for these services.

Environmental expenditures by private enterprises can be offset by payments due for pollution charges (see section 5.3).

There are no formal requirements for natural resource companies to make environmental expenditures. However, it is often the case that these companies engage in these activities, sometimes through informal agreements with the authorities. The annual Extractive Industries Transparency Initiative reports provide details on expenditures on environmental protection by these companies; in the period 2004–2006, these represented about $300,000 annually, equivalent to 0.07 per cent of the value of their total output, a figure that appears quite low.

5.7. Foreign direct investment and international environmental assistance

Foreign direct investment in the Kyrgyz economy has been limited. According to European Bank for Reconstruction and Development data, cumulative foreign direct investment inflows in the period 1989–2007 totalled $190 per capita. This compares well with neighbouring Tajikistan ($102) and Uzbekistan ($62), but falls well short of the average in EECCA ($430). However, a significant increase has been observed in the most recent period, with the annual average in 2006–2007 increasing by 161 per cent in relation to the preceding five years. In 2007, annual foreign direct investment inflows reached 11.7 per cent of GDP. Recent inflows have been concentrated in manufacturing, mining, trade and financial services but not in environment.

The planned reforms of the energy sector would create better conditions for foreign direct investment to finance the construction of new hydroelectric stations. The attraction of further foreign direct investment into mining and tourism is one of the directions set out in the Country Development Strategy. Recent economic expansion has been driven by the growth of sectors with a smaller environmental footprint, such as trade or telecommunications. Appropriate environmental safeguards need to be observed in the development of these promising sectors, ensuring that the environmental impact is fully recognized and that the revenues generated are visible and transparent.

International assistance in the environmental field (table 5.9) includes activities that go beyond those considered as environmental protection expenditures (e.g. water and other natural resources management).

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Bilateral donors and multilateral organizations have been involved in a large number of projects with direct and indirect environmental impact. According to OECD, on the basis of the Country Reporting System Aid Activities Database, environmental assistance amounted to 0.6 per cent of GDP annually in the period 2001–2005. In a regional context, this is relatively high figure.

Table 5.9: International environment and natural resource management projects, in million US$, past and ongoing, 2000–2007

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>207.14</td>
</tr>
<tr>
<td>Water</td>
<td>94.17</td>
</tr>
<tr>
<td>Energy</td>
<td>61.29</td>
</tr>
<tr>
<td>Land degradation</td>
<td>28.42</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>28.25</td>
</tr>
<tr>
<td>General</td>
<td>24.33</td>
</tr>
<tr>
<td>Science and technology</td>
<td>5.26</td>
</tr>
<tr>
<td>Climate</td>
<td>2.26</td>
</tr>
<tr>
<td>Waste disposal and management</td>
<td>0.25</td>
</tr>
<tr>
<td>Total</td>
<td><strong>451.37</strong></td>
</tr>
</tbody>
</table>

Note: Some regional programmes are included.

Most of the financing has been provided by donors through grants or highly concessional loans. Kyrgyzstan’s high level of indebtedness has constrained other forms of foreign involvement. The public foreign debt management strategy restricts new foreign loans to those that have a grant component of no less than 45 per cent. As a result, there is a limited amount of sovereign guarantees available to contract new loans.

Germany, Japan Switzerland, and the United States of America are among the most active providers of assistance. Kyrgyzstan’s participation in multilateral environmental agreements (MEAs) has created opportunities for the involvement of international donors in financing environmental programmes. This includes capacity-building activities financed by the Global Environment Facility, targeting domestic institutions with responsibilities regarding participation in MEAs (see chapter 4). From 2004 to 2008, grant support to SAEPF directly targeting obligations under MEAs totalled $2.3 million. In addition, Kyrgyzstan benefited from additional financing provided in the framework of a regional European Commission project concerning the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention). Preservation of biodiversity, climate change and forestry actions have attracted the bulk of grant financing.

The Joint Country Support Strategy (JCSS) was drafted by seven development partners (ADB, Department for International Development (United Kingdom), Swiss Cooperation, the World Bank Group, United Nations agencies, the Government of Germany and the European Commission) to coordinate actions over the period 2007–2010. It was closely aligned with the CDS for this period. The JCSS supports the mainstreaming of environmental concerns into economic policies and budget planning.

The JCSS backs the development of renewable energy, but this is considered less urgent than the reform of the existing electricity sector. Support to irrigation includes not only developing of physical infrastructure but also introducing new methods of managing and paying for irrigation supplies.

These frameworks have created the basis for better communication and coordination between all involved parties (including both donors and the Kyrgyz authorities). However, these documents need to be understood as a starting point for continued dialogue among stakeholders, which should materialize into concrete projects that are well aligned with national priorities. This demands the active role of SAEPF in preparing proposals with clear financial implications that can engage the donor community and support common understanding of policy orientation in the environmental area (see chapter 4, section 4.3).

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17 IMF country report no. 07/369, November 2007
5.8. Conclusions and recommendations

Progress has been made since the first EPR. An automatic indexation of rates on emission charges has been introduced. Tariffs have become more cost-reflective and the situation vis-à-vis payment has improved. The system of environmental funds has been streamlined and management overheads have been reduced, thus allowing for an increase in the amount of resources devoted to financing environmental expenditures. The adoption of programmatic documents that recognize the importance of environmental issues and identify priorities is a positive step towards a framework for concrete environmental measures and improving coordination among stakeholders. Despite these improvements, however, there are areas where further changes would be beneficial.

There have not been major initiatives in the reform of economic instruments. The system of pollution charges targets an excessively large number of substances and does not create incentives for polluters to change their behaviour. Charges are low and collection has been problematic. There is the need to provide a stronger base for environmental financing and to distinguish the revenue-raising impact from the behaviour-changing role of economic instruments. Environmental spending relies too much on financing through pollution charges.

For the time being, revenue-earmarking may be necessary to provide a base for environmental protection financing, but it should not prevent reforms that seek improvements in collection and a more effective system of incentives.

Better incentives and higher collection rates would be expected, if the task of checking the basic data on which pollution charges and other payments are calculated remained with the environmental inspectors, while collection of payments was performed by the tax service/tax authorities.

Recommendation 5.1:
The State Agency of Environment Protection and Forestry and Ministry of Finance should:
(a) Review the system of pollution charges, aiming at its simplification and proposing the necessary legislative changes to the Government for adoption;
(b) Assess the appropriate level of rates for selected pollutants, to generate changes of behaviour toward increased environmental care;
(c) Entrust revenue collection tasks to the ordinary tax authorities, without modification in the earmarking of these charges for environmental protection.

Prices below cost recovery in sectors with an environmental impact encourage waste, prevent the accumulation of resources for investment and discourage the private-sector involvement. Indirect subsidies through utility prices have been substantial, but this form of support is neither equitable (as subsidies also benefit richer households) nor efficient (as they do not provide incentives for better use of resources). The impact of rising tariffs for municipal services depends on the pace of increases, i.e. how long is the transition period to achieve full cost recovery. In any case, some households may be put in a difficult situation, which would require targeted social assistance, a measure already implemented to accompany the increase in electricity tariffs since April 2008. In addition, enforcement of regulations should be strengthened to create conditions conducive for private sector involvement in utility provision.

Recommendation 5.2:
The State Agency of Environment Protection and Forestry, the National Agency on Local Self-Governance Bodies, the Ministry of Industry, Energy and Fuel Resources and the Ministry of Labour and Social Development should gradually eliminate price distortions in the provision of public services with environmental impact, through a reinforcement of payment discipline and increases of tariffs to reflect full costs. Mechanisms of support should be provided to the most vulnerable sectors of the population.

The system of environmental funds is the main channel for the financing and implementation of public environmental expenditures. However, its revenue base is rather narrow. The basis for spending decisions remains unclear and there are no well-established criteria for the appraisal of projects. More transparency and better communication would increase the efficiency of spending and aid attempts to increase revenues.
Recommendation 5.3: The State Agency of Environment Protection and Forestry and the Ministry of Finance should align expenditure by environmental funds more closely with well-defined environmental priorities as well as enhance project planning, monitoring and assessment mechanisms. Annual reports should be published on the activities of the funds and methodological criteria for project appraisal should be adopted.

Progress needs to be made in ensuring that environmental spending is well recognized in overall budget plans and financed from general resources. This would allow for a better focus on environmental priorities and the associated resource needs. Temporary reliance on off-budget sources, such as pollution charges, should not detract from the need to establish ordinary budget financing for environmental objectives. The Country Development Strategy 2007–2010 provides a policy framework that will inform donor assistance and link with domestic budget priorities. For a low-income country, the inclusion of environmental investments in national programmes to attract donor support appears as an important factor in the effort to raise finance. In order to put environmental spending on a sound footing, the challenge is to translate the recognition of environmental issues in policy documents into concrete financing proposals in the framework of the discussions over future budget plans. First, this demands appropriate mechanisms for coordination and adoption of decisions, involving a plurality of government agencies and other stakeholders. Second, the efficiency of environmental spending should be clearly demonstrable, which demands not only proper design but also suitable control over the implementation of programmed measures.

Recommendation 5.4. The Government, together with the State Agency on Environment Protection and Forestry, should integrate environmental concerns in development plans and medium-term budgetary frameworks in an explicit way, with clear financial implications. Environmental programmes should include detailed consideration of the costs involved, expected outcomes and sources of funding, so that they can be adequately assessed, monitored and evaluated.

See also Recommendation 1.1 in chapter 1.
Chapter 6

SUSTAINABLE MANAGEMENT AND PROTECTION OF WATER RESOURCES

Trends since the first review

The 1999 first Environmental Performance Review already highlighted the difficult situation of Kyrgyzstan regarding the management of water resources, a complex issue with components both at national and regional levels. It recommended to the country to improve water monitoring, elaborate a water strategy and move step-by-step toward integrated water resource management. Little progress have been made in all these directions mostly due to lack of capacities and difficulties to mobilize financial resources.

6.1 Water resources

Overview

Kyrgyzstan is an upstream country. More than 3,500 rivers and springs have their origins on its territory. These rivers and springs can be divided into six main river basins:

- The Syr-Darya (525 km long, called the Naryn upstream from the Fergana valley), which flows into Tajikistan and Uzbekistan. Major Kyrgyz tributaries are the Kara-Suu and the Kara-Darya, as well as the Chijatal, which flows west to Uzbekistan;
- The Chu (221 km), Talas and Assa basin, which flows into Kazakhstan;
- The small south-eastern catchment areas of the Aksay, Sary Dzhaz and Kek Suu, which drain to China;
- The Lake Issyk-Kul interior basin, which has no outlet (inflows are balanced by evaporation);
- The Kyzyl Suu, which is a Kyrgyz tributary of the Amu-Darya basin in the south-west;
- The upstream part of the Ili River catchment area, a tributary of the Balkhash basin in Kazakhstan.

Map 6.1: Map of rivers on Kyrgyzstan’s territory

Most of the rivers in Kyrgyzstan are fed from snow and glacier melt. Over the period 1973–2000 the total annual average flow was 51.9 km³. This is an increase of 6.3 per cent as compared to the previous period, in which the average annual flow was 48.9 km³. This is due to climate change and global warming.

There are 1,923 lakes in Kyrgyzstan with a total water surface of 6,836 km². Lake Issyk-Kul is the country’s largest lake by far, with a surface area of 6,249 km². Other major lakes are Son-Kul (275 km²) and Chatyr-Kul (153 km²). The total water reserve in lakes is estimated at 1,745 km³; however, only a very small part of this reserve is available for human consumption and use. About 1,738 km³ (or 99 percent of total reserves) is saline water of the Lake Issyk-Kul. Freshwater reserves in small other lakes are only about 7 km³. Another feature is that about 84 per cent of these freshwater lakes are located at altitudes above 3,000 m, many of them in remote areas inaccessible for human exploitation.

Thirteen artificial reservoirs with a total storage capacity of 23.4 km³ have been created to regulate the water flow, mainly for the purpose of hydropower production, irrigation and flood protection. Toktogul Reservoir has the biggest storage capacity (19.5 km³).

Kyrgyzstan has huge groundwater resources. The operational reserves are estimated at 5.3 km³ a year. The potential reserves are estimated at 11 km³ a year and are sufficient to meet present needs. A special problem for human settlements and agriculture is the fluctuations in groundwater levels, which vary from a few years up to 10–30 years. Substantial losses from water irrigation systems have also led to an increase in the water table.
Glaciers cover about 8,200 km², or about 4.2 per cent of Kyrgyz territory. The estimated amount of freshwater preserved in the glaciers is 650 km³. Seasonal snow melt and run-off from melted glaciers make up to 60 to 80 per cent of the rivers total run-off, and are crucial for irrigated agriculture. Global warming is expected to have a negative effect on the area covered by glaciers, and some scenarios indicate that the area covered by glaciers could decrease by 30–40 per cent by 2025. The effect of climate change so far is not properly documented due to the cessation of regular observations of glaciers for budgetary cuts in the monitoring institution Kyrgyzhydromet. The increase in annual water flow observed since 1973 is, however, most likely caused by the increased melting of glaciers and not by changes in precipitation.

Water availability in present and future

The water allocation schemes developed under the Soviet regime between Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan are still in force. These grant Kyrgyzstan the right to use 24 per cent of the water that rises in Kyrgyz territory, which on average represents a volume of 11.64 km³/year. In addition, Kyrgyzstan can also dispose of part of the annual water flow of 6.2 km³ in the south-eastern basin (which flows into China) and also part of the water flow in Ili River, which flows to the Lake Balkhash. In total Kyrgyzstan can use about 13.7 km³ of surface water annually. Today, the annual abstracted quantity of surface water is 8 km³, so there is still a great potential for increased use of water even if dry seasons and water shortages in some regions create certain limitations.

In the first Kyrgyz assessment report under the United Nations Framework Convention on Climate Change (2003), possible climate scenarios to 2100 indicate an average annual warming from 1.8 to 4.4° C. The same scenarios show an effect on precipitation ranging from an increase of 10 per cent to 40 per cent (see box 4.5 in chapter 4). In the short term, it is expected that the annual water flows will continue to increase due to increased melting of permanent snowfields and glaciers. The long-term effects, however, are expected to have a negative impact on the state of water resources in some regions by:

- Reducing in total annual flow, including feeding from small glaciers;
- Causing changes in the seasonal distribution of surface water flow, with reductions during the hottest periods, which are concomitantly the periods of maximum demand;
- Causing fluctuations in water flow, which will increase from year to year.

These effects will have adverse impact on biological diversity and forests.

6.2 Water use

There are no reliable figures on water abstraction and water use for recent years. This is due to the deterioration of monitoring networks for water quantity and quality (see chapter 3). Data from the Statistical Compendium shows inexplicably large gaps between water abstracted versus water use plus water losses (see figure 6.1 and table 6.1).

Figure 6.1: Water use in 2006
Total water use 4,566 million m$^3$


Table 6.1: Water use, million m$^3$, 2006

<table>
<thead>
<tr>
<th>Water use, including</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>72</td>
</tr>
<tr>
<td>Agriculture and Irrigation</td>
<td>4'215</td>
</tr>
<tr>
<td>Households</td>
<td>128</td>
</tr>
<tr>
<td>Other</td>
<td>116</td>
</tr>
<tr>
<td>Losses during transportation</td>
<td>1'830</td>
</tr>
</tbody>
</table>


**Drinking water supply**

**Urban areas**

Groundwater is the main source for drinking water in urban areas (table 6.2). There are about 60 water supply facilities in urban areas, but only a few abstract water from surface sources. Currently, about 99 per cent of drinking water in urban areas comes from groundwater resources. Access to piped water in urban areas is generally good, either through in-house connections, yard posts or standpipes in public spaces.

Table 6.2: Water supply sources, percent of population served as of 1 January 2006
The rapid urban population growth in Bishkek and Osh in the last 15–20 years has created considerable challenges with regard to drinking-water supply. This growth is the result of people moving from rural areas to the two big cities in search of employment. These people have established illegal and irregular settlements in the outskirts of the two cities that have been retrospectively legalized by the Government. Infrastructure with regard to water and sanitation in some of these settlements is, unfortunately, non-existent or inadequate. Unofficial estimates indicate that probably 15–20 per cent of the population in Bishkek has no access to piped drinking water. In Osh, there have also been problems with the quantity and quality of the water supplied. In November 2008, the Asian Development Bank (ADB) granted an additional $30 million for a project that aims to provide cleaner drinking water and better sanitation services to 1.5 million people in the provinces of Chui, Jalal-Abad, Osh and Batken.

### Rural areas

In rural areas, about 70 per cent of the drinking water today is abstracted from surface sources, while in the Soviet era 90 per cent was abstracted from groundwater aquifers. This dramatic change is due to lack of funding for operation and maintenance of the wells and water pipeline network, with the result that a large and constantly increasing number of wells and pipelines have ceased functioning. The villages have therefore been forced to take their drinking water from local water canals and rivers. About 30 per cent of the rural population gets its drinking water from individual wells or from surface sources, without any form of disinfection, which results in serious increase in human diseases (See table 6.3).

