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Second Review



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The United Nations have issued the first Environmental Performance Review of Kyrgyzstan (Environmental Performance Reviews Series No.9) in 2000 in English only.

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## *Foreword*

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Environmental Performance Reviews (EPRs) for countries in transition were initiated by environment ministers at the Second Ministerial Conference “Environment for Europe” (Lucerne, Switzerland, 1993). Subsequently, the United Nations Economic Commission for Europe (UNECE) Committee on Environmental Policy decided to make the EPRs a part of its regular programme. The first cycle of reviews, of 23 countries of the UNECE region, began in 1994 and was carried out until 2004.

At the Fifth Ministerial Conference “Environment for Europe” (Kyiv, Ukraine, 2003), the ministers affirmed their support for the EPR Programme, in particular as an important instrument for countries with economies in transition, and decided that it should continue with a second round of reviews. This support was recently reconfirmed at the Sixth Ministerial Conference “Environment for Europe” (Belgrade, Serbia, 2007). This second round, while taking stock of the progress made since the first review, puts particular emphasis on implementation, integration, financing and the socio-economic interface with the environment.

Through the peer review process, EPRs also promote dialogue among UNECE member States and the harmonization of environmental conditions and policies throughout the region. As a voluntary exercise, an EPR is undertaken only at the request of the country concerned.

The studies are carried out by international teams of experts from the region working closely with national experts from the reviewed country. The teams also benefit from close cooperation with other organizations in the United Nations system, for instance the United Nations Development Programme (UNDP), as well as with the Organisation for Economic Co-operation and Development (OECD) and other organizations.

This is the second EPR of Kyrgyzstan published by UNECE. The review takes stock of progress made by Kyrgyzstan in the management of its environment since the country was first reviewed in 2000. It assesses the implementation of the recommendations in the first review (annex I). This second EPR also covers eight issues of importance to Kyrgyzstan related to policymaking, planning and implementation, the financing of environmental policies and projects, and the integration of environmental concerns into economic sectors, in particular the sustainable management and protection of water resources, land and biodiversity.

I hope that this second EPR will be useful in supporting policymakers and representatives of civil society in their efforts to improve environmental management and to further promote sustainable development in Kyrgyzstan, and that the lessons learned from the peer review process will also benefit other countries of the UNECE region.



Ján Kubiš  
Executive Secretary  
Economic Commission for Europe



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## *Preface*

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The second Environmental Performance Review (EPR) of Kyrgyzstan began in February 2008 with a preparatory mission. During this mission, the final structure of the report was discussed and established. A review mission took place from 26 May to 5 June 2008. The team of international experts taking part included experts from Belarus, Bulgaria, Kazakhstan, Norway and Switzerland as well as from the secretariats of the International Union for Conservation of Nature (IUCN) and the United Nations Economic Commission for Europe (UNECE).

The draft EPR report and its translation into Russian were submitted to Kyrgyzstan for comment and to the Expert Group on Environmental Performance for consideration in December 2008. During its meeting on 26 January 2009, the Expert Group discussed the report in detail with expert representatives of the Government of Kyrgyzstan, focusing in particular on the conclusions and recommendations made by the international experts.

The EPR recommendations, with suggested amendments from the Expert Group, were then submitted for peer review to the special session of the UNECE Committee on Environmental Policy on 28 January 2009. A delegation of high-level officials from the Parliament and the State Agency of Environmental Protection and Forestry of Kyrgyzstan participated in the peer review. The Committee adopted the recommendations as set out in this report.

The Committee on Environmental Policy and the UNECE review team would like to thank the Government of Kyrgyzstan and its experts who worked with the international experts and contributed their knowledge and assistance. UNECE wishes the Government of Kyrgyzstan further success in carrying out the tasks involved in meeting its environmental objectives, including the implementation of the recommendations in this second review.

UNECE would also like to express its deep appreciation to the Governments of Austria, Bulgaria, Estonia, Switzerland and the Netherlands for their financial contributions; to the Governments of Belarus, Norway and Switzerland for having delegated their experts for the review; and to IUCN and the United Nations Development Programme for their support of the EPR Programme and this review.



*International team of experts for the second EPR of Kyrgyzstan, 2008.*

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The mission for the project took place from 26 May to 4 June 2008. The peer review was held in Geneva on 28 January 2009. The UNECE Committee on Environmental Policy adopted the recommendations set out in this document.

The information cut-off date for this publication was 28 January 2009. Please note that this publication is also available in Russian.

At the UNECE Secretariat, Rainer Enderlein and Franziska Hirsch also contributed to the content of the report, George Georgiadis helped with the executive summary and edited material, Jyrki Hirvonen prepared tables and graphs, Christopher Edgar performed the linguistic editing, Antoine Nunes overviewed the preparation of the report, Irina Goryunova and Yaroslav Bulych translated the report into Russian and Oksana Rott prepared the layout.

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## ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
BAT	Best Available Techniques
CACILM	Central Asian Countries Initiative for Land Management
CAPACT	Clean Coal Combustion Technologies in Central Asia
CAREC	Regional Environmental Centre for Central Asia
CBD	Convention on Biodiversity
CDF	Comprehensive Development Framework
CDM	Clean development mechanism
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CTSD	Concept of Transition to Sustainable Development
DCC	Donor Coordination Council
DENRU	Department of Ecology and Nature Resource Use
DSEC	Division of State Environmental Control
EBRD	European Bank of Reconstruction and Development
EECCA	Eastern Europe, Caucasus and Central Asia
EIA	Environmental Impact Assessment
EMEP	Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe
EMS	Environmental Management Systems
ENA FLEG	Europe and Northern Asia Forest Law Enforcement and Governance
ENVSEC	Environment and Security Initiative
ESC	Ecological Security Concept
ESCAP	Economic and Social Commission for Asia and the Pacific
ESD	Education for Sustainable Development
EU	European Union
FAO	Food and Agriculture Organization
FLEG	Forest Law Enforcement and Governance
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse gas
GIS	Geographic information system
GTZ	Gesellschaft für Technische Zusammenarbeit (the German Society for Technical Assistance)
Gosplan	State Committee for Economic Planning
HIV	Human immunodeficiency virus
ICSD	Inter-State Commission for Sustainable Development
ICWC	Inter-State Commission for Water Coordination
IPEN	Independent Environment Expertise
IPPC	Integrated Pollution Prevention and Control
IEE	Independent Environmental Expertise
IFAS	International Fund for Saving the Aral Sea
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
ISO	International Organization for Standardization
IUCN	International Union for Conservation of Nature
JCSS	Joint Country Support Strategy
KIRFOR	Kyrgyz-Swiss Forestry Support Programme
KJKS	Kyrgyzkjylkommunsoyuz
LRF	Land Redistribution Fund
LRTAP	Long-range Transboundary Air Pollution
MAC	Maximum allowable concentration
MDGs	Millennium Development Goals
MEA	Multilateral environmental agreement
MEP	Ministry of Environmental Protection
MDEI	Main Division for Environmental Inspection

MoU	Memorandum of Understanding
MTBF	Medium-Term Budgetary Framework
NABU	Nature and Biodiversity Conservation Union
NAP	National Action Plan
NCC	National Coordination Council
NFP	National Framework Programme
NEAP	National Environmental Action Plan
NEHAP	National Environmental Health Action Plan
NGO	Non-governmental organization
NPRS	National Poverty Reduction Strategy for 2003–2005
OECD	Organisation for Economic Co-operation and Development
OSCE	Organization for Security and Co-operation in Europe
PAC	Pollution and abatement control
PCB	Polychlorinated biphenyls
PEE	Public Environmental Expertise
pH	Potential of hydrogen
PM	Particulate matter
RAS	Rural Advisory Service
REAP	Regional Environmental Action Plan
SAEPF	State Agency of Environmental Protection and Forestry
SAICM	Strategic Approach to International Chemicals Management
SDC	Swiss Agency for Development and Cooperation
SEA	Strategic Environmental Assessment
SEE	State Environmental Expertise
SPECA	Special Programme for the Economies of Central Asia
TACIS	Technical Assistance programme for the Commonwealth of Independent States
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNECE	United Nations Economic Commission for Europe
UNITAR	United Nations Institute for Training and Research
USAID	United States Agency for International Development
WB	World Bank
WHO	World Health Organization
WUAs	Water users' associations
WWF	World Wide Fund for Nature

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**SIGNS AND MEASURES**

..	not available
-	nil or negligible
.	decimal point
°C	degree Celcius
\$	dollar
Ci	Curie
GWh	gigawatt-hour
ha	hectare
kg	kilogram
kJ	kilojoule
km	kilometre
km <sup>2</sup>	square kilometre
km <sup>3</sup>	cubic kilometre
kgoe	kilogram of oil equivalent
ktoe	kiloton of oil equivalent
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
l	litre
m	metre
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre
MW	megawatt
PJ	petajoule
ppm	parts per million
s	second
t	ton
TJ	Terajoule
toe	ton of oil equivalent
tofe	ton of fuel equivalent
TWh	terawatt-hour

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**CURRENCY****Monetary unit in Kyrgyzstan: Som**

Exchange rates (period average):

<b>Year</b>	<b>Som / US\$</b>
<b>2000</b>	47.70
<b>2001</b>	48.38
<b>2002</b>	46.94
<b>2003</b>	43.65
<b>2004</b>	42.65
<b>2005</b>	41.01
<b>2006</b>	40.15
<b>2007</b>	37.32
<b>2008</b>	36.57

*Source:* UNECE database 2009.