A project of the World Bank, the United Kingdom Department for International Development and the Asian Development Bank, initiated in 2001, aims to rehabilitate water-supply systems in rural villages. The intention is to transfer ownership and responsibilities for operating and maintaining water supply systems at the village level to community drinking-water users’ unions. Thus far, 650 such unions have been established, accounting for 80 per cent of the rural population. In villages where the unions are already in operation, tariffs covering 30–80 per cent of the full costs are being collected. The difference is subsidized by the local authorities. The effect of transferring ownership and responsibilities to the local level seems to be positive with regard to both access and quality of drinking water.

### Drinking water quality

The quality of drinking water in urban areas has remained unchanged for many years. In 2007, approximately 10 per cent of the samples taken did not meet biological requirements and 2 per cent were above the limit values for physical and chemical parameters. In rural areas, the quality of piped water has declined due to more extensive use of surface water as the source for drinking water. As the water purification infrastructure has deteriorated to an alarming extent in many places since the Soviet times due to lack of investment, much piped water is currently not treated at all. Drinking water from individual wells is typically not disinfected, and the quality is in general not very good. The quality of surface water is in general even worse. At least 600,000 people in Kyrgyzstan have no access to clean drinking water. Unofficial estimates put this figure much higher, at close to half the population. This has led to a high incidence of diseases such as typhus and other gastric illnesses (table 6.3).

### Table 6.3: The status of centralized drinking water supply sources and water quality

<table>
<thead>
<tr>
<th>Place of residence</th>
<th>Centralized water pipeline</th>
<th>Street water pump</th>
<th>Well</th>
<th>Spring</th>
<th>River/small water canal</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cities</td>
<td>71.4</td>
<td>27.9</td>
<td>0.7</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>100</td>
</tr>
<tr>
<td>Villages</td>
<td>15.0</td>
<td>55.3</td>
<td>4.9</td>
<td>2.6</td>
<td>21.2</td>
<td>1.0</td>
<td>100</td>
</tr>
<tr>
<td>High level mountains</td>
<td>3.9</td>
<td>54.0</td>
<td>2.8</td>
<td>6.3</td>
<td>31.9</td>
<td>1.1</td>
<td>100</td>
</tr>
<tr>
<td>Low level mountains</td>
<td>20.5</td>
<td>62.6</td>
<td>6.4</td>
<td>1.8</td>
<td>7.6</td>
<td>1.1</td>
<td>100</td>
</tr>
<tr>
<td>Plains</td>
<td>46.5</td>
<td>35.5</td>
<td>2.6</td>
<td>0.9</td>
<td>10.8</td>
<td>3.7</td>
<td>100</td>
</tr>
<tr>
<td>Kyrgyz Republic</td>
<td>39.3</td>
<td>40.5</td>
<td>3.1</td>
<td>1.5</td>
<td>12.4</td>
<td>3.2</td>
<td>100</td>
</tr>
</tbody>
</table>

### Indicator Underground water supply | Surface water supply
---|---
Number of centralized water abstraction sources | 1'207 | 93
% of water resources not complying with sanitary rules and standards | 3.6 | 18.2
% of water sources not complying with the sanitary rules and standards due to lack of sanitary protection zones | 1.5 | 3.2
Number of samples checked for sanitary and chemical indicators | 31'953 | 275
% of samples not complying with hygienic standards | 0.2 | 11.1
Number of samples checked for microbiological indicators | 2'860 | 163
% of samples not complying with hygienic standards | 6.2 | 17.1

*Source: Ministry of Health, 2003.*

**Water use in industry and mining**

Due to major shutdowns of industry after the Soviet era, the water used by industry decreased from 674 million m³ in 1991 to 138 million m³ in 1998 and then to 72 million m³ in 2006. Since the first review, industry continued to decline even if there have been signs of recovery in the last few years. The most important industrial sectors to date are mining (gold and coal) and the energy sector. Other sectors of importance are construction, the food processing industry and the textile industry.

**Water use in agriculture**

In 2006, the agricultural sector consumed 93 per cent of water used. About 1.02 million ha of arable land is irrigated, which accounts for 80 per cent of the ploughed land (1.28 million ha). The potential of available land for irrigation is estimated at 2.25 million ha.

The total length of the irrigation canals is 13,000 km. The main distribution canals are the responsibility of the Ministry of Agriculture, Water Management and Processing Industry, and are generally well maintained, especially downstream of the large storage dams. Responsibility for the secondary distribution systems and drainage canals has, however, shifted to the village authorities after the Soviet times. This shift has resulted in poorly maintained in-farm distribution systems, which have made irrigation highly ineffective. This is due to lack of funding for maintenance for many years, and is now causing irrigation losses of 35–50 per cent.

The situation would have been worse without the establishment of water users’ associations, which has been an important step in the structural and institutional reform of the agriculture sector. These water users’ associations consist of farmers at the village level cooperating to maintain and operate irrigation networks. The associations have a legal status that makes them independent of the Government and enables them to collect taxes from their members and to raise loans to finance the costs of maintaining and operating the irrigation networks. Since the adoption of the Law on Water Users’ Associations in 2001, about 450 water users’ associations have been established, with an expected need of 500–550.

**Hydropower production**

Development of hydropower is an economic priority for Kyrgyzstan. The total hydropower potential is estimated at 142 billion kWh/year, but to date only 10 per cent of this potential is utilized. Still hydropower provides more than 90 per cent of the domestic use of electricity, and Kyrgyzstan has also been able to export 2–2.5 billion kWh/year to China, Kazakhstan and Uzbekistan. However, exports in 2008 were significantly less because of the extraordinarily cold winter, with a record-high production of electricity that almost depleted the water reserves in the reservoir at the Toktogul hydropower station, the largest in the country.

The most important hydropower project at present is the construction of the Kambarata 2 hydroelectric plant on the Naryn. The project started in 1986 in Soviet times in a completely different context, and was designed to meet the demand in electricity and irrigation water for the whole region. With the emergence of new independent smaller republics in 1991, the plant capacity appeared oversized for single Kyrgyzstan and construction has slowed due to financial problems. The first power generation unit of the Kambarata 2 is...
expected to start producing electricity by the end of 2009 (an estimated 400 million kWh/year. There are also concrete plans to build another hydroelectric plant in the Naryn (Kambarata 1), but so far the financials for this project have not been secured. In Soviet times, there were about 200 small hydro power plants in Kyrgyzstan. In recent years, with the support of the international community, a few small hydropower plants have also been built, or are in the implementation phase, to ensure electricity for small and remote villages.

_Flood control_

There is an enormous need to rehabilitate flood control installations and eroded river banks in areas prone to flooding. High river flows are an annual occurrence in the spring and early summer, when the temperatures rise and the melting of snow and glaciers begins. Floods are common, particularly in autumn. These disasters have caused fatalities and injuries, and invariably destroy homes and infrastructure. People who are uprooted must then find a way to re-establish their livelihoods.

A special risk is floods caused by possible breaks in mountain glacier lakes. According to the Ministry of Emergencies, about 200 out of 2,000 glacial lakes in Kyrgyzstan are in danger of overflowing. Since 1952, Kyrgyzstan has seen about 70 incidents in which glacial lakes overflowed, some causing human causalities and severe property damage.

6.3 Anthropogenic pressures on the quality of water resources

Assessment of the anthropogenic pressures, is lacking, as is data on the quality of water resources. Most of the text below is based on estimates and expert opinion.

The main sources of water pollution in Kyrgyzstan are wastewater from households and industry, agricultural run-off, leachate from waste disposals and pollutants from mining industry, and abandoned industrial facilities.

_Wastewater discharges_

Municipal wastewater collection in urban areas is estimated at 70 per cent of the water supplied. Moreover, most of the collected wastewater is not adequately treated. In 1999, only 60 per cent of the 350 wastewater treatment units were operating due to lack of funding for maintenance and for drastic reductions in water management staff. Only 30 per cent met the national standards. The situation today is probably even worse because of continued insufficient funding for maintenance. In 2006, only 21 per cent of the total wastewater discharge received some kind of treatment before it was discharged into natural water bodies; in most cases, the wastewater was probably only mechanically treated.

As a practice inherited from Soviet times, industrial wastewater is usually treated in municipal wastewater treatment facilities, sometimes after some kind of pre-treatment. The consequences of over 15 years of inadequate maintenance of municipal treatment facilities is that almost all municipal and industrial wastewater are discharged into water bodies without sufficient treatment. Therefore, the load of nutrients and hazardous chemical substances discharged into the water bodies may be considerable, and the impact on water quality noticeable, especially in the dry season and in densely populated areas. However, data on wastewater discharge and the impact on water quality of receiving bodies are very scarce (see chapter 3).

_Mining_

Mining activities are mainly located in the mountainous areas. By inducing and exacerbating landslides, mudflows and slope erosion and by releasing hazardous substances to the surroundings, the impact of these activities on the environment in general, and on water in particular, is considerable. The most important mineral deposits being exploited are gold, but also other minerals such as coal, mercury, uranium and antimony. Coal output diminished from 2.5 million tons in 1992 to 411,000 tons in 2003 and 321,300 tons in 2006. The Government plans to increase the exploitation of the considerable remaining deposits to reduce the country’s dependency on foreign energy resources.
The large quantities of radioactive waste Kyrgyzstan has inherited from the Soviet era is a major threat. These wastes are accumulated in 36 uranium tailings sites and 25 uranium mining dump sites located throughout the country. The ongoing degradation of uranium tailings and the associated risks of water resources contamination pose a wide range of threats to public health and the environment; they also present a challenge to political and economical stability in the region, as they could have a transboundary impact on neighbouring countries, e.g. Kazakhstan, Tajikistan and Uzbekistan. The threats posed by certain sites are imminent and require urgent solutions. For instance, in 1994 the Mailuu-Suu River was blocked by a landslide. Houses were flooded and part of a uranium waste reservoir was pushed into the river. In May 2002, the worst-case scenario nearly occurred when a 4,000 m³ landslide blocked the Mailuu-Suu again. There were serious concerns that that nuclear waste accumulated in uranium tailings impoundments along its banks would be carried away by the river, jeopardizing both domestic and regional security.

Agriculture

Current agricultural practices are not sustainable and pose a threat both to water quality and to human health and prosperity (See Chapter 7). The large-scale losses of water in the irrigation systems and the inefficient drainage are causing a rise in the water table level. In some regions, the rise in the water-table level has caused the destruction of buildings and a considerable reduction in arable land because soil and groundwater have become saline. World Bank estimates indicate that as much as 11.5 per cent of the total irrigated area is affected by salinization. The increased water table has also resulted in arable land becoming waterlogged and unfit for agricultural production. It is estimated that 750,000 ha of irrigated land will need drainage. At present, only 150,000 ha have well-functioning drainage systems.

Lack of protection of groundwater resources exploited for drinking water is a severe problem. There are no territorial limitations for sanitary protected areas. Livestock is allowed to graze close to the water intakes and there are no restrictions on the use of pesticides and fertilizers within the protected zones. Construction permits are often given in sanitary protected areas without consultation with environmental or health authorities or because the permitting authorities are not aware of the areas’ protected status. In many places, discharge of wastewater from industry and households is affecting the quality of groundwater resources, both with regard to bacteriological and chemical content.

6.4 Policy and institutional framework for water resources management and water protection

The policy framework

In 2002, a draft national strategy for the use and protection of water resources was developed, but due to disagreements over the institutional framework, the draft was never put forward for adoption. Thus, as of 2008, there is still no national water strategy. Water issues are, however, a part of a number of other national strategies and plans sometimes with competing objectives, and as a result none gives a holistic and coherent strategy for water resource management.

The National Environmental Health Action Plan (1997) contains four water-related objectives:

- To protect water sources and supplies from biological and chemical contamination;
- To secure, on sustainable basis, the continued availability of water for human consumption of a quality at least consistent with the World Health Organization guidelines;
- To reduce the incidence of waterborne microbial diseases;
- To reduce exposure through drinking water to toxic chemicals from industry and agriculture.

In 2007, SAEPF and UNDP developed the publication, *The Kyrgyz environment and natural resources for sustainable development*. This publication also outlines some directions and priorities for the water sector.

Nonetheless, the lack of an overall national strategy for the use and protection of water makes it almost impossible for all the different authorities at the national, regional and local levels, as well as international donors, to coordinate their actions and priorities. The only area within the water sector that seems to be
coordinated is the allocation of water, as quotas for each oblast are set by the Ministry of Agriculture, Water Management and Processing Industries according to the traditional practices prevailing in Soviet times.

Within the framework of the European Union Water Initiative, UNDP, the European Commission, UNECE and OECD have drawn up a “Common framework for addressing water issues in Central Asia”, which focuses in particular on a policy framework for integrated water resource management and water supply and sanitation. It includes measures for establishing (a) river basin councils and river basin administrations; (b) a sound financing strategy for water supply and sanitation infrastructure; and (c) capacity-building activities for technical and political personnel in Kyrgyzstan and other Central Asian countries.

Legal framework

In 2005, a new Water Code was approved which regulates the use, protection and development of water resources for the guaranteed, adequate and safe supply of water and for the protection of the environment (see chapter 1). The Water Code also establishes principles for an integrated water resources management approach and defines the competences of State bodies. Areas such as emergencies and dam safety are also included in the new Code, as are water resources monitoring and basin management plans for the development, use and protection of water resources.

Although several by-laws have been developed and adopted, the Water Code is still not fully implemented. For instance, the river basin management principle has not been put into practice, although a pilot project was initiated in the Chu and Talas rivers basin in cooperation with the World Bank. The Water Code also states that a basin council should be set up for each principal river basin, a measure not yet taken.

In accordance with the Water Code, a National Water Council was established in 2006 with the tasks of coordinating activities on the water sector and defining the hydrogeographic boundaries of the principal river basins (See box 6.1). As of end 2008, the Council has yet not met, and its responsibilities are currently covered by the Department for Water Resources in the Ministry of Agriculture, Water Management and Processing Industries.

The institutional framework

A number of institutions are responsible for the water sector:

- The Ministry of Agriculture, Water Management and Processing Industries is responsible for water allocation, water accounting and regulating and issuing permits for water use. It is also responsible for the water supply and wastewater treatment in rural areas. Together with the oblasts, this Ministry is charged with construction and maintenance of the primary infrastructure for irrigation water, including reservoirs and their dams and main canals, and for delivering irrigation water. All users, public or private, need to obtain a permit from the Ministry to abstract water. Permits are issued at the oblast level and must be in line with the quotas set by the Ministry for each oblast.
• SAEPF is responsible for water discharge permits and for controlling permit compliance. The permit compliance control is done by regional offices in each oblast, who levy fines or close down facilities if permits are violated; for instance, activities of 12 holiday resorts were temporarily suspended in Issyk-Kul oblast in 2007 for violation of water discharge permits (see chapter 2, box 2.2).

• The Ministry of Emergencies is responsible for constructing and maintaining flood control infrastructure, while the Ministry of Health is responsible for the quality of drinking water. The Ministry of Industry, Energy and Fuel Resources is responsible for hydropower installations.

• In Bishkek, the Bishkek Vodokanal under the City Council is responsible for water supply and wastewater collection and treatment, while the Kyrgyzkommunsoyuz State enterprise (KJKS) has this responsibility in the other cities with centralized water supply.

• Water users’ associations are responsible for the in-farm irrigation network, including construction and maintenance of the distribution and drainage canals. In villages where water users’ associations have not yet been established, the local village authorities assume this responsibility.

According to the Water Code, the management of water resources in Kyrgyzstan should be based on the river basin approach. A water basin administration and a basin council should be established within each principal basin to coordinate activities within the water sector and to develop integrated basin management plans, rules and procedures for approval by the Government (See Box 6.2). The Water Code also provides that management of water resources should be based on the participatory principle, i.e. all interested stakeholders should be involved in the decision making process. So far, this part of the Water Code has not been implemented, however.

Box 6.2: International assistance on integrated water basin management

To improve coordination of the water-sector activities within each basin and to ensure transparency and the involvement of all interested stakeholders in the new administrative structure, Kyrgyz authorities, together with the World Bank, the European Commission (Tacis projects), UNECE, UNDP, Finland, Switzerland and other donors, have initiated a number of technical cooperation projects. These are being coordinated by a National Steering Committee led by the Minister for Agriculture, Water Management and Processing Industries. In particular this Steering Committee, established under the UNECE-led National Policy Dialogue on integrated water resources management, streamlines activities related to improving water management in Kyrgyzstan (a World Bank project), Good Water Governance (a Tacis project), Integrated Water Resources Management (UNDP project) and dam safety, water-quality management and transboundary cooperation under the Chu and Talas Commission (UNECE-led projects).

Other institutions are responsible of water monitoring:

After 1991, as it was already reflected in the first EPR, water monitoring activities have been drastically reduced due to lack of financing. Monitoring institutions were almost disrupted and for some of them activities ceased completely. The situation is slowly improving. However, as in past years responsibility for monitoring institutions has often shifted between various ministries, coordination of activities amongst these institutions has been seriously weakened.