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## EXECUTIVE SUMMARY

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*The first Environmental Performance Review (EPR) of Kyrgyzstan was carried out in 2000. This second review intends to measure the progress made by Kyrgyzstan in managing its environment since the first EPR, and in addressing upcoming environmental challenges.*

### *Overall context*

*The environmental performance of Kyrgyzstan is affected by long- and short-term economic difficulties...* The problems currently facing the Kyrgyz environmental sector are partly related to the country's current economic difficulties, but also to the prolonged and steep recession that has befallen the country since its independence. By some estimates, Kyrgyzstan has lost as much as 70 per cent of its gross domestic product (GDP).

*...which limit the availability of financial resources and undermine political will.* This is even more true when it comes to mobilizing and making available resources for environmental protection. The lack of funding, however, is not only due to the limited revenues of the national and regional budgets, but also to the limited political will to link the current legal and policy frameworks for environmental protection to the existing budgetary system and procedures.

### *Policymaking framework for environmental protection and sustainable development*

*Significant progress has been made since the first EPR in terms of developing the strategic framework for environmental protection.* Since the first review in 2000, Kyrgyzstan has made considerable progress in terms of developing its legal and policymaking frameworks for environmental protection and sustainable development. It has approved a set of key policy documents, most notably the 2007 *Country Development Strategy for 2007-2010*, and the 2007 *Ecological Security Concept for 2007-2020*. The adoption of programme documents that recognize the importance of the environment and identify priorities is a positive step. What is still needed is the translation of these broad frameworks into concrete environmental measures and financing proposals for future budgets.

*A number of key environmental protection laws have been promulgated,* e.g. on environmental protection, environmental expertise, air protection, fauna and specially protected natural areas, as well as on natural resources. The challenge for the country now is to proceed with their concrete implementation. To be implemented, these laws need to be reinforced by more detailed regulations.

*At the same time, many institutional changes have occurred since the first review.* Most notably, the status of the national environmental authority has been downgraded from a ministry to a State agency, the State Agency of Environmental Protection and Forestry (SAEPF). While its competence has been expanded with the addition of the functions of forest protection and management as well as biodiversity conservation, no additional resources have been allocated to fulfill these new tasks. At the local level, a governance system is currently under formation, but the current sharing of competencies between national environmental authorities and local bodies remains unclear.

*The downgrading of environmental authorities has important implications* because performing key functions often requires the appropriate status to initiate and facilitate inter-ministerial and intersectoral cooperation. As a result, it is often not possible for SAEPF to properly carry out its responsibilities with regard to environmental protection or the promotion of sustainable development. In these circumstances, the establishment of effective integration and cooperation mechanisms becomes even more important.

*Providing sufficient State funding for environmental protection measures remains a key challenge for Kyrgyzstan.* Important environmental protection and sustainable development programmes and plans, e.g. the 1995 *National Environmental Action Plan*, the 1998 *Strategy on Sustainable Human Development*, the 2002 *Strategy for*

*Biodiversity Conservation* and the related *Action Plan*, and the 2002 *Agenda 21* have to a great extent not been implemented because their financing has not been secured.

### *Compliance and enforcement mechanisms*

*The enforcement of the environmental legislation is hampered by the lowly political status of the national environmental authority.* In addition, because of the establishment of interregional environmental protection administrations (April 2008) and the very recent institutional restructuring at the regional level (May 2008), the distribution of competencies is quite unclear and the efficient implementation of environmental control quite inefficient. Furthermore, environmental control authorities at the regional level remain both understaffed and overloaded.

*Functions of permitting and control are concentrated under the same department within SAEPF.* This is not in accordance with the internationally recognized good practice of splitting these two functions. Such practices, when put in place, make better use of expertise in the respective functional areas and minimize chances for corruption. Once these functions are split, a regular exchange of information between the two respective staffs needs to be ensured. Likewise, and with the same downsides, these functions are not separated at the regional level.

*Monitoring and enforcing compliance with permitting remains difficult.* This is partly due to the large number of regulated substances based on maximum allowable concentrations (MACs), uniform permitting rules for all polluters irrespective of their size and impact, and the brevity of permits' validity. This system puts a heavy burden on both the environmental administration and the regulated community.

*The effectiveness of the compliance monitoring system is weak,* partly because the capacities of both inspection staff and laboratories under SAEPF are also weak. Furthermore, one of the major challenges facing the Government and the legislature is to ensure 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, when the industrial operator remains reluctant to comply – and in order to discourage similar reluctance from operators in the future – it would be appropriate to give the inspection authorities the legal mandate to implement the required environmental measures at the company's expense.

*Environmental self-monitoring and reporting do not exist in practice.* Continuous online monitoring in industry is non-existent, and only a few companies monitor their emissions properly. Unless there is a well-documented, legally based reason for keeping such information confidential, new regulations for self-monitoring, self-reporting and handling confidential industrial data need to be introduced that reflect international good practices. Confidentiality should be limited to commercial secrets. Facility-specific information of environmental significance should be publicly available.

*Sanctions against environmental violators are not yet efficient enough to modify violators' behaviour* and thus to protect the environment effectively. The rates of the fines need to be increased, thereby strengthening their deterrent effect. At the same time, the administration should set feasible and enforceable compliance objectives and implement them in a transparent and accountable manner.

*Enforcement authorities at the regional level can hardly cope with the functions delegated to them.* They need appropriate assistance (e.g. methodological support, staff training). In addition to providing expert support to local authorities, 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 the internal auditing of inspection and control services and no practical experience with implementing such auditing. This situation may change with the recent adoption of the Government Resolution No 139/2008, which contains detailed provisions on environmental assessment, permitting and control.

### *Information, public participation and education*

*Since 2000, Kyrgyzstan has expanded its environment monitoring network, but significant gaps remain.* Nonetheless, because of the lack of available resources and the difficult economic situation, the network density

is far from the requirements of national monitoring regulations. For instance, a number of pollutants harmful to human health and the environment are not measured; the current networks are unable to link pollution levels with emission patterns, and there is neither an integrated nor interconnected environmental electronic database in the country. As a result, environmental monitoring data is not sufficient for making decisions, elaborating policies or raising public awareness. Moreover, those policy documents with environmental objectives either do not contain any environmental monitoring and information objectives at all or, where set, such objectives remain unattained.

*Progress has been made in producing assessments of the state of the environment*, but the country is some ways from producing full-fledged assessments based on internationally agreed indicators. Specifically, national state-of-the-environment reports were published regularly up to 2004, but only sporadically since then. An integrated state-of-the-environment assessment report, which marked an improvement from previous largely descriptive report, was completed in late 2008. In the meantime, concise information on the state of the environment has been periodically uploaded on the website of the central environmental authorities. More needs to be done to improve the consistency between the similar environmental data series collected by different public authorities and to ensure that all emission sources report data and that this data is reliable.

*SAEPPF has improved the level and quality of information to the public.* The Agency publishes an environmental newspaper and hosts a dedicated environmental website. Except for SAEPPF, however, ministries and agencies with environmental information do not actively disseminate this information to the public. Environmental publications by public authorities have an ad hoc character. As a result, the public is not sufficiently informed about troublesome domestic environmental issues such as poor drinking water quality, uncontrolled litter disposal, forest-cutting, pollution from mine tailings, degradation of pastures and the pollution of Lake Issyk-Kul.

*SAEPPF has strengthened civil society involvement.* The Consultative Council within SAEPPF promotes its cooperation with non-governmental organizations (NGOs). NGOs are involved in various governmental environmental processes and activities, including State and public environmental expertise of projects, draft laws, regulations, programmes and concepts, and participation in the Board of the Agency's Environmental Fund. However, owing to the absence of detailed procedures, these efforts have not yet established an adequately transparent and effective framework for efficient public information and participation. Furthermore, the establishment of a legal obligation to inform the public about a given decision and the reasons behind it is still pending. Kyrgyzstan does not have a detailed strategy or an action plan for the implementation of the Aarhus Convention<sup>1</sup>.

*Environmental education is now taught at all levels, from preschool to university.* To move further in this direction, an interdepartmental expert council has been created. In 2003, the Ministry of Education and Science (jointly with the former Ministry of Ecology and Emergencies) adopted the *Concept of Continuous Environmental Education in Kyrgyzstan* as well as the related implementation programme. An interdepartmental Coordinating Council on Education for Sustainable Development, with the participation of key stakeholders, was also been established. However, most of these measures and bodies have not yet been made operational due to continuous reorganization within the governmental institutions concerned.

### *International agreements and commitments*

*Since the first EPR, significant progress has been achieved in terms of international environmental cooperation.* Kyrgyzstan has joined seven international conventions and three protocols, and takes part in a number of bilateral and regional agreements. To comply with the requirements under the multilateral environmental agreements (MEAs) in which it participates, Kyrgyzstan, assisted by the international community, has developed policies and strategies and implemented many environmental projects. The *Country Development Strategy* and the *Ecological Security Concept* lay out the main directions for international cooperation on environment protection.