The quality and quantity of surface water is monitored by the State agency for meteorology, Kyrgyzhydromet, under the Ministry of Emergencies. In 1991, Kyrgyzhydromet had a routine monitoring water quality network consisting of some 180 stations located on rivers, lakes and reservoirs. Since then, insufficient funding has drastically decreased Kyrgyzhydromet’s monitoring capacity. At present, Kyrgyzhydromet is only able to analyse water samples from the Chu, its tributaries and one monitoring station in the Naryn close to the Uzbek border (see chapter 3). Samples from the monitoring stations are brought by car to the Kyrgyzhydromet laboratory in Bishkek, the only laboratory of its kind still in operation, as the Osh laboratory shut down in the 1990s due to lack of financial resources. Samples from other parts of Kyrgyzstan are not feasible due to the high transportation costs. The sampling frequency is four times a year, while at least 11 times a year would be required.

Kyrgyzhydromet has also an observatory that is responsible for monitoring the water quantity and quality of Lake Issyk-Kul. At present, again for economic reasons, only the level of the water table in the lake is measured.
The number of water-quantity monitoring stations has also been substantially reduced from 145 in the early 1990s to only 65 today, of which 60 are functioning. This means that Kyrgyzhydromet is no longer able to measure the water flow in a satisfactory manner. The situation is especially critical in the Chu basin, where about 2 million people live and which has 360,000 ha of irrigated land. In 1991, there were nine monitoring stations in this river basin, but none is now in operation.

The State Agency on Geology and Mineral Resources is responsible for monitoring the quality and quantity of groundwater resources and the groundwater table levels. They are also responsible for issuing permits for the abstraction of groundwater. At present, groundwater is abstracted from 42 major groundwater aquifers. The frequency of samples varies from once a month to once a year, depending on the potential impact from industry.

SAEPF is responsible for monitoring the purification performances of municipal wastewater treatment plants. However, no such data have been published and the data would probably be of little interest, as most of the municipal treatment plants are no longer in operational or do only mechanical treatment. Moreover, the SAEPF laboratory has just resumed its activities after a long hiatus, but is still limited by tight financial constraints (see chapter 2).

The Ministry of Emergencies is responsible for the observation of glaciers and glacial lakes. Here again, due to lack of financial resources, regular observation has ceased.

The Ministry of Health is responsible for monitoring the quality of drinking water. The Ministry has more that 40 regional offices, which in 2007 oversaw 1,074 water installations. The lack of sufficient financial resources has meant that the frequency of controls is far below what is required. There have also been little or no financial resources available for modernizing the laboratories for many years.

The Ministry of Agriculture, Water Management and Processing Industries is responsible for the quality of irrigation water. As with the other sectors, the quality control of irrigation water is inadequate.

*Water pricing*

Irrigation service fees were introduced in Kyrgyzstan in 1995, but due to resistance from the Parliament, water tariffs were not established before 1999. The tariffs were rather symbolic and covered only 20 per cent of the operational and maintenance costs of irrigation infrastructure. After the countrywide establishment of water users’ associations, these associations assumed responsibility for collecting irrigation service fees from their members, and the average collecting rate has increased to cover more than 50 per cent of the operational and maintenance costs.

Fees for drinking water supply were also introduced in the 1990s. Unfortunately, the fees are still far too low to cover the costs of operating and maintaining the water-supply and wastewater discharge infrastructure (see chapter 5). At the same time, however, poverty makes it very difficult to raise the fees to a level that would give full recovery of the costs. As 40 per cent of the population is below the poverty line, higher prices could force them to reduce their water consumption below the socially optimal level, which could result in an increase in water-related disease and/or resistance to paying the higher prices.

6.5 Conclusions and recommendations

The first EPR recommended that Kyrgyzstan develop a consistent national water strategy. An attempt was made in 2002, but was unfortunately unsuccessful.

The management of water resources in Kyrgyzstan is of utmost importance both from an economic, social and political point of view. In addition to its importance for domestic consumption, water is crucial both for irrigation purposes and for production of electricity. It is also crucial to the activities of downstream countries, and Kyrgyzstan has related international obligations. It is therefore essential that authorities at the national, regional and local levels, together with other domestic stakeholders and international organisations (e.g. the United Nations Special Programme for the Economies of Central Asia (SPECA); see chapter 4),
take coordinated action to achieve the maximum benefit out of their common resources. Attaining this, however, is not possible as long as there is no comprehensive national strategy that sets targets and defines priorities for managing water resources.

**Recommendation 6.1:**

The Government should entrust the National Water Council to develop and implement without delay a comprehensive and coherent national strategy for the integrated management of water resources. The strategy should be elaborated in cooperation with all relevant national, regional and local authorities as well as NGOs. The strategy should focus on the sustainable use of water resources, and should include protection of water quality, water supply, water pollution control, flood protection, use of water for energy purposes and international obligations.

The tailing dams located at closed uranium mining and processing sites are regarded as presenting highest risks to environmental safety and human health in the region. The disposal of radioactive waste from the Soviet era is also a considerable challenge to the Kyrgyz economic, social and political development and also to neighbouring countries such as Uzbekistan. If immediate action is not taken, it will only be a matter of time before soil erosion, landslides, flooding or earthquakes will destroy one or more of the uranium tailing dams, with the possible consequence of causing a national and regional catastrophe with radioactive waste being released into the air and/or nearby rivers or lakes. The cost of damages caused by such a catastrophe and of their remediation would be huge, and certainly much higher than the cost of preventive measures. Kyrgyzstan should tackle these preventive actions and, if not able to afford related costs, it should seek a substantial part of the funding from international donors.

**Recommendation 6.2:**

The Government should take immediate actions, together with international donors and affected neighbouring countries, to reduce the threat that high-risk uranium impoundments pose to human health and the environment, including water bodies.

The quality of groundwater resources is threatened by various human activities such as wastewater discharge, agricultural production, the release of chemicals from products and industrial processes, mining and construction activities, and waste disposal. The threat is especially severe if these kinds of activities occur close to the locations where groundwater is abstracted. Many of the areas around groundwater resources have already today status as sanitary protected areas or sanitary protected zones, but their legal status is very weak and seems to set very few or no limitation to the activities within the areas.

**Recommendation 6.3:**

The Ministry of Agriculture, Water Management and Processing Industry, together with the other ministries involved, should take appropriate actions to protect the groundwater resources from pollution by:

(a) Stopping illegal activities within the sanitary protected zones by establishing regular inspections and by sanctioning illegal activities;
(b) Ensuring delimitation and demarcation of sanitary protection zones;
(c) Strengthening the legal basis for sanitary protection zones, with due consideration to preventing drinking water contamination and the need to protect human health.

Poorly maintained distribution systems and drainage canals make the irrigation of arable land highly ineffective. Large-scale water loss from irrigation systems has caused a rise in the groundwater table, which has led to a considerable reduction of arable land due to either waterlogged areas or because soil and groundwater have become saline. If proper actions are not taken the long-term effects and economic consequences of this situation will be considerable.

The transfer of responsibility for the operation and maintenance of the in-farm distribution systems to the local level by establishing water users’ associations has been an important step forward in the structural and institutional reform of the irrigation systems. The fundamental problem is the lack of financial resources for restoration and maintenance of the irrigation distribution infrastructure.

**Recommendation 6.4:**
The Ministry of Agriculture, Water Management and Processing Industry together with the oblast authorities and water users’ associations should give priority to speed up the process of restoring the water irrigation infrastructure by:

(a) Making an assessment of the status of the irrigation infrastructure and estimating rehabilitation costs;
(b) Prioritizing the most needed and most cost-effective actions;
(c) Increasing the financial resources in the State budget available for this purpose;
(d) Increasing the charges set by the water users’ associations, aiming at full cost recovery of the operational and maintenance costs of irrigation waters as soon as possible;
(e) Striving to attract foreign donors and new investments.

According to the Water Code, water resources management in Kyrgyzstan is to be based on the river basin approach. Basin Water Administrations and Basin Councils have to be established for the principal basins to coordinate activities within the water sector and to develop river basin management plans, rules and procedures for approval by the Government or governmental entities. So far, this part of the Water Code has not been implemented.

Municipalities, agriculture, industry and hydropower plants are the main users of water resources in Kyrgyzstan. Their needs for water differ widely in terms of time, quantity and quality, as do their impacts on the environment and human health. To make optimal use of available water resources, the needs and impacts of water uses in municipalities, agriculture, industry and hydropower generation, together with other uses and flood protection, need to be assessed. The water Code is calling for an integrated water resources management plan that has not yet been established.

Integrated water resource management is a complex approach, but it has proven its efficiency all over the world. Often, international assistance is helpful to countries when they tackle with this difficult issue. In Kyrgyzstan, the World Bank has initiated a pilot project under in the Talas basin to establish a basin water administration and a basin council. Under the UNECE-led National Policy Dialogue on integrated water resources management, part of the EU Water Initiative for EECCA countries, arrangements have been made for the establishment of a basin council for the Chu basin. The World Bank and UNECE activities complement each other and will serve as examples for establishing proper institutional frameworks in other river basins in Kyrgyzstan.

Recommendation 6.5:
The Government should, as soon as possible, establish basin water administrations and basin water councils for each principal basin in line with the Water Code. The management of each principal basin should be based on the concept of integrated water resources management, including the involvement of all relevant stakeholders in the decision-making process. Technical assistance from the international community should be sought to make further progress in this matter.

Data describing the status and pressures on water bodies is an essential tool for making decision for a rational management of water resources. The responsibility for monitoring water quality and quantity is shared between several ministries, agencies and institutes. Their monitoring activities are not very well coordinated and they have all been hampered by the lack of financial resources for many years, which has caused a substantial reduction in their monitoring networks and capacities since the Soviet era. At present, the monitoring capacity is clearly insufficient to give reliable data both on water quantity and quality. The lack of reliable data is causing problems with regard to a proper management of water resources, e.g. prioritization of actions and investments, and may complicate the introduction of integrated water management principles.

Recommendation 6.6:
In order to ensure a sustainable management of national water resources and to attract foreign investment funds in water infrastructure, the National Water Council should work towards:
(a) Establishing an effective national water resources monitoring system in line with the provisions in the Water Code;
(b) Developing a detailed plan for restoring the monitoring networks for water quality and quantity and laboratory capacity, and for increasing the frequency and coverage of samplings.
See also Recommendation 3.1 in Chapter 3.
Chapter 7

LAND MANAGEMENT AND PROTECTION

7.1 Land cover and land use

Kyrgyz territory falls into four main geo-morphological categories: mountains, foothills, foothill valleys and foothill plains. Over 90 per cent of the country is covered by mountains (above 1,500 metres) where approximately 14 per cent of the population lives. Eighty-six per cent of the population and all arable lands are concentrated on the 7 per cent of valleys and plains.

The soil cover in Kyrgyzstan is represented by a wide variety of soil zones, including desert, desert steppe, dry steppe, mountain-forest-meadow steppe, mountain meadow, meadow steppe (sub-alpine and alpine), high-mountain steppe and high-mountain desert. Geo-morphological and climate conditions, together with diverse soil cover, are the main factors that determine the different ecosystems, which range from deserts to broad-leaved and coniferous forests to alpine meadows. Twenty-two different types of ecosystems are found in Kyrgyz territory (see chapter 8).

In accordance with the Land Code of 2 June 1999 N 45, the land fund includes seven distinct land categories forming the country’s land structure (figure 7.1).

Figure 7.1: Distribution of land fund, percent, 1995, 2000 and 2006


Note: The total area of the land fund is 19.9 million ha.

In 2006, the reserve lands constituted the bulk of the land fund (49%, or 9.8 million ha), agricultural land covered 5.7 million ha, of which 1.3 million ha were arable land (1.052 million ha are privately owned and 293,000 ha are State-owned), and the forest fund land accounted for 2.7 million ha (although not fully forest-covered). This situation remains unchanged in 2008.
A relatively large percentage of the country’s territory is classified as reserve land, which comprises all land not made available for ownership or use. Apart from glaciers and rocky ground, this group includes a considerable portion of pasture land (over 4 million ha) that is very poorly managed due to lack of traceable users. Many years of non-utilization has led to a loss of this land’s productive function, and to its degradation.

Intensive land-use transformation processes (i.e. agrarian reform) started in the 1990s and many changes were introduced to the land fund structure in the period 1995–2006. Between 1995 and 2000, the land fund structure changed drastically due to a new political, social and economic context, particularly the initiation of the agrarian and land reforms. Over this period, the transfer of a part of pasture land into reserve land, the transfer of agricultural land into residential development area (particularly in the suburbs of Bishkek and Osh), and the withdrawal of degraded agricultural land from agricultural use have caused agricultural land to decrease virtually by half in the same period. Moreover, roughly 90 per cent of agricultural land is prone to desertification. Residential areas have increased by 1.8 times, forest fund land by 2.4 times and specially protected natural areas by 3.6 times. Between 2000 and 2006, changes continued at a slower pace, with the forest fund land and specially protected areas being enlarged by 76,300 ha and by 182,900 ha, respectively. In the same period, agricultural land reduced by 85,300 ha, while human settlement land expanded by 20,400 ha (figure 7.1).

7.2 Land under stress

Land degradation in Kyrgyzstan is caused by natural factors, by anthropogenic factors, or a combination of the two (cumulative impact). Natural disasters – including mudslides, avalanches and landslides – pose risks, mostly in the south of the country. Seventy-three per cent of all natural and man-caused disasters occur in the southern region of the country.

Types of degradation are typical to the altitude where they occur:

- In mountainous areas: rocky ground, landslides, pasture degradation and deforestation;
- In foothill areas: water and wind erosion, mudslides, irrigation erosion and loss of soil fertility;
- In valleys: salinization, waterlogging and irrigation erosion.

In recent years, the anthropogenic factor has begun to dominate land degradation. Agricultural activities constitute the main pressure. Now predominant small-scale farming and cattle breeding no longer use conventional agricultural practices and modern agro-technologies are poorly implemented. This leads to soil fertility loss and land degradation. The unfavourable situation with respect to land degradation in the mountains and foothills also affects valley land, in particular since there is as of yet no basin approach to promote sustainable land use and to combat land degradation.

Other anthropogenic factors causing land degradation include urban expansion and uncontrolled settlement. This is particularly evident in the suburban areas of Bishkek and Osh. Official statistics alone suggested that between 2000 and 2006 human settlement areas increased by 20,400 ha. The negative impacts of other human activities (e.g. infrastructure development, transport, tourism and recreation, waste disposal facilities, military activities) are insignificant compared to the ones mentioned above.

Natural disasters

Every year, a multitude of natural disasters of different kinds inflict considerable damage on country’s the economy and natural resources, especially the land:

- **Earthquakes**: Each year the Institute of Seismology of the Kyrgyz National Academy of Sciences records hundreds of earthquakes, including those with a magnitude greater than 4 on the Richter scale: in 2005, 21 were recorded, in 2006, 13 and in 2007, 18. A general increase in seismic activities is expected in the Tien Shan Mountains for the period 2007–2015.

- **Landslides**: There are over 5,000 zones prone to landslides in Kyrgyzstan. About 10,000 houses in 509 communities are located in potential danger zones. Between 2002 and 2007, landslides caused the 88 deaths. On average, 20–30 devastating landslides happen in the country every year (over the last
decade, the minimum number of landslides was 5 (in 2001) and the maximum was 53 (2004); in 2007, there were 10. There is no evidence of a relationship between landslides and human activities in Kyrgyzstan.

- **Mudflows:** There are about 3,100 mudflow-prone water basins and 2,000 highland lakes, of which 200 at risk of a breach. Over 300 communities are located in areas likely to be affected by breaks. The number of damaging mudflows and floods varies from year to year, with an average over the last decade of 40–45 events annually. The most occurred in 2002 (95) and the least in 2001 (9); in 2007, there were 75 recorded events.

- **Avalanches:** More than half of Kyrgyz territory is prone to avalanches. The avalanche season lasts five to seven months. In an average year, 10–20 avalanches are recorded, with substantial and sometimes disastrous consequences, mainly to the transportation infrastructure. Climate change and the greater frequency and magnitude of extreme meteorological events have increased the risk of avalanches.

- **Waterlogging:** According to the 2007 survey of the Kyrgyz Comprehensive Hydrological Expedition, waterlogging affects about 320,000 ha of land, mostly agricultural land, in over 316 communities.

On average, some 200 emergencies, mainly natural ones, take place in Kyrgyzstan each year, with profound effects on nature and society (figure 7.2). The average annual damage in the period 2001–2007 was estimated at $35 million. Mudflows and landslides are most common, making up 46 per cent; other types are represented relatively evenly (4–10%; see figure 7.3). Emergency cases have risen over the past 15 years, which has required additional effort on the part of the Government to take preventative action, protect the population and manage the consequences.

**Figure 7.2: Frequency of emergencies in the period 1992–2007**

![Figure 7.2](image)

**Source:** Ministry of Emergencies, 2008.

**Figure 7.3: Main types of emergencies, average for the period 2000–2007**

![Figure 7.3](image)
Kyrgyzstan has developed and put in place an efficient system to prevent and manage emergencies. Every year, the Department of Emergency Monitoring and Forecast and Management of Tailing Sites under the Ministry of Emergencies issues forecasts to warn the public and prepare for responses. These forecasts are drawn up for each rayon, for Bishkek and Osh, and for the 21 most vulnerable municipalities (aiyl okmotu) of Batken, Jalal-Abad and Osh oblasts. These forecasts are the basis for taking precautionary steps to protect the population from possible emergency impacts occurring from expected high-risk processes and events. In addition, based on the analysis of forecast materials, at the Government’s expense and with the use of international assistance, construction and repairs are carried out annually to build protective structures in the danger zones.