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<sup>1</sup> UNECE *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*

*Clear priorities and objectives regarding MEAs have not yet been adequately defined.* As a result, the many ministries and agencies involved in environmental protection do not share a common understanding of problems or of how to effectively coordinate their actions. These two capabilities are needed to ensure that the requisite financing and capacity are available to meet MEA commitments. Furthermore, despite the adoption of the *Country Development Strategy*, international donors lack adequate guidance, which limits the efficiency of international financing and external technical assistance. The preparation of the donors' own Joint Country Support Strategy up to 2010 has not addressed the issue adequately. As a result, donors very often follow their own development strategies.

*Regional cooperation to address transboundary problems has improved, but is not yet sufficient...* While positive steps have been taken to strengthen bilateral and regional cooperation on the use and protection of transboundary waters, there is much room for further progress. Agreements have been established (mainly prior to 2000) 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 was an important step towards a common approach.

*...although work on the implementation of UNECE multilateral environmental agreements is progressing.* Specifically, preparatory work has begun to ratify the *Protocol on Water and Health to the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention)*. Preparatory work is also under way to join other regional conventions, e.g. the EMEP Protocol<sup>2</sup> and the *Protocol on Heavy Metals to the UNECE Convention on Long-range Transboundary Air Pollution* and the *UNECE Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)*. Kyrgyzstan has not ratified the *UNECE Water Convention* and is not planning to do so in the near future. However by joining these MEAs, Kyrgyzstan could take advantage, with the assistance of the secretariats of the MEAs and donor countries, of implementation programmes and capacity-building activities.

#### *Economic instruments and expenditures for environmental protection*

*The State does not devote sufficient regular budget resources to environment protection...* This prevents the successful implementation of environmental protection and sustainable development strategies and plans. The lack of budgeted State funding, particularly for projects requiring significant funds, remains a key constraint. Most of the public environmental expenditures are covered by the Environmental Fund. The Fund's revenue base, however, is rather narrow. Furthermore, the criteria by which funds are allocated to projects often remain unclear. More transparency and better communications would increase revenues as well as cost-effectiveness.

*...moreover, it is almost impossible to estimate the funds from the regular budget going to environmental protection.* There is no specific budget line for environmental objectives in the regular budget. Changing this situation to ensure that environmental spending is included in overall budget plans and financed by regular sources would create the necessary conditions for a more effective focus on environmental priorities.

*Attracting better-targeted donor assistance on environment projects remains an objective.* Beyond budgeted resources, attracting assistance and investments serving environmental objectives is of paramount importance for a low-income country such as Kyrgyzstan. Although a better definition of MEA objectives and priorities would significantly improve such linkages, the *Country Development Strategy* provides a national policy framework that can link donor assistance and domestic budget priorities. The inclusion of environmental investments in national programmes to attract donor support is an important factor in the effort to strengthen the financing of environmental objectives.

*In Kyrgyzstan, the core economic instrument for financing environmental spending is pollution charges* Nonetheless, there is room for improvement. More efforts are needed to ensure that the system of pollution charges does not target an excessively large number of substances and that it creates incentives for polluters to

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<sup>2</sup> *Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe*



change their behaviour. Currently, charges are low and collection has been problematic. This fact increases the need to provide a stronger regular base for environmental financing and thus emphasize more the behaviour-changing – and less the revenue-generating – role of this economic instrument.

### *Sustainable management and protection of water resources*

*Kyrgyzstan has not been successful in its efforts to develop a consistent national water strategy.* The management of water resources is of the utmost importance to Central Asia. In addition to its importance for domestic consumption, water is crucial both for irrigation purposes and for the production of electricity. It is also crucial to the activities of downstream countries, with which Kyrgyzstan has related international obligations. To attain the maximum benefit from this common resource, Kyrgyzstan needs a comprehensive national strategy that sets targets and defines priorities for managing water resources.

*The quality of water resources is still under serious threat due to the pressures of past pollution and current economic activities.* The tailing dams located at closed uranium mining and processing sites as well as the disposal of radioactive waste from the Soviet era present grave risks to environmental safety and human health in the region, mainly through pollution of surface waters. Groundwaters are also threatened by various anthropogenic activities, including agriculture, industry and transport, and protection rules are not implemented. Kyrgyzstan should take preventive actions and, if not able to afford the costs, seek a substantial part of the funding from international donors.

*The establishment of water users' associations has been an important positive step in the structural and institutional reform of the irrigation systems,* because it has led to the transfer of responsibility for the operation and maintenance of the in-farm distribution systems to the local level. However, poorly maintained distribution systems and drainage canals make the irrigation of arable land highly ineffective. A fundamental problem is the lack of allocated financial resources for restoration and maintenance of the irrigation distribution infrastructure.

*Integrated water resource management is gradually being introduced,* even if it is still in the inception phase. However, the proper management of water resources is complicated by the lack of reliable data on their quality and quantity. The responsibility for monitoring water is shared between several ministries, agencies and institutes. Their monitoring activities are not very well coordinated, and for many years they have been hampered by the lack of financial resources. The country has also seen a substantial reduction in its monitoring networks and capacities since the Soviet era. This lack of data makes it impossible to prioritize actions and investment, and complicates the introduction of integrated water resource management principles, an approach promoted in the 2005 *Water Code*. Nevertheless, the establishment of a Chu basin council is a positive development. This will be accomplished under a UNECE-led National Policy Dialogue on integrated water resource management.

### *Land management and protection*

*Sustainable land management is one of the Government's main priorities.* Land degradation – primarily due to water erosion, desertification, salinization and waterlogging – poses a very serious challenge in Kyrgyzstan. The Government adopted the *National Action Programme to Combat Desertification* (2000) and the *National Framework Programme on Land Management* (2006–2016) within the framework of the Central Asian Countries Initiative for Land Management (2006). These programmes focus on sustainable land management, increased productivity of agricultural land and poverty alleviation in rural areas. Despite the successful implementation of a number of pilot projects focused on sustainable land management and good agricultural practices in the period 2000–2007, very slow change has been coupled with land degradation, a worsening of indicators of agricultural production and an increase in poverty in rural areas. Kyrgyzstan should increase its efforts at full-scale implementation of all the above-mentioned programmes.

*Substantial problems have emerged with regard to pasture use and pasture conservation since land privatization took place.* Grazing is a traditional agricultural sector in Kyrgyzstan, and pasture land covers 9.2 million ha (nearly 50%) of the country's area. Herding is an important element of the traditional Kyrgyz way of life. Following land privatization, collective farms collapsed and over 530,000 small farms were created. This has rendered the

current pasture management system inadequate and in need of reform or substitution. The 2009 *Law on Pastures* is a step in the right direction and needs to move to the implementation phase as soon as possible.

*Spatial planning is not used adequately in Kyrgyzstan.* Rayon land-use planning schemes 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 large cities and in zones where tourism activities are actively developing – are not contained. There is no planning, which increases the risk of natural disasters in areas where construction should be strictly prohibited. Reviving the use of spatial planning, combined with the introduction of geographic information system (GIS) technologies should be a priority.

*Since 1990, there has been no land monitoring in Kyrgyzstan.* It is therefore impossible to accurately assess changes, estimate their dynamics in due time, elaborate measures for land prevention and remediation, and provide control of effectiveness of measures undertaken. Making adequate information available to decision makers on soil condition and land degradation processes is vital to ensuring sustainable land management and protection. It is also necessary to initiate background soil and urban soil monitoring. Kyrgyzstan needs to implement the approaches defined under the current regional cooperation in Central Asia and the United Nations Convention to Combat Desertification.

#### *Biodiversity conservation and sustainable management of natural resources*

*Great attention has been paid to the sustainable management and protection of forests.* There is, however, an urgent need for a strategy on biodiversity conservation in general, and on protected areas in particular. In recent years, Kyrgyzstan has managed to elaborate an inclusive and widely accepted forest-related policy and strategic document, the *National Forest Programme*. The country nonetheless lacks a framework policy and strategy on the sustainable use of biological resources. Without such a framework, it may not be possible for other strategies, programmes, or action plans for ecosystems (e.g. forests) or other resources to be effective and/or achievable.

*Protected areas have almost doubled since 2000.* The size of protected areas in Kyrgyzstan has increased by about 426,000 ha to 937,700 ha, but there is need to move even more State-owned forested lands and hunting areas to a protection regime. Furthermore, there is still room for improvement in the effective management and development of protected areas, through more in-depth and strategic planning. In this spirit, the elaboration of long-term National Strategies and Action Plans for Protected Areas System Development, as recommended by the Convention on Biodiversity, would help Kyrgyzstan both to define goals and objectives for the development of the protected area system and to prioritize actions for achieving them.

*Efforts to protect species are continuing.* The national Red List of endangered species was adopted in 2005, as was the related *Red Book* of 2007. But significant opportunity for improvement exists in: (a) defining the de-listing and down-listing criteria and procedures; (b) providing a time frame for their revision and updating; (c) establishing clear legal procedures and rules for selecting species for the Red List; (d) assigning them a threat category; and (e) expanding State responsibilities beyond mere prohibition of direct use (e.g. hunting, collection) of listed species.