To enhance management, improve coordination of stakeholders and expedite decision-making in the event of an emergency, a Crisis Management Centre was set up in 2006. The Centre is well equipped (including with space communication systems) and is designed to support the functioning of the national system addressing the prevention and management of natural and man-induced emergencies within the territory and in areas bordering other States.

Agricultural practices

Agriculture is a major part of the country’s economy: it provides more than one third of its GDP, and employs half of the economically active population. The majority of the population (65%) lives in rural areas.

Figure 7.4: Structure of area under cultivation, percent, 1991, 1997 and 2006
Data comparisons of 1991–1997–2006 have shown that there are pronounced changes in the structural development of areas under cultivation. Areas planted with fodder crops have reduced considerably (from 48.5% in 1991 to 22% in 1997 and 18% in 2006), and areas planted with cotton, potatoes and oil producing crops have markedly increased. Along with the diversification of agricultural production, cultivation patterns show a growing share of crops that require special agro-technological techniques and exert greater pressures on land. Both intensive agriculture and eco-agriculture are not developed in the country. Old farming methods and techniques are still applied for the production of non-rotating staple crops (e.g. wheat), which results in agricultural land degradation.

The main types of arable land degradation are wind and water erosion, salinization, waterlogging, loss of soil organic matter and fertility, and chemical contamination.

Table 7.1: Distribution of degraded lands in 1990–1999 and 2000–2005

<table>
<thead>
<tr>
<th>Types of degraded lands</th>
<th>1990-1999</th>
<th>2000-2005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>million ha</td>
<td>% of total area</td>
</tr>
<tr>
<td>Eroded (wind, water, and pasturable erosion)</td>
<td>5.40</td>
<td>27.00</td>
</tr>
<tr>
<td>Salinized soils</td>
<td>1.17</td>
<td>5.85</td>
</tr>
<tr>
<td>Water-logged</td>
<td>0.09</td>
<td>0.01</td>
</tr>
<tr>
<td>Rocky</td>
<td>3.80</td>
<td>19.00</td>
</tr>
</tbody>
</table>


Since the 1990s, the area of degraded lands has increased (table 7.1) and the actual figures for degraded lands are likely to be even higher in 2008. The last comprehensive land monitoring was conducted in 1990 and the subsequent selective survey may not reflect the complete extent of the degradation process. The country has not conducted any regular comprehensive land monitoring surveys since independence. Furthermore, due to lack of financing the land inventory recently prepared by the National Academy of Sciences has not yet been published.

\(^1\) United Nations Convention to Combat Desertification.
Table 7.2: Regional distribution of land degradation, thousand ha

<table>
<thead>
<tr>
<th>Oblast</th>
<th>Agricultural land</th>
<th>Salinized 1) soils</th>
<th>Solonetzic 2) soils</th>
<th>Waterlogged</th>
<th>Rocky</th>
<th>Deflation 3) (wind erosion)</th>
<th>Affected by water erosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jalal-Abad</td>
<td>Non-irrigated</td>
<td>16.2</td>
<td>6.1</td>
<td>2.0</td>
<td>610.8</td>
<td>861.0</td>
<td>861.0</td>
</tr>
<tr>
<td></td>
<td>Irrigated</td>
<td>33.0</td>
<td>2.0</td>
<td>8.0</td>
<td>262.0</td>
<td>920.0</td>
<td>1'348.0</td>
</tr>
<tr>
<td>Osh</td>
<td>Non-irrigated</td>
<td>77.3</td>
<td>15.6</td>
<td>9.8</td>
<td>685.3</td>
<td>830.6</td>
<td>830.6</td>
</tr>
<tr>
<td></td>
<td>Irrigated</td>
<td>77.0</td>
<td>16.0</td>
<td>88.0</td>
<td>267.0</td>
<td>893.0</td>
<td>784.0</td>
</tr>
<tr>
<td>Batken</td>
<td>Non-irrigated</td>
<td>27.4</td>
<td>11.3</td>
<td>14.7</td>
<td>320.2</td>
<td>447.2</td>
<td>447.2</td>
</tr>
<tr>
<td></td>
<td>Irrigated</td>
<td>119.0</td>
<td>36.0</td>
<td>132.0</td>
<td>229.0</td>
<td>302.0</td>
<td>335.0</td>
</tr>
<tr>
<td>Issyk-Kul</td>
<td>Non-irrigated</td>
<td>84.3</td>
<td>1.9</td>
<td>40.4</td>
<td>429.0</td>
<td>1'026.7</td>
<td>1'026.7</td>
</tr>
<tr>
<td></td>
<td>Irrigated</td>
<td>160.0</td>
<td>6.0</td>
<td>90.0</td>
<td>234.0</td>
<td>1'309.0</td>
<td>921.0</td>
</tr>
<tr>
<td>Naryn</td>
<td>Non-irrigated</td>
<td>647.1</td>
<td>332.3</td>
<td>28.1</td>
<td>1'210.0</td>
<td>1'066.7</td>
<td>1'066.7</td>
</tr>
<tr>
<td></td>
<td>Irrigated</td>
<td>161.0</td>
<td>115.0</td>
<td>5.0</td>
<td>447.0</td>
<td>760.0</td>
<td>2'175.0</td>
</tr>
<tr>
<td>Talas</td>
<td>Non-irrigated</td>
<td>15.4</td>
<td>7.2</td>
<td>5.0</td>
<td>451.4</td>
<td>711.4</td>
<td>711.4</td>
</tr>
<tr>
<td></td>
<td>Irrigated</td>
<td>56.0</td>
<td>65.0</td>
<td>5.0</td>
<td>136.0</td>
<td>942.0</td>
<td>739.0</td>
</tr>
<tr>
<td>Chui</td>
<td>Non-irrigated</td>
<td>286.1</td>
<td>96.8</td>
<td>18.6</td>
<td>314.5</td>
<td>746.2</td>
<td>746.2</td>
</tr>
<tr>
<td></td>
<td>Irrigated</td>
<td>1'600.0</td>
<td>600.0</td>
<td>3.0</td>
<td>386.0</td>
<td>1'385.0</td>
<td>1'346.0</td>
</tr>
<tr>
<td>Total</td>
<td>Non-irrigated</td>
<td>1'180.8</td>
<td>471.2</td>
<td>118.6</td>
<td>4'021.2</td>
<td>5'689.8</td>
<td>5'689.8</td>
</tr>
<tr>
<td></td>
<td>Irrigated</td>
<td>2'200.0</td>
<td>818.0</td>
<td>331.0</td>
<td>1'961.0</td>
<td>6'511.0</td>
<td>7'648.0</td>
</tr>
</tbody>
</table>


Notes:
1) soil contaminated with salts.
2) soil, often called burnout or gumbo soil, characterized by a tough, impermeable hardpan that may vary from 5 to 30 cm or more below the surface.
3) deflation is the lowering of the land surface due to removal of fine-grained particles by the wind.

Erosion, and in particular wind erosion, is of a special concern (table 8.2). Wind erosion is quite common due to unsustainable agricultural practices on pasture and arable land. The areas particularly prone to wind erosion are located in the west, adjacent to the Issyk-Kul area, the Kochkor hollow, the eastern part of Kemin rayon, the western part of the Kara-Bura rayon and in some rayons of Osh and Batken oblasts.

Irrigation erosion is another severe and widespread phenomenon, affecting 97 per cent of irrigated land due to the poor state of irrigation systems (surface watering, gravity type). For instance, a single application of water on irrigated land washes off from 0.05 to 20 tons of silt, which reduces soil fertility and leads to water pollution.

Salinization and waterlogging also affect arable land mostly in irrigated valleys. The use of inefficient and outdated irrigation technologies, the low standard of agricultural practices and the destruction of drainage networks have contributed to the intensification of these processes.

Current farming system and practices do not ensure a sound humus balance. In most places, the humus content in arable land has dropped by 30–45 per cent compared with virgin lands. According to experts, the fertility of arable land, in particular that under irrigation, is in critical condition.

Altogether, these different types of land degradation in Kyrgyzstan cause great economic damage. The reduction in crop yield is estimated from 20 to 60 per cent.

Use of fertilizers and pesticides

The country generates about 4 million tons of organic fertilizer (manure) a year and 70–80 per cent is traditionally used as household fuel. The annual application of organic fertilizers normally stands at around 1 million tons (in 2006, 649,600 tons, or some 0.5 tons per 1 ha of arable land). These amounts are largely insufficient to maintain soil fertility.

Since the breakup of the former Soviet Union, the use of mineral fertilizers has been very limited, constituting approximately 10–15 per cent of what is needed (some 25 kg/ha of arable land). Kyrgyzstan does not produce...
mineral fertilizers, and imported ones are too expensive for farmers. The Government offers minimal support in this regard. Nitrogen fertilizers are mostly used, while phosphate and potash fertilizers are more rarely applied.

Unlike mineral and organic fertilizers, pesticide use is still quite heavy in Kyrgyzstan. In 2006, 996 tons were applied, including 140 tons of herbicides, 562 tons of fungicides and 294 tons of insecticides. A control system over pesticide imports has been established. The former system, administered by the firm “Selkhoz Khimia” (“Agricultural Chemistry”) with specialized machinery and trained staff, collapsed. Today, the country is left with over 100 private providers of pesticides and mineral fertilizers services with poor equipment and often unprofessional staff. The good practices of pesticide use are no longer followed, in particular since the abolition of licensing for this environmentally hazardous activity in 2002, a decision which appears particularly ill-founded. Moreover, there is no system in place to monitor pesticide residues, or the content of heavy metals, in agricultural soil, and consequently no relevant information is available.

Storage of obsolete and banned pesticides, including persistent organic pollutants

The storage of obsolete and unused pesticides, including those containing persistent organic pollutants (POPs), poses a serious problem for Kyrgyzstan. After the “Selkhoz Khimia” system was denationalized, no subsequent reporting has taken place, and therefore full and reliable information is lacking. In the course of preparing the 2006 National Plan on the Implementation of the Stockholm Convention on POPs (see chapter 4), the stocktaking of storage sites detected 104.7 tons of outdated pesticides, including 31.9 tons of POPs. Unauthorized POP-containing pesticides may continue to appear in the country, as they are smuggled and stolen from unsecured burial sites, and because private farms still have some in stock. In highland areas (e.g. Naryn, Issyk-Kul and Talas) where the main rivers originate, obsolete pesticides are stored in buildings that fail to meet safety and reliability standards. In the event that the storage facilities were destroyed and obsolete pesticides were released into the environment, it would cause the pollution of a great amount of territory downstream. Some farms store unused mineral fertilizers and pesticides in inappropriate ways, often simply disposing of them on unused land.

Degradation of natural pasture land

In Kyrgyzstan, nomadic grazing is a major traditional use of land: of the 10.77 million ha of Kyrgyz agricultural land, natural forage land accounts for 87 per cent or 9.4 million ha (pasture land and hayfields). The share of natural forage land in the annual feed balance is 70–90 per cent, so pastures play a major role in fodder provision. Pasture land is the sole property of the State. Some pasture land is part of the reserve land. The grassland management system has led to the overgrazing of near-village pastures (grazed on the average 3.2 times in excess of an ecologically sound grazing), while remote natural pastures, which accounted for 70 per cent of the annual feed balance in the Soviet times, are hardly used these days. To use remote pastures for grazing, a herd should be consist of at least 300 to 500 sheep. However, small-scale private farmers – who own on average three to five sheep and one to two cows – are not able to amass such herds, even collectively, and their cattle graze near villages almost the whole year around.

Measures to protect and improve pasture land have not been taken. As a result, the badly maintained water supply canals are becoming unusable nearly everywhere, accelerating pasture degradation. According to Gosregistr (which keeps the land inventory) and the Ministry of Agriculture, Water Management and Food Processing Industry, 36 per cent of the 3.7 million ha of remote (distant) pastures are in a stage of degradation; of the 3.1 million ha of pastures under intensive use, 50 per cent have degraded; and of the 2.4 million ha of near-village pastures, 70 per cent are classified as degraded. The main types of pasture degradation are shrub overgrowth (4.1 million ha), inedible weeds (5.1 million ha), wind and water erosion (2.4 million ha) and as a consequence the loss (via erosion) of the topsoil.

A current key management concern is the lack of common ownership for pasture land. According to law, near-village pastures come under the jurisdiction of municipalities, pastures under intensive use come under rayon State administration and remote pasture land comes under oblast State administration. In practice, farmers-raising cattle face numerous difficulties such as bureaucracy, corruption and/or a lack of legal knowledge when they try to sign a pasture lease. At the moment, farmers officially lease only about 1 million ha of grassland. The remaining part, i.e. 90 per cent of pasture land, is State property.
A draft Law on Pastures provides for the decentralization of pasture management and the development of local cooperation. Legislative support, season-linked increase in lease payments for near-village pasture, encouragement of community-based consolidation (cooperation), and tighter control of pasture utilization could foster sustainable pasture management and reduce pressures on near-village pastures.

**Box 7.1 Promoting a sustainable use of pastures at local level**

The Community-based Rangeland Management project in Temir Village (UNDP, 2004–2007) has the dual objective of improving environmental stewardship and alleviating poverty. The Community-based Rangeland Management Plan covers about 30,000 ha and envisages a set of measures aimed at putting into practice sustainable pasture management principles and improving the pasture infrastructure.

The primary project goal was to have a pasture rotation regime implemented by the local community. They decided that the livestock would be moved from overgrazed village pastures to the remote mountain pastures by 15 April of each year. This procedure has been implemented since 2006. It allows for a more rational and sustainable approach to using local pastures, via reducing the burden of overgrazing on most degraded near-village pastures.

**Mine tailings and mine waste deposits**

According to the State Registry of Tailings and Mining Dumps, there are 92 locations where toxic and radioactive mining waste has accumulated, totaling 250 million m³ in the country. Extraction of mineral resources (mainly gold, coal, oil, uranium and natural gas) is currently of limited scope and overall the related environmental pressures is not significant, although it can be of significant impact locally.

By Government Resolution No 161 of March 1999, the maintenance and rehabilitation of 36 tailing sites with a total size of 13.35 million m³ and 25 refuse heaps totaling 2.35 million m³ that have remained derelict since the Soviet times, were transferred under the competence of the Ministry of Emergencies. Of these 36 tailing sites, 31 contain radioactive waste, including 28 with uranium waste, 3 with thorium-containing polymetal waste, and 5 with non-ferrous metal waste. The total volume of radioactive waste is 8.2 million m³; non-ferrous metal waste, 5.15 million m³. These tailing sites have not been designed to cope with long-term effects, in particular exposure to natural processes (e.g. landslides, flooding and mudflows), nor have they been protected against unauthorized access by people. International and national experts estimate the risk of radiation-related ecological disasters as very high, with the possibility of contamination not only of Kyrgyz territory, but territories of Kazakhstan, Tajikistan and Uzbekistan as well, with a potential impact on a population of some 5 million people.

Since 1999, the Ministry of Emergencies has used insignificant national funds to rehabilitate the primary waterworks and protective constructions, establish a monitoring network and ensure temporary safety of tailing sites. The Ministry systematically conducts surveys to assess needs such as emergency recovery work, tailing sites radiological monitoring and restoration and repair of water-related hydraulic facilities. To ensure environmental safety of the Central Asian region against radioactive contamination, in 2004 the Ministry of Emergencies developed a Comprehensive Priority Action Plan that lists rehabilitation and restoration of tailing sites as a priority (with an estimated cost over $38.1 million). the Ministry currently cooperating with international organizations (e.g. World Bank, ADB, OSCE, UNDP) and donor countries (e.g. Czech Republic, United States of America) to rehabilitate and restore the tailing sites, to monitor their condition and to reduce the hazard they present to the population.

**Box 7.2: The ecological hot spot of Mailuu-Suu**

There are 23 tailing sites (1.99 million m³) and 13 refuse heaps (940,500 m³) containing uranium waste within the territory of Mailuu-Suu, Jalal-Abad oblast. The average on-surface gamma radiation is 30–60 mR/h, spiking up to 500 mR/h in some areas.

The biggest threat at the moment originates from tailing sites No. 3, 5, 7 and 18 in the Mailuu-Suu valley and tailing site No.13 down in the Ailampa-Sai valley. The risk of their being damaged and destroyed by landslides and mudflows is very high. This serious problem was underlined in the first EPR of Kyrgyzstan.

The estimated cost of the priority restoration and rehabilitation of the tailing sites is estimated at $16.8 million, with $7.4 million budgeted for the rehabilitation of the Mailuu-Suu sites. This is part of the $10.95 million World Bank project, "Preventing Emergencies" (2005–2009), designed to address the problems connected with uranium tailing
sites and strengthen national capacity with respect to emergency prevention. The project is being implemented by the Ministry of Emergencies. Complete implementation of the restoration and rehabilitation activities at the Mailuu-Suu territory is awaiting adequate financing.

7.3 Policy and legal framework

Legal framework

The legal framework for land management is contained in the 1999 Land Code, the 2005 Water Code and the 1993 Forestry Code, as well as other laws and legal acts governing the use of pastures and arable land (see annex IV). The land-use legislation was primarily adopted in the period 1999–2001, even though numerous amendments have been brought into regulatory acts since then (e.g. the Land Code has 17 amendments). Other relevant legal provisions on land use can be found in the 2001 Law on the Management of Agricultural Lands, the 2002 Law on Mountainous Areas, the 1999 Regulations on the State Control of Land Use and Protection, the 1999 Regulations on Monitoring of Agricultural Land and the 2002 Regulations on the Procedure of Renting and Using Pastureland.

Practically all legal acts are quite general and the supporting regulations have not been adequately developed. There is no harmonization of the terminology used in various legal acts, and laws contain many reference provisions that are not clearly linked to other relevant legal acts. Landowners, users and local authorities have difficulty making sense of the dispersed and heavily amended regulatory framework. For example, existing national legislation does not contain definitions for "land" or "soil", although a variety of legal acts and technical regulations – as well as State programmes on sustainable land management – use both these terms extensively. Moreover, the Land Code and relevant by-laws use the term “land” (e.g. the Law on the Management of Agricultural Land, the Regulations on State Control over Land Use and Protection), while normative legal and technical documents on soil pollution evaluation use the term “soil” (e.g. the Regulations on State Sanitary and Epidemiological Valuation, the Hygienic Valuation of Chemical Substances in Soil). At the same time, a methodology to calculate damage caused by land pollution that bases itself on the hygienic valuation of chemical substances in soils uses the term “land” (Resolution of the Government on Material Liability for Damage Caused by Land Deterioration N 696 of 27 September 2006). Finally, the two terms appear in the Agricultural Land Monitoring Regulations without any clarification, definition or specification.

Likewise, national land legislation offers no uniform interpretation on the subjects of legal relations. For instance, paragraph 1 of the Council of Ministers’ Decision on Material Liability for Damage Caused by Land Deterioration determines that “enterprises, organizations and other economic entities (regardless of ownership and type of business) whose action or omission of action caused land deterioration” must provide compensation for damage inflicted, i.e. this definition excludes individuals. On the other hand, pursuant to the Land Code, land protection (arts. 95 and 96) is exercised by owners of land plots and land users, whereas article 1 defines a land user as “an individual or a legal entity who uses a land plot based on a right provided, transferred or passed to him/her for indefinite (the period is not defined) or temporary use”. This includes both companies and individuals. The Land Code and the other laws contain provisions that restrict the inappropriate use of land, but resources to implement these provisions are limited. In addition, the legal framework is incomplete, e.g. there is still no legislation on pasture land. In May 2007, the President entrusted the Government and the Parliament with preparing a law on pasture as a component of the Country Development Strategy for 2007–2010. The draft Law on Pasture is at the approval stage.

To conclude, there is currently no well-tested consolidated regulatory framework that would enable a clear protection of land property and provide guidance in the intricate business of land relations. The legal regulation of land management and protection is not able to cope with the new context existing after independence.

Land reform and land privatization

Following a referendum on privatization, private ownership of land was instituted in 1998 through a constitutional amendment. The Land Code was amended and 75 per cent of arable lands were allocated for privatization and 25 per cent for the State-owned Land Redistribution Fund (LRF). After only 18 months, the
Law on Agricultural Land Management (2000) lifted the five-year moratorium on agricultural land sales established in 1998. However, pastures still come under the sole ownership of the State.

As a result of the land and agrarian reform, in the past 10 years more than 75 per cent of cropland has been divided into land plots and is privately owned by farmers. More than 80 per cent of the rural population is now agricultural landowners. The ownership of all housing and suburban areas was also transferred into private ownership. 2.7 million people, or about 530,000 families, are private landowners of 1.052 million ha.

**Figure 7.5: Distribution of farms depending on the size of land plots**

![Distribution of farms depending on the size of land plots](image)


The very small size of land plots of farms is a problem (figure 7.5): 72 per cent of farms have less than 0.2 ha of arable land and only 3 per cent are larger than 5 ha. This fragmentation of arable land is a serious obstacle to sustainable land use. The prevailing small-scale production leads to destruction of soil fertility because inadequate agricultural technologies are used. Given the too-small size of land plots, it is quite difficult to maintain crop rotation and to carry out anti-erosion measures.

From the very beginning, agricultural land reform has chiefly targeted land re-distribution. Concurrently, measures to improve the quality of agricultural land have practically ceased, with no amelioration activities being undertaken.

Land privatization and poverty have resulted in about 30 per cent of arable land being uncultivated. These uncultivated lands have begun to become overgrown with weed vegetation and reed, and rehabilitating them for cultivation and crop rotation will require substantial investment.

In 2004, the President and the Government called for the establishment of farmers’ associations (cooperatives) and in the view that such cooperation was a critical tool to achieving sustainability in the agrarian sector. Feasible mechanisms and incentives for this complicated process, however, have thus far not been developed and applied in practice.

**Land cadastre**

Since 2003, a Land Cadastre, including a system of registration of the immovable property rights, was compiled in Kyrgyzstan for the first time. It was conducted by Gosregister within the framework of the World Bank project, “Restructuring the Land and Real Estate Management System”. State registration of the rights is carried out free-of-charge to owners. The registration step has been finalized, but an electronic database for
land parcels in rural areas is still under development. A project proposal for this database has been submitted to the World Bank.

According to the 2007 State land inventory, agricultural land covers an area of 1,345.7 million ha. However a detailed land inventory carried out under the USAID-sponsored Land Reform and Market Development Project (2006–2008) has shown (a) that the actual land under cultivation is roughly 1.7 million ha and (b) that the country has about 0.4 million ha of undocumented cropland. Most of the latter is under the jurisdiction of the municipalities, but the status of this undocumented cropland is undefined. Part of non-privatized land is included in the privatization fund, another part is land not registered in the cadastre, and the last part is land from the Land Redistribution Fund (LRF). The undefined legal framework for the LRF makes its management ineffective and causes local corruption, non-transparent land lease conditions, inaccurate information in Gosregister, and a lack of capacity to plan for the society’s future needs. In 2007, the Government took a series of measures to improve this situation and adopted the Standard Regulations on the Terms, Conditions and Procedure of LRF Land Lease. A cadastral survey of the 120 municipalities will be completed soon, laying down the foundation for making LRF land management more orderly.

Spatial planning

The country’s territory is administratively divided into seven regions (oblasts). Bishkek and Osh have a special status as cities of national significance. At the local level, 39 districts (rayony), 21 towns, 29 urban villages and 1,802 villages are the administrative and territorial units. In turn, administrative districts are divided into 472 municipalities (aiyl okmotu). These aiyl okmotu are numerous, small and sometimes not unified in spatial terms (there are enclaves within the boundaries of other municipalities). This leads to the fragmentation of local resources, administration challenges and excessive costs to support management personnel, with the result that even on the municipal level basic spatial planning activities are often not carried out. A draft Law on Territorial Administrative Reform, to re-organize and consolidate the administrative and territorial system and its public administration, has been submitted to the Parliament. Practically no land-use planning schemes have been developed at rayon level, although it was traditionally used in Kyrgyzstan and the former Soviet Union as the basic one. Such schemes rely on a well-developed scientific foundation and certain practical experience, which are not yet present.

Despite rapid urbanization, Bishkek had no master plan until 2007. A draft master plan for Osh has not yet been approved. In general, issues of urban development and sprawl are largely neglected. Bishkek has no legal area zoning which would determine what is allowed, accepted and prohibited in terms of area use within each zone. Plans for Bishkek, Osh and Issyk-Kul require approval by the Government. For all other cities, plans are approved by oblast authorities. Under the Land Reform and Market Development Project, USAID developed the Rules of Development and Land Use for 11 pilot towns, which was endorsed by local authorities (for Balykchy, Batken, Jalal-Abad, Kara-Balta, Karakol, Naryn, Osh, Talas, Tokmok, Uzgen and Cholpon-Ata). The introduction of a legal zoning system for urban territories has resulted in increased investments as well as simpler and more transparent procedures of allocating land parcels for development. With the financial support of the Government of Japan, a land-use plan for the Lake Issyk-Kul resort area has also been developed. Unfortunately, the document is very general, does not contain a plan to raise investment funds and has hardly been implemented. National and local authorities have not established effective control for the implementation of spatial planning schemes. Violations of construction rules and environmental legislation is therefore frequent is this area, which is submitted to significant pressures due to tourism (see box 2.2 in chapter 2).

In summary, since 1990 spatial planning in Kyrgyzstan has been fragmentary and sporadic. Related legal and information support, research and staff training are at low levels.

Environmental and agricultural policies and strategies

The Country Development Strategy for 2007–2010 proclaimed environmental safety to be a priority. Ecosystem restoration and degradation prevention, which covers the problems of sustainable land use and protection, is listed as one of the critical areas. These policies are given more substance in the Ecological Security Conception (2007), which incorporates desertification and land protection in its priorities.
In terms of agricultural policy, two important documents have been adopted that concern land management and protection: the 2004 Law on New Directions and Measures of Land and Agrarian Reform and the 2004 Agrarian Policy Concept until 2010. These define how the farming economy and corporate agricultural enterprises should develop, the decentralization of land management should be carried out and sustainable use of land should be performed. So far, these policies have not been seriously implemented.

Other policy objectives and legal acts envisage the integration of sustainable use and protection of land in other sectors of activities (e.g. agriculture, mining). However, the formulation of policy and definition of specific activities are typically unclear and are scarcely applied in practice.

Projects and programmes

A number of national programmes supporting sustainable land use and protection and relying on own national resources (the Land Programme (2000–2005), the Melioration Programme (2004–2008), the Agricultural Land Monitoring Programme for 1999–2005 and Beyond, and the National Environmental Action Plan (NEAP) have shown the Government’s limited capacity to execute such programme successfully (mainly due to lack of funds). Therefore, the Government and the public authorities concerned have recently relied chiefly on international assistance to support land protection and sustainable use activities. A number of international projects addressing sustainable land management have been implemented (e.g. Community-based Rangeland in Temir Village (2005–2007; Canadian International Development Agency/Global Mechanism/UNDP); the Kyrgyz Agriculture Support Services Project (1998–2006; Swiss Agency for Development and Cooperation/World Bank/Government of Switzerland); the On-farm Irrigation Project (2000–2007; World Bank); Land Reform and Market Development Project (2004–2008; USAID); Promotion of Trade and Service Cooperatives (2003–2005; GTZ)). These ambitious pilot projects have achieved success, but only within local project sites, and in general they have no effect on the overall land use situation in the country. Frequently, pilot projects are not pursued beyond the project life and are not further used to disseminate best practices and lessons learned.

The National Framework Programme (NFP) on Land Management (2006–2016) within the framework of the Central Asian Countries Initiative for Land Management (CACILM) is an attempt to address the limitations and constraints of national programmes and certain technical assistance projects (see chapter 4). NFP, approved by the Government in 2006, is currently being implemented. It is a comprehensive package of projects and programmes addressing land degradation and the need for sustainable management of land, water and natural resources, including forests and pasture land. The prospective cost of the NFP at the initial stage of implementation is $68.3 million, with much of the initial cost to be financed by grant resources from potential donor agencies and from the Global Environmental Fund (see chapter 4).

Institutional framework

The main executive agencies and departments responsible for the creation of national policy and the drafting, implementing and coordination of legislation and control of land management and protection are:

- The Ministry of Agriculture, Water Management and Food Processing Industry, which together with local administrations is responsible for the formulation and implementation of an agricultural development strategy. The Ministry is the only State authority carrying out executive, regulatory and coordination functions aimed at developing and implementing a unified policy in rural areas and coordinating the activities of local agriculture authorities.

- The State Agency of Registration of Immovable Property Rights (Gosregistr) is the State body responsible for the development of land legislation, the registration of rights to real estate and the implementation of a unified policy in the areas of: (a) registration of rights to real estate; (b) regulation of land management; (c) creation and management of the land cadastre; and (c) the development of a property market. Gosregistr includes local registration bodies, area centres for real estate and land resources, and organizations carrying out development of geodesic and cartographic work.

- The Institute “Kyrgyz Giprozem” and the Agrochemical Soil Station are responsible for land monitoring, soil surveying and land planning. The inspection function of Gosregistr is clearly separated
from its other functions and this task is being performed by the Inspectorate on State Control over the Use and Protection of Lands (Land Inspectorate).

- The **State Agency of Environmental Protection and Forestry (SAEPF)** is the State body responsible in particular for protected areas and protection and management of forest territories (see chapter 1).

- The **Ministry of Emergencies** is responsible for the prevention of emergencies, civil defence and the inspection of mining areas. The Ministry carries out a number of activities to ensure the security of the population in the event of emergencies of a natural, ecological and technogenic nature.

- The **Ministry of Health Care**’s area of competence includes sanitary control of public lands and territory.

The major weaknesses of the land management system are the lack of a clear and consolidated legal basis and ineffective distribution of roles and responsibilities between ministries and State agencies. Information flow between the authorities is limited, and the regulations issued by the different authorities are not fully streamlined.

State land environmental control is shared between different governmental institutions and is not well coordinated:

- According to its statute, the Land Inspectorate of Gosregistr should ensure supervision of all aspects of land management and protection. In practice, the Land Inspectorate deals only with legal requirements regarding land allocation for different users as well as the collection of land tax. Only a small portion of violations is related to land re-cultivation after mineral resources extraction. There are practically no violations formally recorded linked to soil degradation. The full staff of the Land Inspectorate comprises 62 persons (13 in the central office, with only one inspector in each rayon (not provided with a car). Shorthanded, poorly equipped and administratively (and structurally) dependent on Gosregistr, the Land Inspectorate is unable to exercise its functions in an independent and comprehensive manner.

- Within SAEPF, there is no organizational unit for land protection. This function fall under the State Environmental Control Division, which is responsible for different aspects of the environment, e.g. air, water and waste., and has a very limited staff. Therefore, efficient land control cannot be ensured.

**Scientific research**

A number of scientific institutes engage in research on land use (e.g. Institutes of Land Cultivation; of Cattle Breeding, Veterinary and Pastureland; of Irrigation; and of Agrarian Economy; as well as the National Centre for the Production of Plant Protection Bio-organisms, the Institute “Kyrgyz Giprozem” and the Agrochemical Soil Station). Since the break-up of the former Soviet Union, research institutions have faced serious financial constraints and areas of research and the numbers of researchers have decreased dramatically; scientific manpower is also ageing. In consequence, the needs-driven research and the dissemination of research results among the target groups necessary to reinforce and implement policies and programmes (e.g. to support sustainable land management and sustainable agricultural practices) has not sufficiently developed. This is particularly urgent, as the privatization of lands has a considerable impact on agriculture practices.

**Land monitoring**

In the past 17 years agricultural land monitoring was implemented selectively and was not conducted regularly, affecting the comprehensiveness and reliability of the information obtained. These activities have either been reduced to a minimum or have stopped entirely due to the lack of financial resources: for instance, Kyrgyzhydromet ceased its monitoring of soil pollution in 1993 (see chapter 3). The data on the soil quality indicators in the State land cadastre has not been updated since 1990. Practically no consistent information is available on humus changes or the content of nutrients, salinization, heavy metals distribution, nor on the nitrate and radionuclide content in agricultural soil. The Department on Use of Chemicals to Protect Plants and Phyto-sanitary Control of the Ministry of Agriculture, Water Management and Food Processing Industry does
not properly monitor pesticide residues in agricultural soils. Background soil monitoring is not performed, and there is no system to monitor urban soils.

To ensure the timely disclosure of changes in agricultural land use and the assessment and prevention of any negative consequences of these changes, in 1999 the Government approved the Regulations on the Monitoring of Agricultural Land and entrusted Gosregistr to carry out land monitoring activities. All agricultural land is subject to monitoring. This work fall into two basic areas: (a) monitoring of arable land and (b) monitoring of pasture land. In addition, a Programme for Agricultural Land Monitoring 1999–2005 was adopted by the Government Decree N 115, of March 1, 1999. Unfortunately, due to financial constraints it has not been put into practice.

7.4 Conclusions and recommendations


It is crucial that Kyrgyzstan fully implement these programmes, which would require financial mechanisms to be strengthened in order to: (a) support programme activities, local communities and authorities; (b) enhance deeper, coordination between all stakeholders (e.g. national and local public authorities, private sector, local communities, NGOs, academia); and (c) improve information exchange and mechanisms to disseminate best practices.

International donors are involved in the implementation of projects in Kyrgyzstan addressing sustainable land management and protection. Despite the successful implementation of a large number of pilot projects focused on sustainable land management and good agricultural practices in the period 2000–2007, evidence of very slow change and is coupled with land degradation, a decline in agricultural production indicators and an increase in poverty in rural areas. It is therefore crucial to combine national and international sources of funding to ensure adequate implementation of the National Framework Programme on Land Management (2006–2016) and wide dissemination of the positive lessons learned. Agricultural extension services (i.e. Rural Advisory Services in Kyrgyzstan) could be an effective tool to disseminate good agricultural practices through better pasture management, integrated pest management, improved cultivation patterns and organic farming.