*The national biodiversity monitoring system needs to be improved.* Monitoring activities are carried out in a fragmented manner in some protected areas and hunting management areas. They are performed sporadically and on an ad hoc basis by NGOs and academic institutions. When establishing the national biodiversity monitoring system, it would be highly desirable (both financially and environmentally) to include in it the recently initiated forest inventory.

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# INTRODUCTION

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## I.1 Physical context

Kyrgyzstan, a landlocked country in Central Asia, is bordered by Kazakhstan to the north (border length, 1,051 km), China to the east (858 km), Tajikistan to the south-west (870 km), and Uzbekistan to the west (1,099 km). The total area of the country is 198,500 km<sup>2</sup>, of which 7,200 km<sup>2</sup> (3.6%) are covered by water.

The country is located at the juncture of two great mountain systems, the Tien Shan and the Pamir, and high mountains cover about 65 per cent of its territory. The Alay range portion of the Tien Shan dominates the south-western crescent of the country; to the east, the main Tien Shan range runs along the boundary between southern Kyrgyzstan and China before extending further into China. Only about one eighth of the country lies lower than 1,500 m in altitude, and more than half of Kyrgyzstan lies at an elevation higher than 2,500 m. The highest mountain peaks are found in the Kokshaal-Too range on the Chinese border. The highest point is Jengish Chokusu (7,439 m). The area experiences frequent seismic activity and earthquakes are common, some of them quite violent.

The Naryn, the largest river (length 807 km, annual flow 13.7 km<sup>3</sup>), originates in the north-eastern mountains and flows west through the Fergana Valley into Uzbekistan, where it meets another of the country's major rivers, the Kara Darya. The two form the Syr Darya, which eventually flows into the Aral Sea. The Chu (221 km), in northern Kyrgyzstan, flows northward into southern Kazakhstan. Lake Issyk-Kul, in the north-western Tien Shan, is the largest lake in Kyrgyzstan and the second largest high-altitude (1,608 m) mountain lake in the world.

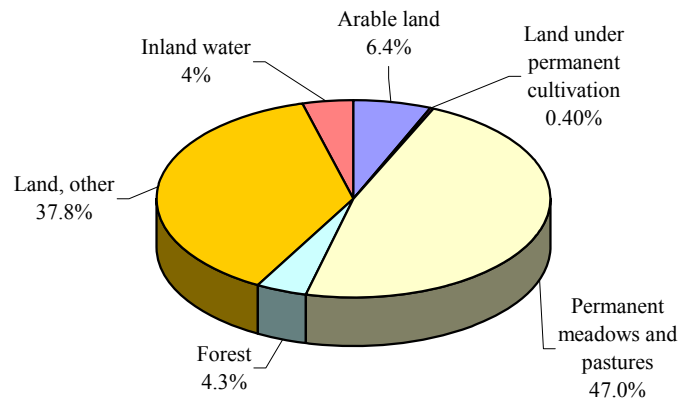
The climate is basically continental, with significant local variations due to the wide range of altitudes. Except in the high-altitude areas, winters are cold and summers are warm. Glaciers and snow permanently cover more than 3 per cent of country's total land area. These glaciers are melting: according to the United Nations Environment Programme (UNEP) and the World Glaciers Monitoring Service, the glacier area of the Tien Shan decreased 25–35 per cent during the twentieth century.

The mountainous topography produces heavy winter snowfalls, resulting in spring floods that often cause serious damage downstream. The Fergana Valley in the south-west is subtropical and extremely hot in summer, with temperatures reaching 40°C. The lower mountain slopes have a dry continental climate, as they receive desert-warmed winds from Kazakhstan and Uzbekistan, whereas the highest mountain elevations have a polar climate. The northern foothills are temperate and the climate of the Tien Shan mountain range varies from dry continental to polar, depending on elevation. In the coldest areas, temperatures can stay below zero Celsius for approximately 40 days in winter, and some desert areas experience constant snowfall during this period. The average annual precipitation is 533 mm, varying from over 1,000 mm in the mountains to 150–500 mm in the plains. Most of the precipitation falls as snow in the period between October and April.

## I.2 Natural resources

Agriculture is an important part of the economy, but only 7 per cent of the total land area is used for crop cultivation. Forty-four per cent of the land is used as pasture land for livestock. Because of the mountainous topography, animal husbandry remains a significant part of the agricultural economy. Cultivation is centered in the Fergana Valley and in Talas and Chu oblasts. Main crops include tobacco, cotton, vegetables, and fruits; the largest crop is fodder for livestock. The second largest is winter wheat, followed by barley, corn and rice. The main export products are cotton and tobacco. Meat is also exported, but in less significant quantities.