Recommendation 7.1: The Government, the Ministry of Agriculture, Water Management and Food Processing Industry, the State Agency of Environmental Protection and Forestry, the State Agency of Registration of Immovable Property Rights and local authorities should act in concert to implement the 2000 National Action Programme to Combat Desertification and the 2006 National Framework Programme on Land Management, by carrying out specific pilot projects as a first step. Furthermore, they should ensure that pilot steps further concretize into large scale projects or programmes.

Recommendation 7.2: The Ministry of Agriculture, Water Management and Food Processing Industry should the application of good agricultural practices, including organic farming, and sustainable land and water management. To this end, agricultural extension services should be strengthened. Where farmers cannot afford these services, they should be provided free-of-charge.

Grazing is a traditional agricultural sector in Kyrgyzstan, and pasture land covers 9.2 million ha (nearly 50 per cent) of the country’s area; herding is an important element of the traditional way of life of the Kyrgyz people. Following land privatization, the collapse of collective farms and the emergence of over 530,000 small farms, substantial problems have emerged with regard to pasture use and conservation. The current three-tier pasture management system is ineffective, prone to abuses (corruption) and lacks transparency. The measures
undertaken by the central and local authorities to address the situation are insufficient and do not rely on the proper legal foundation. Therefore the three-tier system should be abolished.

The draft Law on Pastures contains the necessary provisions to improve management of pasture resources on the basis of decentralization and increasing the role of local communities. The law would create the necessary legal prerequisites for development of an economic mechanism to stimulate sustainable use of pasture, the growth of investment to improve pasture management, alternative pasture use (e.g. tourism, hunting, beekeeping, cultivation of medicinal herbs) and pasture restoration and preservation.

In addition, it is very important to transfer traditional knowledge and practices in cattle breeding to farmers, many of whom possess neither the educational background in agriculture nor relevant experience. Approaches and methods of traditional system of cattle breeding in mountainous areas have been formed over centuries and are based on the invaluable experience of the harmonious environmentally friendly interaction of a human being and the nature. This experience needs to be summarized and widely disseminated among new farmers, who lost or do not get skills in traditional cattle breeding.

**Recommendation 7.3:**
The Government should ensure that decentralization of pasture management and the development of local farmer cooperatives are properly reflected in the draft Law on Pastures, and should submit the draft law to the Parliament for approval. Further to the draft law, a State programme should be developed and implemented to promote traditional cattle-raising practices as well as modern, scientifically grounded and environmentally friendly animal husbandry technologies, community-based pasture management and pasture conservation and restoration.

Spatial planning is an important tool for sustainable development in any country. It is not used adequately in Kyrgyzstan. Rayon land-use planning schemes, a basis for improved spatial planning, have not advanced since 1990; except in a few cases where projects have started recently, nothing has been seriously implemented. Informal settlements, in particular in the suburbs of the large cities and in zones where tourism activities are actively developing, are not contained. There is no zoning, which exacerbates the risk of natural disasters where human settlement should be strictly prohibited.

It is necessary to strengthen and create legislative frameworks related to land planning schemes and to develop supporting implementation and financing mechanisms. In the context of private landownership, robust and uncontrollable urbanization through the legal and often illegal transformation of agricultural land into residential areas and escalating land degradation, integrated spatial environmental protection schemes for problem areas of Kyrgyzstan become highly relevant, and even critical, for the country.

Finally, reviving rayon level of spatial planning with the use of modern GIS technologies should be viewed as a priority task.

**Recommendation 7.4:**
The Government, the State Agency of Registration of Immovable Property Rights and the State Agency on Architecture and Construction should develop a national framework on spatial planning, including a law, a strategy, an action plan, and corresponding budgets. Responsibilities of national, regional and local authorities vis-à-vis spatial planning should be clearly defined, and adequate resources allocated. As a first immediate step, the national land inventory should be made available.

Availability of adequate information on soil condition and land degradation processes is vital for decision makers to ensure sustainable land management and protection. This would allow for accurately assessing changes, estimating their dynamics in due time, elaborating measures on their prevention and remediation, and providing control of effectiveness of measures undertaken. It is also necessary to initiate background soil and urban settlement soil monitoring.

Unfortunately, no land monitoring has been undertaken since 1990. The adoption of the Regulations on the Monitoring of the Agricultural Lands and the Agricultural Land Monitoring Programme in 1999 have not improved the situation due to lack of financial support for the planned activities, which therefore have not been implemented. Work should urgently resume to ensure proper land monitoring.
Recommendation 7.5:
The State Agency of Registration of Immovable Property Rights, the Ministry of Agriculture, Water Management and Food Processing Industry and the State Agency of Environmental Protection and Forestry should take the necessary measures to establish and develop land monitoring that corresponds to national priorities and needs and meets criteria and approaches defined for regional cooperation under the Central Asian Countries Initiative for Land Management and the 10-year Strategic Plan and Framework to Enhance the Implementation of the United Nations Convention to Combat Desertification.
Chapter 8

BIODIVERSITY CONSERVATION AND SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES

8.1. Biodiversity status

Species

Kyrgyzstan is a mountainous country covering a variety of climatic habitats, ranging from glaciers to subtropical to temperate ecosystems. It lies at the centre of the Central Asian biodiversity hot spot, with a high density of endemic species representing Himalayan flora and fauna biotypes. Despite the country’s small size (0.13% of the world’s landmass), it has a good representation of all terrestrial taxonomic groups, hosting nearly 1 per cent of all known species on Earth (table 8.1). This indicator is higher than expected for a country of this size in this subregion, with above-average species richness for Central Asia.

Table 8.1: Species richness and number of threatened species in Kyrgyzstan

<table>
<thead>
<tr>
<th>Taxonomic group</th>
<th>Number of species</th>
<th>% of world number</th>
<th>Number of species in the national Red Book*</th>
<th>% of Red Book species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower plants</td>
<td>3'676</td>
<td>5.0</td>
<td>4</td>
<td>0.1</td>
</tr>
<tr>
<td>Higher plants</td>
<td>3786</td>
<td>1.5</td>
<td>95</td>
<td>2.5</td>
</tr>
<tr>
<td>Annelid worms</td>
<td>12'822</td>
<td>3.5</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Molluscs</td>
<td>168</td>
<td>0.3</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Insects</td>
<td>10'242</td>
<td>1.2</td>
<td>18</td>
<td>0.2</td>
</tr>
<tr>
<td>Fish</td>
<td>75</td>
<td>0.4</td>
<td>6</td>
<td>8.0</td>
</tr>
<tr>
<td>Amphibians</td>
<td>4</td>
<td>0.1</td>
<td>2</td>
<td>50.0</td>
</tr>
<tr>
<td>Reptiles</td>
<td>33</td>
<td>0.5</td>
<td>8</td>
<td>24.2</td>
</tr>
<tr>
<td>Birds</td>
<td>368</td>
<td>4.1</td>
<td>53</td>
<td>14.4</td>
</tr>
<tr>
<td>Mammals</td>
<td>83</td>
<td>2.1</td>
<td>26</td>
<td>31.3</td>
</tr>
</tbody>
</table>

* Number of Red Book species is updated based on the 2008 official list.

Records for different taxa\(^1\) are uneven. Species richness of higher vascular plants and vertebrates is better known. Lower plants (including fungi) and invertebrates have also been studied intensively. A number of species are found only in Kyrgyzstan. These endemic species and subspecies include over 200 plant species, around 3,240 invertebrate species, including 2,760 endemic insects and 17 vertebrate species, as well as a further 47 subendemic vertebrates. Almost 30 per cent of arthropods and nearly 60 per cent of molluscs are thought to be endemic.

The use of species that are listed in the national Red Book (e.g. hunting, collection) is forbidden in Kyrgyzstan (with few exceptions), but there is no requirement to develop national species action plans (or recovery plans) for listed species. Species conservation measures are restricted by establishment and management of protected areas and few rehabilitation centres (e.g. the ex-situ measure), mostly associated with the protected areas (see section 8.3). The only exception is Ovis ammon; a national programme was developed and adopted for this species’ conservation in 2004. There are no other similar programmes (e.g. action plans or recovery plans) for any other endangered species.

\(^1\) Taxa, plural of taxon: any taxonomic group or rank
Ecosystems

There are no unified data on types and areas covered by the different ecosystems in Kyrgyzstan (table 8.2). Despite the high diversity of ecosystems, much of the country is virtually lifeless due to the extreme climatic and environmental conditions. Twenty-three per cent of the country is above 3,500 m in altitude and is covered by glaciers and rocks; a further 15 per cent is open rock, gravel or clay; and deserts cover more than 6.8 per cent of the territory. Most of the country has had little or no human intervention on natural ecosystems, and only 7 per cent of the country’s territory is composed of man-made ecosystems. Natural ecosystems include various forest types (e.g. coniferous and broad-leaved), a wide range of grassland communities (meadows and steppes), deserts, water bodies (lakes and rivers) and wetlands (swamps and lakeshores).

In recent years, national-level efforts to formulate national strategies, policies, and action plans for forest ecosystems have increased (see sections 8.2 and 8.4). By contrast, no sufficient attention has been given to wetlands, despite the fact that they are at least as important as forest ecosystems in terms of biodiversity, and perhaps even more valuable than the latter for the socio-economic life of the country.

Table 8.2: Ecosystems, hectares

<table>
<thead>
<tr>
<th>Ecosystem</th>
<th>Source of data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Spruce forest</td>
<td>277'200</td>
</tr>
<tr>
<td>Spruce-fir forests</td>
<td></td>
</tr>
<tr>
<td>Juniper forest</td>
<td>268'000</td>
</tr>
<tr>
<td>Broad-leaved forest</td>
<td>46'400</td>
</tr>
<tr>
<td>River forest (tugai)</td>
<td>22'600</td>
</tr>
<tr>
<td>Maple forests</td>
<td></td>
</tr>
<tr>
<td>Walnut forests</td>
<td></td>
</tr>
<tr>
<td>Small leaved forest</td>
<td>71'100</td>
</tr>
<tr>
<td>Pistachios and almonds</td>
<td></td>
</tr>
<tr>
<td>Deciduous bushes</td>
<td></td>
</tr>
<tr>
<td>Mid-mountain deciduous shrubland</td>
<td>97'000</td>
</tr>
<tr>
<td>Mid-mountain pterophilic shrubland</td>
<td>231'700</td>
</tr>
<tr>
<td>Savannah</td>
<td>608'100</td>
</tr>
<tr>
<td>Almond and pistachio forest</td>
<td>18'200</td>
</tr>
<tr>
<td>Glacier and subglacier</td>
<td>1'152'700</td>
</tr>
<tr>
<td>Cryophilic meadow</td>
<td>2'724'200</td>
</tr>
<tr>
<td>Alpine meadows</td>
<td></td>
</tr>
<tr>
<td>Sub-alpine meadows</td>
<td></td>
</tr>
<tr>
<td>Cryophilic steppe</td>
<td>2'141'300</td>
</tr>
<tr>
<td>Cryophilic desert</td>
<td>191'100</td>
</tr>
<tr>
<td>Mid-mountain meadow</td>
<td>876'400</td>
</tr>
<tr>
<td>Mid-mountain steppe</td>
<td>1'764'300</td>
</tr>
<tr>
<td>Mid-mountain desert</td>
<td>254'300</td>
</tr>
<tr>
<td>Mid-mountain savannahs</td>
<td></td>
</tr>
<tr>
<td>Mid-mountain &quot;redini&quot;</td>
<td></td>
</tr>
<tr>
<td>Mountainous dry-farming land (bogara)</td>
<td>279'100</td>
</tr>
<tr>
<td>Foothill steppe</td>
<td>82'300</td>
</tr>
<tr>
<td>Foothill desert</td>
<td>876'800</td>
</tr>
<tr>
<td>Foothill savannahs</td>
<td></td>
</tr>
<tr>
<td>Pterophilic lowland shrub</td>
<td>17'100</td>
</tr>
<tr>
<td>Lakes and wetlands</td>
<td>393'000</td>
</tr>
<tr>
<td>Rock</td>
<td></td>
</tr>
<tr>
<td>Cultivated land (anthropogenic)</td>
<td>1'247'500</td>
</tr>
</tbody>
</table>

Use of biodiversity

Biodiversity and biological resources are exceptionally valuable to the economy of the country.

Pasture land is probably the most important biological resource, and the livestock that graze these pastures support thousands of people (about 65% of total population). According to livestock inventory data of January 2008, there were 1,168,026 head of cattle, 4,252,813 sheep and goats, 74,918 pigs, 355,553 horses, 4,589,190 fowl, 338 camels, 32,316 rabbits and 80,124 bee families.

About 7 to 8 per cent of the land is used by people to gather wild mushrooms (more than 10 edible species) and medicinal plants (several dozen species). Many people, mainly in the south of the country, gather walnuts as well as the fruits of wild apple, pear, apricot, plum, cherry and other trees.

A small proportion of the population hunts and fishes, predominantly for recreational purposes but also to supplement their food supply, not as a main livelihood. In Kyrgyz territory, about 30 species of birds and up to 20 species of mammals are hunted. Marmots and to a lesser extent gophers, muskrats, foxes, badgers, wolves and squirrels are hunted for their fur. In addition, Marco Polo sheep and mountain goats are hunted for trophy and sold for hard currency. Although no reliable statistical data according to the opinion of national experts and government officials, degradation of forests and arable land, overcollection, and poaching have all contributed to the considerable declines in these species’ populations. Commercial fishing in Lake Issyk-Kul and Lake Son-Kul is limited to 200–300 kg per year. However, most of the trade is from poaching, and, thus lies outside these official limits.

Many people, particularly in rural areas, rely on wild plants for medicinal purposes. Such medicinal plants are collected and sold through special trade associations. Rural populations also traditionally use a range of natural products for construction, utensils, dyestuffs, etc.

<table>
<thead>
<tr>
<th>Box 8.1. Values of biodiversity in Kyrgyzstan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biodiversity</strong> is of significant importance in Kyrgyzstan, not just for the direct use and potential of its species, but also for the functions and processes related to the diversity of ecosystems in the country. This is particularly important within the fragile mountain ecosystems.</td>
</tr>
</tbody>
</table>

**Ecosystem functions.** In the harsh conditions of the mountains, natural ecosystems play an important role in ensuring an environment that can support life. While biological communities do not vary greatly in the Kyrgyz lowlands, the mountains support deserts, steppes, coniferous and deciduous forests, and alpine meadows, which can all be found within a few kilometres of each other. It is only such high levels of diversity that allow an environmental balance to be maintained effectively under the extreme mountain conditions. Groups of ecologically co-adapted species have an important role in processes such as the creation and preservation of soils, water distribution, the cleansing of surface water and atmospheric composition in these areas. The high level of adaptation to these extreme conditions means that, once lost, it is highly unlikely that these species be replaced by other types of organisms and, as a result, the functions they perform would also be lost. Seasonal pastures are formed by the variable climate of certain areas (e.g. the direction of prevailing winds) and the composition of plant species adapted to grow in those particular conditions. In these areas, primary biological production – animal breeding – supports an important sector of the economy upon which the majority of the population depends. This activity, if managed appropriately, conserves vegetation cover, thereby preventing soil erosion on mountain slopes, and reducing the likelihood of flooding. The latter has the potential to cause annual agricultural losses in the millions of United States dollars.

**Species’ actual and potential value.** The diversity of species provides an important genetic resource for the country. This includes the potential to supply highly productive and disease-resistant cultivars; decorative, medicinal, and aromatic plants; and raw materials for biotechnology. Kyrgyz territory is the centre of origin for many wild relatives of cultivated plants. For example, the fruit and nut forests contain species that may provide important sources for the future selection of commercial fruits and berries. Many people in Kyrgyzstan rely on direct use of biodiversity or products from the natural environment. Together with hunting and fishing, collection of medicinal plants, berries and mushrooms provides an important resource – and source of income – for a part of the population.

**Aesthetic, spiritual and economic value of biodiversity.** Biodiversity has been at the heart of the spiritual development of the nation and is connected with its origins as a nomadic society. A close relationship and
understanding of nature is an integral part of the national culture. Respect for wild animals was recognized early on, as is demonstrated by the epic Kyrgyz saga, *Koghoghash*. The aesthetic and recreational importance of biodiversity is also potentially of direct economic value. The country’s attractiveness is an important factor in promoting tourism, which is rapidly becoming significant to the national economy. Furthermore, the presence of ecosystems with a high concentration of species makes the country of interest from an educational and scientific point of view.

Overall, the natural ecosystems in Kyrgyzstan that remain intact play important roles in stabilizing the environments of both mountains and adjacent lowlands, and may help to mitigate the loss of important functions from land already degraded by man’s activities.


Threats to biodiversity

All natural ecosystems are to some degree affected by human activities. Some, such as foothill steppes and deserts, have practically disappeared, and the area and species composition of other ecosystems has been drastically altered. A number of ecosystem types are very fragile and threatened by any human activity. The most threatened ecosystems in the Kyrgyz territory include the fruit and nut forests of the south (threatened by overuse), fragile mountain forest communities, steppes near large human settlements, high-mountain meadows (threatened by overgrazing) and some areas of semi-desert and dry steppe (which are easily degraded through grazing). Overall, forest loss has been dramatic over the last decades – fir and juniper forests have declined by over 35 per cent, fruit and nut forests have declined by 50 per cent, and pistachio and almond forests have shrunk to only 30,000 ha (30% decline) over the last 50 years. About 90 per cent of the latter forests still are used as pasture land.

Destruction of natural ecosystems, linked to increases in cultivated lands, poses the greatest threat to biodiversity in Kyrgyzstan. Fires have also become more frequent and often result in irreversible damage to ecosystems, particularly forests. Other 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 2008 national *Red Book* are at the critical lower limit of viability, from which the populations may not be able to recover. The tiger population became extinct at the turn of the twentieth 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.

Overhunting has contributed to the decline in a range of ungulate species (e.g. mountain sheep, mountain goat, roe deer and red deer), as well as reductions in marmot populations. Marmots have declined significantly over wide areas as a result of overhunting and eradication campaigns, and have completely disappeared from some areas of their range. During the 1950s and 1960s, a campaign was conducted in order to eradicate sources of disease, and over 1 million marmots were exterminated. Losses in prey species have in turn affected predators such as bears, wolves and snow leopards, as well as large predatory birds such as vultures (including Egyptian, black and griffon vultures). Declines have also been reported in many indigenous fish species in Lake Issyk-Kul as a result of overfishing. In Lake Issyk-Kul, declines have also been linked to the introduction of perch-pike.

In addition, populations and habitats of some plants are at risk as a result of overcollection. Overcollection of wildflowers and medicinal plants close to towns and villages has led to substantial declines in these species. In many areas, tulip species (including Greig’s tulip), early crocuses and other plants have recently disappeared.

Many species have been driven to the edge of extinction, not only through direct extermination, but also through habitat loss. For example, many steppe species disappeared when these lands were ploughed, and birds such as bustards and steppe eagles stopped nesting. Felling of trees and shrubs has caused the decline and, in some places, the complete loss of areas of mountain forest. Loss of forest, coupled with deterioration in forest quality, means that some once-widespread forest species, such as Tien Shan maral and heathcock, are now restricted to isolated areas. Wetland habitats have
been severely affected by drainage of swamps, river pollution, and direct habitat destruction. Such destruction has had severe effects on species that rely on wetlands, including otters and birds. Waterfowl and other wetland birds such as cormorants, herons, geese, sandpipers and various duck species have stopped nesting in a number of areas, including the Chu Valley. Loss of vegetation as a result of felling and overgrazing has led to extensive soil loss and degradation of whole communities. Fragmentation of natural communities also results from an extensive road network, much of which connects seasonal or temporary settlements.

Meanwhile, other ecosystems suffer indirect anthropogenic impacts. Overgrazing has restricted regeneration in fruit and nut forests, making their future uncertain. It has led to the degradation of pastures, and to drastic reductions in the numbers of wild ungulates. Reductions in ungulate numbers have had direct effects on carnivore and scavenger populations, many of which are listed as under threat in the 2008 Red Book.

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

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

**Biodiversity monitoring**

No national biodiversity monitoring system has been developed and implemented in Kyrgyzstan. Current, fragmented activities in biodiversity monitoring are restricted to the following (see also the section on monitoring of biodiversity, including forests, in chapter 3):

- Limited biodiversity monitoring activities are carried out in protected areas, but they are not standardized or prioritized in accordance to modern international methodologies and requirements (including requirements under the Convention on Biological Diversity);
- Annual counts of selected game species are done in hunting reserves only;
- National forest management surveys are conducted every five years, and comprehensive surveys only every 10 years. In 2008, the preparation of national forest inventory was launched; no inventory of other plants has ever been prepared in Kyrgyzstan.

In addition, some monitoring activities are carried out by NGOs and academic institutions, but only on an ad hoc basis (i.e. they are funding- and project-dependent), with no regularity and follow-up.

**8.2. Forests and forestry**

The forests in Kyrgyzstan belong to the State, and the forest management functions are assigned to the State Agency for Environment Protection and Forestry (SAEPF). The lands managed by SAEPF form the so-called State Forest Fund, with a total area in 2003 of 3.279 million ha (or 16.52% of the territory). However, the forested area in 2005 makes up only 869,000 ha, or 4.32 per cent of the country’s territory. In addition, there are just 313,000 ha of other wooded land. A significant part of this land is in a “reforestation fund” (105,500 ha). A forest inventory recently has been initiated.

Kyrgyz forests can be grouped in four main types:

- Spruce forests (*Picea schrenkiana*) occur in the west, in the centre of the country and in the higher parts of the ranges north of the Fergana Valley, mainly at altitudes between 1,700 and
3,000 m. Small areas of stands with the endemic Semenov fir (*Abies semenovii*) can be found in the very west of the country.

- The walnut-fruit forests of Kyrgyzstan are considered to be the largest remaining areas of this particular forest type worldwide, and are therefore of global significance for biodiversity conservation. These forests occupy the northern and north-eastern slopes of the Fergana Valley. This category comprises a range of forest ecosystems dominated by fruit-bearing woody species including walnut (*Juglans regia*), apple (*Malus* spp.), hawthorn (*Crataegus* spp.), plum (*Prunus* spp.), rose species (*Rosa* spp.) almond (*Prunus amygdalus*) and pistachio (*Pistacia vera*). Forest stands of walnut and its accompanying species grow in the valleys and hills in altitudes between 800 and 2,400 m, whereas pistachio forests and almond stands grow in the dryer, lower parts of the hills.

- Juniper forests (*Juniperus* spp.) grow under arid conditions or in very high altitudes up to 3,500 m in the very south of the country and dispersed over the country. These forests are typically open stands, formed by tree and crawling forms of juniper.

- Riparian forests can be found in all parts of the country along streams and rivers, typically with species from the genera willow (*Salix*), poplar (*Populus*), birch (*Betula*) and tamarix (*Tamarix*), and sometimes also sea buckthorn (*Hippophae rhamnoides*).

Apart from natural forests, there are also two types of plantations: (a) plantations of native and sometimes introduced tree species within the area of natural distribution of the above forest types; and (b) plantations of poplar near or within settlements for the purpose of timber production for construction and of creating windbreaks.

The annual budget allocated by the State for the national forest resources management amounts to over KGS 74 million ($1.84 million as of 2006). In addition, the forestry sector has at its disposal approximately KGS 40 million ($1 million) These monies form the so-called special means resulting from the production activities carried out by the forest management enterprises.

The forest sector is not an important part of the national economy, as forests are of low industrial value – the combined gross output of the hunting and forestry activities amounts to about KGS 97 million ($2.42 million) or 0.09 per cent of the country’s GDP. Industrial roundwood production value is estimated as only $0.5 million, which is about 0.008 per cent of the country’s GDP. There are no designated production forests in Kyrgyzstan (table 8.3). Limited production of industrial timber and fuelwood takes place in “multiple-use” function forests and totals about 27,300 m³ annually (table 8.4). At the same time, some studies indicate that estimated production of industrial wood and fuelwood is much higher than legal supply in many countries with economies in transition (table 8.5). In Kyrgyzstan, estimated annual average fuelwood production during the period 2002–2004 amounted to 330,000 m³, almost 15 times more than the legal supply. This is not surprising, as 50 to 80 per cent of rural people depend on fuelwood as source of energy.

In addition to the provision of fuelwood for energy generation, forests provide many non-wood goods and services, including food, game and fodder, which are important for the livelihoods of the Kyrgyz population, in particular in rural areas. They are mainly used for subsistence, and only a small amount is being marketed.

Current legal protections (including in protected areas) apply to only 8 per cent of all forests in Kyrgyzstan. There is no legal protection regime of any kind for the majority of forest ecosystems. Although forest resources are scarce and of low industrial value, they ensure important protection (e.g. for soil and water) and biodiversity conservation functions and play an vital role in terms of providing social services (e.g. recreation, sanitation, fuelwood, non-timber forest products).

**Table 8.3: Forest use categories (in thousand ha)**
### Table 8.4: Production of industrial timber and fuelwood (in thousand m³ under bark)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roundwood</td>
<td>13.1</td>
<td>13.3</td>
<td>11.1</td>
<td>11.2</td>
<td>9.3</td>
<td>9.3</td>
<td>9.3</td>
</tr>
<tr>
<td>Woodfuel</td>
<td>33.3</td>
<td>29.7</td>
<td>24.7</td>
<td>24.9</td>
<td>18.0</td>
<td>18.0</td>
<td>18.0</td>
</tr>
</tbody>
</table>


### Table 8.5: Estimated production and legal supply of industrial timber and fuelwood (in thousand m³)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Estimated production from forest areas</th>
<th>Legal supply from forest areas</th>
<th>Ratio</th>
<th>Estimated production from forest areas</th>
<th>Legal supply from forest areas</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>2002</td>
<td>444</td>
<td>83</td>
<td>5.3</td>
<td>2 302</td>
<td>222</td>
<td>10.4</td>
</tr>
<tr>
<td>Armenia</td>
<td>2003</td>
<td>150</td>
<td>20</td>
<td>7.5</td>
<td>587</td>
<td>50</td>
<td>11.7</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>2004</td>
<td>11 - 456</td>
<td>0.6</td>
<td>n/a</td>
<td>n/a</td>
<td>10</td>
<td>n/a</td>
</tr>
<tr>
<td>Georgia</td>
<td>2004</td>
<td>550</td>
<td>70</td>
<td>7.9</td>
<td>2 000</td>
<td>300</td>
<td>6.7</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>2002-2004</td>
<td>n/a</td>
<td>11</td>
<td>-</td>
<td>330</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Moldova</td>
<td>2004</td>
<td>n/a</td>
<td>44</td>
<td>-</td>
<td>750</td>
<td>359</td>
<td>2.1</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>2004</td>
<td>n/a</td>
<td>8</td>
<td>-</td>
<td>n/a</td>
<td>18</td>
<td>-</td>
</tr>
</tbody>
</table>


A new national forest inventory is being implemented in Kyrgyzstan in cooperation with the Food and Agriculture Organization of the United Nations that will provide updated data on forestry management that policymakers will be able to make use of.

### 8.3. Protected Areas

At present, there are 84 protected areas with a total area of 937,700 ha, or 4.7 per cent of the country’s total land area (table 8.6). The network of protected areas consists of 9 State nature reserves, 7 national parks, 1 biosphere reserve, 48 sanctuaries (managed reserves) and 19 nature monuments. Forested lands included in protected areas are only about 72,000 ha (8% of all forests). Some sources indicate even lower percentage, i.e. around 19,500 ha, or only 2.2 per cent.

### Table 8.6: Dynamics of size changes in protected areas (ha)

<table>
<thead>
<tr>
<th>Category / function</th>
<th>1990</th>
<th>2000</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Protection of Soil and Water</td>
<td>685.3</td>
<td>680.3</td>
<td>677.8</td>
</tr>
<tr>
<td>Biodiversity Conservation</td>
<td>26.1</td>
<td>51.5</td>
<td>64.2</td>
</tr>
<tr>
<td>Social services</td>
<td>16.9</td>
<td>14.4</td>
<td>13.2</td>
</tr>
<tr>
<td>Multiple Use</td>
<td>108.1</td>
<td>112.1</td>
<td>114.1</td>
</tr>
<tr>
<td>Total</td>
<td>836.4</td>
<td>858.3</td>
<td>869.3</td>
</tr>
</tbody>
</table>

### Protected area category

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature Reserve</td>
<td>124'554</td>
<td>161'523</td>
<td>164'857</td>
<td>236'937</td>
<td>236'937</td>
<td>354'760</td>
<td>379'505</td>
</tr>
<tr>
<td>National Park</td>
<td>2'286</td>
<td>2'286</td>
<td>11'172</td>
<td>13'458</td>
<td>238'697</td>
<td>259'197</td>
<td>241'315</td>
</tr>
<tr>
<td>Sanctuary</td>
<td>398'269</td>
<td>400'967</td>
<td>288'900</td>
<td>288'900</td>
<td>36'176</td>
<td>291'017</td>
<td>316'771</td>
</tr>
<tr>
<td>Nature monument</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>525'169</td>
<td>564'836</td>
<td>464'989</td>
<td>539'355</td>
<td>511'870</td>
<td>905'034</td>
<td>937'651</td>
</tr>
<tr>
<td>% of country area</td>
<td>2.6</td>
<td>2.8</td>
<td>2.3</td>
<td>2.6</td>
<td>2.5</td>
<td>4.5</td>
<td>4.7</td>
</tr>
</tbody>
</table>

*2008 data is provided by the Public Affairs Department of SAEPF.

There has been a significant increase in protected areas since 2000. The GEF-UNEP-WWF project, “Development of the Econet for Long-term Conservation of Biodiversity in the Central Asia Eco-region”, being pursued in consultation with Governments and using GIS technologies, has outlined an ecological network plan for Central Asian countries. Taking this plan into account, Kyrgyzstan has established five new protected areas since 2000 (three State reserves and two national parks) and enlarged several others. As a result, the total size of protected areas has grown by about 426,000 ha since 2000.

But some serious issues remain unresolved:

- A majority of protected areas do not have management plans and business plans; this reduces their management effectiveness significantly.
- Protected areas have their own independent administrations that report to the Division of Specially Protected Territories of SAEPF. At the same time, protected areas’ managers are also accountable to local authorities (municipal and regional government bodies). This double subordination is counterproductive and creates barriers in effective conservation management of protected areas (particularly in terms of ensuring protection regimes). Usually, protected areas have a more independent status vis-à-vis local authorities, and report only to the Government;
- Budgetary cuts since Soviet period have created additional concern for effective protected area management. Financial limitations have led to staff reductions and decreased enforcement capacity. Due to the same reason, conservation, research, monitoring, data analysis and education activities are very limited in most of the protected areas (even non-existent in some);
- In addition to the lack of human resources, the capacity of existing staff is not adequate;
- The potential to generate financial resources within protected areas has not been fully explored.

### 8.4. Policies, strategies and legislation

**Legislation**

Box 8.2 provides a list of major environmental normative documents and legislation related to biodiversity conservation and natural resources management (see chapter 1).

**Box 8.2. Main Kyrgyz acts of legislation on biodiversity and natural resources management**
<table>
<thead>
<tr>
<th>Name of legislation</th>
<th>Enactment data and the Law number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Law on Environmental Protection</td>
<td>16.06.1999 (No. 53) amendments of 04.02.2002 N 22 and of 11.06.2003 N 101</td>
</tr>
<tr>
<td>Law on ecological expertise</td>
<td>16.06.1999 (No. 54) amendments of 11.06.2003 N 102</td>
</tr>
<tr>
<td>Law on Specially Protected Natural Areas</td>
<td>28.05.1994 (No. 1561-XII)</td>
</tr>
<tr>
<td>Forestry Code of the Kyrgyz Republic</td>
<td>08.07.1999 (No. 66)</td>
</tr>
<tr>
<td>Water Code of the Kyrgyz Republic</td>
<td>12.01.2005 (No. 8)</td>
</tr>
<tr>
<td>Law on Intergovernmental Usage of Water Bodies, Water Resources and Water Facilities</td>
<td>23.07.2001 (No. 76)</td>
</tr>
<tr>
<td>Law on water use</td>
<td>14.01.1994 (No. 1422-XII)</td>
</tr>
<tr>
<td>Law on mountain areas</td>
<td>01.11.2002 (No. 151)</td>
</tr>
<tr>
<td>Law on drinking water</td>
<td>25.03.1999 (No. 33)</td>
</tr>
<tr>
<td>Law on the Sanitary and Epidemiological Well Being of the Population</td>
<td>26.06.2001 (No. 60)</td>
</tr>
<tr>
<td>Law on radiation security of the population</td>
<td>17.06.1999 (No. 58)</td>
</tr>
<tr>
<td>Law on the Production and Consumption of Waste</td>
<td>13.11.2001 (No. 89)</td>
</tr>
<tr>
<td>Law on Protecting the Atmosphere</td>
<td>12.06.1999 (No. 51)</td>
</tr>
<tr>
<td>Law on tailings and mining dumps</td>
<td>26.06.2001 (No. 57)</td>
</tr>
<tr>
<td>Law on Industrial Safety of Hazardous Production Facilities</td>
<td>19.11.2001 (No. 93)</td>
</tr>
<tr>
<td>Law on Fisheries</td>
<td>25.06.1997 (No. 39)</td>
</tr>
<tr>
<td>Land Code of the Kyrgyz Republic</td>
<td>02.06.1999 (No. 45)</td>
</tr>
<tr>
<td>Law on Wildlife</td>
<td>17.06.1999 (No. 59)</td>
</tr>
<tr>
<td>Law on Flora Protection and Use</td>
<td>20.06.2001 (No. 53)</td>
</tr>
<tr>
<td>Law on Biosphere Reserves</td>
<td>09.06.1999 (No. 48)</td>
</tr>
<tr>
<td>Law on Licensing</td>
<td>03.03.1997 (No. 12)</td>
</tr>
<tr>
<td>Law on non-commercial organizations</td>
<td>15.10.1999 (No. 111)</td>
</tr>
<tr>
<td>Law on Local Self-governance and Local State Administration</td>
<td>12.01.2002 (No. 5)</td>
</tr>
<tr>
<td>Law on International Agreements</td>
<td>21.07.1999 (No. 89)</td>
</tr>
</tbody>
</table>


The legal base for endangered species conservation needs improvement. Government Resolution No. 170 (2005) on the Red List of Threatened Flora and Fauna provides only the list of species by taxonomic groups and asks for the creation of an editorial board to develop the Red Book based on this list. As a follow-up, in 2008 the national Red Book has been produced and the IUCN\(^2\) Red Data List Categories\(^3\) assigned to each listed species. But there are still several problems associated with the Red List and Red Book:

- The legislation does not mention de-listing and down-listing criteria and procedures. Inclusion of a species in the Red List should have the objective to de-list it after some time. For instance, when the critically endangered\(^4\) category is assigned to a specific case, the objective should be to eventually down-list that case to a lower threat category, for example from endangered\(^5\) to vulnerable\(^6\). Such down-listing has not yet occurred in Kyrgyzstan;

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\(^2\) International Union for Conservation of Nature.

\(^3\) IUCN Red Data List Categories include: extinct (EX), extinct in the wild (EW), critically endangered (CR), endangered (EN), vulnerable (VU), lower risk (LR), data deficient (DD), not evaluated (NE)

\(^4\) A taxon is critically endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.

\(^5\) A taxon is endangered when it is not critically endangered but is facing a very high risk of extinction in the wild in the near future.

\(^6\) A taxon is vulnerable when it is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future.
• No time frame for the revision of the list has been provided;
• There are no clear legal procedures and rules on selecting species for the Red List and assigning threat categories. As a result, some of the most widespread, common and non-threatened species appear in the list. One good example is the green toad (*Bufo viridis*);
• Finally, the State does not take any responsibility for listed species, other than prohibition of direct use (e.g. hunting, collection).

The *Law on Special Protected Natural Areas* (1994) is outdated. The need to update it is well understood in SAEPF, which is why a new draft Law on Protected Areas which is awaiting decision by the Parliament, pending resolution of conflicting interests in land use by different economic sectors (environment, energy, agriculture and mining). These difficulties are due to the fact that no long-term strategy and policy documents for protected areas have been agreed upon by all stakeholders and, as a result, the necessary basis for corresponding, and the needed institutional reforms and legislative framework, is lacking (see section 8.5).

**Policies and Strategies**

The Biodiversity Strategy and Action Plan drafted and presented to stakeholders in 1998 was adopted by the Government only in 2002. Most of the national experts in biodiversity conservation consider this document as outdated, and consequently there is a need to revise, update and produce a new Strategy and Action Plan for Biodiversity Conservation.

The *Country Development Strategy* (2007–2010) contains a chapter titled “Providing of Environmental Sustainability” (with a subchapter on “Providing of Environmental Safety”). This chapter outlines 11 measures/sections, including protected areas, biodiversity conservation, restoration of ecosystems, sustainable management of natural resources, etc., with a cost of about $60 million. Only about $10 million is envisaged from the State budget, and the gap is expected to be covered by private investments, donors’ funds and additional budget funding.

In 2007, the total environmental funds expenditures were equal to KGS 36.2 million, including KGS 9.36 million for forestry, KGS 2.94 million for animal protection and KGS 2.01 million for biodiversity and natural reserves (see chapter 5).

In recent years, Kyrgyzstan has managed to elaborate forest-related policy and strategic documents (box 8.2), while giving another very important type of ecosystems – wetlands – much less attention.

In 2008, the Government adopted the Programme of Fishery Development for 2008–2012. This policy document outlines current status of fishery and main issues, defines the goals and objectives and describes the mechanisms of its implementation. However, as there is no national policy on the sustainable use of natural resources, this programme does not integrate other biological resources use, e.g. forest products, hunting, medicinal plants.

The new national forest policy was initiated by the President of Kyrgyzstan of (Decree of 6 October 1998, No 300). In accordance with the Decree, in 2004 the Government approved the *Concept of the Forestry Sector Development*. The Concept was followed by the National Forest Programme and Action Plan (see box 8.3). The development of the Programme was conducted in a participatory manner, with stakeholder engagement and cooperation with other sectors that play an essential role in forest policy reform.

From 2001, a new progressive approach has been introduced in Kyrgyzstan: joint forest management, a form of collaborative forest management. Joint forest management is understood as different types of processes aimed at building cooperation between different partners from the governmental, private and civil sectors through joint planning and implementation of forest management activities. According to the new forest policy, the State is going to broadly involve local population in joint forest management.
Box 8.3. Forest-related policy and strategy documents

The Concept of the Forestry Sector Development (2004) defines the main goals of the forest policy of Kyrgyzstan:

- Providing for sustainable development of the forestry sector;
- Involving the population and local communities in joint forest management;
- Adapting the role of the State in the forestry sector.

The National Forest Programme of the Kyrgyz Republic for 2005–2015 (2005) defines a set of activities for implementation of the Concept of Forestry Sector Development. These activities are distributed along the 10 strategic goals for national forestry sector development outlined in the Concept:

- Ensuring protection of all the forests and biodiversity in the country;
- Defining technical norms for sustainable forest management;
- Transferring productive activities to the private sector;
- Improving the system of collaborative forest management and leasing relations;
- Rationalizing forest service structure at the territorial and national levels;
- Implementing economic reform of structural management units;
- Improving the status of Forest Service personnel;
- Improving forest research and education;
- Improving efficiency of funding system for forestry sector;
- Raising public awareness of forestry-related issues.

The National Action Plan for the Development of the Forestry of the Kyrgyz Republic for the period 2006–2010 (NAP) (2006) is a logical continuation of the Concept and the Programme. NAP defines in detail strategic goals for forestry sector development for a five-year period and foresees stage-by-stage implementation of the set objectives.

Objectives of NAP for 2006–2010 are the following:

- Ensuring the conservation of the biological diversity and forests;
- Improving the system of forest management:
  - Separating the control and regulation functions and the economic functions;
  - Optimizing the management structure of the forestry sector;
  - Enhancing the status of employees of the forestry sector;
  - Improving the gender policy in the forestry sector;
- Involving the local population and local communities in joint forest management;
- Determining the norms for the sustainable management and the multi-purpose use of forests;
- Ensuring the efficiency of the economic reform and the system of financing of the forestry sector;
- Improving forest-related science and education;
- Enhancing awareness of the forestry sector development.

In addition, a National Plan of Measures on fighting illegal logging of the Kyrgyz Republic has been developed in 2007, so that the country can fulfil its international obligations within the framework of the Europe and Northern Asia Forest Law Enforcement and Governance (ENA FLEG) process.

The Europe and Northern Asia Forest Law Enforcement and Governance (ENA FLEG) process, coordinated by the World Bank and partner organizations, is an international negotiation process designed to address problems of forest law enforcement and governance. This process is aimed at mobilization of international efforts of Governments, producers, consumers and donors to combat illegal logging and corruption in the forestry sector. Kyrgyzstan joined the ENA FLEG process at the 2005 international ministerial conference held in St. Petersburg, Russian Federation (21–25 November). The conference endorsed two multilateral documents: an International Declaration and an Indicative Plan of Action. On the basis of these two documents, participating countries are to develop their systems of fight with law violation in the forestry sector. After signing these documents, Kyrgyzstan expressed its readiness to work in this direction and to develop its own National Plan of Measures to combat illegal forest logging.

8.5. Institutional framework

The main governmental body responsible for biodiversity conservation and management of natural resources is SAEPF, created in 2005. Within SAEPF, several departments and divisions share direct responsibilities in biodiversity conservation and natural resources management:
• The Department of Forest Ecosystems Development is responsible for the management of the State Forest Fund (including some protected forest areas)
• The Department of Hunting Control and Regulation of Hunting Resources Population is responsible for the management of hunting reserves, including some managed reserves (category IV, Protected Areas)
• The Section for Biodiversity, Protected Areas, Eco-education and Media is responsible for the management of State nature reserves, national parks and some managed reserves;
• The State Forest Inventory Division is responsible for planning and conducting forest inventory and monitoring.

In addition, several other units have certain linkages to biodiversity and natural resources:

• The Division of Environmental Strategy and Policy, with its two sections dealing with the economic aspects of nature use, standards, information and programmes development;
• The Section for State Ecological Expertise;
• The Section for International Cooperation;
• The Section for Fauna and Flora;
• The Section for Fishery Control and Inspection.

Fishery management is conducted by the department within the Ministry of Agriculture, Water Management and Processing Industry.

The current institutions and institutional framework are not adequate to ensure a proper protection of nature and biodiversity conservation, for instance:

• The Section for Biodiversity, Protected Areas, Eco-education and Media has eight staff members, only four of whom are responsible for the overall management of the national protected areas system (including management of current and establishment of new protected areas) and all aspects of biodiversity conservation (including species conservation and monitoring and red listing). This Section is dramatically understaffed and requires urgent assistance in strengthen its capacity;
• The administrations of individual protected areas have overlapping lines of reporting: in addition to SAEPF, they are also accountable to local municipalities (at the district and regional levels). This creates law enforcement issues and generally decreases managerial effectiveness.
• Although the Department of Forest Ecosystems Development is relatively strong, and considering the primary functions of Kyrgyz forests (soil and water protection and biodiversity conservation) and the fact that they have no productive function, the forest protection legal regime is quite restricted, as only 2 to 8 per cent of forests are within protected areas.
• A separate division is responsible for State Forest Inventory, but it is not part of the National Biodiversity Monitoring System.
• The Department of Hunting Control and Regulation of Hunting Resources Population is also relatively strong, but it actually conducts activities similar to the Section for Biodiversity, Protected Areas, Eco-education and Media – management of sites (e.g. equivalent to IUCN Category IV, Managed Reserves or Sanctuaries), monitoring of species.
• Monitoring comes under the Section for Fishery Control and Inspection, while fishery management comes under the Fishery Management Department of the Ministry of Agriculture, Water Management and Processing Industry.

Another weakness of the State institutions in the biodiversity field is that the implementation units for international donor-assisted projects are located outside of these institutions. Therefore, capacity-building components are not as effective as they would be if projects were implemented by the relevant departments and divisions.
Kyrgyz institutions also appear to be weak in the area of law enforcement and governance, as is demonstrated by the amount of illegal logging. This is a threat not only to biodiversity due to unmanaged cuttings and removals from the forests, but may also hinder economic and societal development.

8.6. Conclusions and recommendations

The current institutional framework related to biodiversity conservation and biological resources management requires significant improvements. For historical reasons, many undersized units at the national level are involved in natural resources protection and biodiversity conservation, but they act separately. Tasks and responsibilities are imperfectly distributed among different government bodies, often leading to overlapping, duplications and gaps. Moreover, they are different subordinated bodies at the regional and local levels. Instead of building capacity and strengthening the different departments and divisions in the biodiversity field, it is advisable to create a single strong unit endowed with national-level management functions. Restructuring the distribution of tasks at all levels would increase the overall functional capacity of management bodies.

For instance, the Section for Biodiversity, Protected areas, Eco-education and Media of SAEPF requires institutional strengthening and capacity-building. With its current staff, this Section cannot fulfill its role, especially considering that in addition to protected areas, it is responsible for biodiversity conservation in general. An institutional reform is needed to more effectively manage protected areas and biodiversity, including natural resources. Within SAEPF, this could be a “Biodiversity Department” and in the event that the status of SAEPF is upgraded to that of a ministry, this might be the “State Agency for Biodiversity Management” within the Ministry of Environment. The policymaking role could remain outside of this unit within SAEPF or the Ministry of Environment if such a body were created.

In addition, taking into account the low commercial value and high protection function of Kyrgyzstan forests, in parallel to institutional reforms, more forested lands should be put under protection regime (although different protection categories may apply). Exceptions can be made for those forest areas that have nationally strategic value and importance for other economic sectors (e.g. mining). In this case, a compromise could be to transfer ownership for such areas to relevant government bodies.

Similarly, the transfer to protected areas of those hunting management areas that still remain under State ownership need to be seriously considered.

**Recommendation 8.1:**
The Government should increase the effectiveness of the management of natural resources and biodiversity conservation by creating a single coordination body for protected areas, biodiversity and the sustainable management of forestry, fishing and hunting. Upgrading protection status to current forest and hunting areas should also be considered.

There is a positive trend to enlarge the size of protected areas in Kyrgyzstan, but there are still many concerns in terms of their effective management. The development of protected areas requires more in-depth and strategic planning. The Convention on Biodiversity recently adopted the Programme of Work on Protected Areas and requested signatory countries to start its implementation. One of the central recommendations in this programme is the elaboration of long-term National Strategies and Action Plans for Protected Areas System Development. This document may define goals and objectives for the development of the protected area system in Kyrgyzstan and prioritize actions for achieving them. Such a document is usually an excellent tool to increase State budget funding for protected areas, attract more international donors and maximize potential revenues from biological resources management within the protected areas. Its elaboration should be a multi-stakeholder process resulting in an itemized and prioritized action plan to be considered for governmental approval. As a result, a new legal framework and regulations for the management of protected areas could be developed.
Recommendation 8.2:
SAEPF should elaborate a national strategy and action plan for protected areas development. It should address in particular:

- Varied objectives and needs of individual protected areas;
- Enlargement and/or establishment of new protected areas;
- Subordination aspects at the national, regional and local levels;
- Increased capacity-building of the coordinating body;
- Improvement of human resources management;
- Stable financing of protected areas.

The national Red List adopted by the Government in 2005 and the related Red Book of 2008 can be considered as a first step towards improving endangered species conservation. But there are several problems associated with the Red List and the Red Book. The de-listing and down-listing criteria and procedures are not defined, and there is no stated objective to de-list or down-list the species after inclusion in the Red List. No time frame is provided after which the list must be revised and updated. There are no clear legal procedures and rules for selecting species for the Red List and assigning them a threat category. Finally, the State does not take any responsibility for listed species other than prohibition of direct use (e.g. hunting, collection). It is desirable that the legislation clearly defines the State’s responsibilities vis-à-vis listed species, and that the legislation be better enforced (See chapter 2 and Recommendation 2.5). For example, the State should develop recovery plans (or national species action plans) for species, at least highly threatened category, and should be responsible for implementation of these plans.

Recommendation 8.3:
SAEPF should strengthen the legal base for threatened species conservation. De-listing, down-listing and recovery planning for listed species should be addressed by Red List regulations.

The national biodiversity monitoring system does not work properly in Kyrgyzstan. Monitoring activities are carried out in a fragmented manner in some protected areas and hunting management areas. They are performed by NGOs and academic institutions sporadically and on an ad hoc basis (i.e. they are funding- and project-dependent, on international or national donors). A national forest inventory has been initiated only recently. To support decision making process in biodiversity conservational and biological resources management fields, it is essential to develop a national biodiversity monitoring scheme that includes:

- A number of biodiversity indicators selected from internationally recommended lists (e.g. the Convention on Biological Diversity, the Ramsar Convention, EU directives), and adapted for specific use in Kyrgyzstan;
- Data processing and management system (e.g. software with GIS support);
- Institutional structure with defined national coordination and potential partners;
- Public access to data (e.g., updatable website);
- Availability of required funding (e.g. from the State budget, Academy of Sciences, international donors).

When establishing the national biodiversity monitoring system, it would be highly desirable (both financially and environmentally) to include the recently initiated forest inventory in it.

Recommendation 8.4:
SAEPF should elaborate a national biodiversity monitoring scheme with internationally recommended and nationally adopted indicators, data gathering and processing systems and participatory tools.

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7 The Convention on Wetlands of International Importance, especially as Waterfowl Habitat.
In recent years, Kyrgyzstan has managed to elaborate of a forest-related policy and strategic documents, i.e. the National Forest Programme. This programme is known for its participatory and cross-sectoral approach, which provided all concerned in its elaboration and implementation with a strong ownership feeling. Another key ecosystem with much socio-economic and environmental value for Kyrgyzstan, wetlands, has been neglected. There is an urgent need to formulate a national policy, strategy and action plan on conservation and sustainable use, of wetlands. This is a requirement of the Ramsar Convention, which provides guidelines for developing national wetlands policy and strategy.

Furthermore, Kyrgyzstan lacks a framework policy and strategy on the sustainable use of natural resources (biological resources). Without such a framework vision and strategy, programmes, strategies or action plans for individual ecosystems (e.g. forests), or any other individual resources (e.g. fisheries), may not be effective and/or achievable.

**Recommendation 8.5:**
SAEPF should elaborate integrated national strategy, programme and action plan to ensure sustainable use of biological resources and ecosystem services (wetlands, pastures, forests, hunting and fishing.) Such a programme should build upon and incorporate the National Forest Programme using a similar participatory and cross-sectoral approach.