Kyrgyzstan has substantial hydroenergy resources; these provided 93 per cent of the total electricity used in 2004. This abundance has enabled the country to become a hydroelectricity exporter and a significant electricity provider to the Central Asian grid. However, the natural annual variation of the water level and water management issues are causing problems, and during times of drought Kyrgyzstan is heavily dependent on foreign energy imports. The management of the water resources is also a constant source of tension with neighboring downstream countries.

**Figure I.1: Land use, 2005**

Source: FAOSTAT (statistical database of the Food and Agriculture Organization of the United Nations, <http://faostat.fao.org/site/377/default.aspx#ancor>), accessed 18 September 2008

Kyrgyzstan produced 23 tons of gold in 2003, making it the third largest gold producer (after the Russian Federation and Uzbekistan) of the Commonwealth of Independent States (CIS) countries. The development of several new mines, notably the Kumtor mine, has created increases in production, and the country's gold reserves are estimated at over 560 tons. In addition, more than 40 commercial or near-commercial gold deposits have been discovered – a figure that could easily double with further exploration and deposit evaluation.

### I.3 Demographic and social context

The total population in 2006 was 5.2 million, which was 5.7 per cent higher than in 2000 (4.9 million). Although the population has grown little in recent years, other demographic and health figures have remained surprisingly similar since 2000. This is significant, as the other countries formerly parts of the Soviet Union have witnessed drastic changes in their populations and general health indices since the Soviet collapse.

Kyrgyzstan's population is very young: in 2005, 31.2 per cent was younger than 14 years of age. The total fertility rate in 2004 was 2.6. Mortality rate has stayed steady at around 7 per 1,000. The most recent figure for 2006 was 7.4. Infant mortality is unfortunately on the rise, having gone up from 23 per 1,000 in 2000 to 29.7 per 1,000 in 2005.

Kyrgyzstan is predominantly rural and sparsely populated; about two thirds of the population (66.1%) lives in rural areas, and the average population density is 26 people per km<sup>2</sup>. Bishkek, the capital and financial centre with 900,000 inhabitants (2005), is

the largest city. The second largest city is Osh (population 220,000 in 2003), located in the Fergana Valley near the border with Uzbekistan.

Ethnic composition has remained almost the same since 2001. In 2005, the main ethnic groups were Kyrgyz (67.9%), Uzbek (14.3%) and Russian (9.9%), with 7.9 per cent of the population belonging to a number of small minority groups. These include Tatars (1.9%), Uyghurs (1.1%), Tajiks (1.1%), Kazakhs (0.7%) and Ukrainians (0.5%); the remainder is comprised by other smaller ethnic groups. The country's minority populations are regionally significant, e.g. ethnic Russians mainly live in the north and Uzbeks generally in the south of the country.

Kyrgyzstan has been active with respect to gender issues and is one of the top 10 countries in terms of successfully fulfilling its commitments under the Beijing Platform for Action of the Fourth World Conference on Women (1995). The new Constitution, adopted in 2007, provides a legal framework for gender equality and promotes women's empowerment. In political terms, change has been fast: while there were no female deputies in the former Parliament, 27 per cent of the deputies elected in 2007 were women. Higher representation of women in Parliament is assured by the *Election Code*, which requires that no more than 70% of the candidates allocated to the party lists can be of the same gender.

Despite progress at the political level, however, significant disparities still exist in social and economic terms, especially in rural areas, where the majority of the country's population lives. Women

make up 40% of the country's workforce and play a key role in the country's economic development; however, their average salaries are equal to only three quarters of those of men. Growing economic and social disparities were noted in the 2005 Country Assessment of Kyrgyzstan by the Asian Development Bank (ADB).

After gaining independence, Kyrgyzstan kept Russian as an official language; however, in September 1991, the Kyrgyz language was also adopted as a State language and the country became officially bilingual. In general, except in some remote mountain areas, Russian is understood throughout the country. The majority of Bishkek residents are Russian speaking, and most business and political affairs are carried out in Russian. Most parliamentary meetings are conducted in Kyrgyz, with simultaneous interpretation available for those who do not speak Kyrgyz.

As measured by the United Nations Development Programme (UNDP) Human Development Index, the national living standard dropped slightly in recent years, from 0.712 in 2000 to 0.696 in 2005. The drop in ranking was more pronounced, as Kyrgyzstan fell from 112th position to 116th. However, the country's development between 2000 and 2005 was comparable with all Central Asian countries except Kazakhstan, which rose both in the index and in its ranking.

Kyrgyzstan is a secular State, although Islam is exerting a growing influence in politics. About 75 per cent of the population is Muslim and about 20 per cent belong to either the Russian or the Ukrainian Orthodox church. The remaining 5 per cent belongs to other religious groups.

#### **I.4 Economic context**

As with other countries that were part of the former Soviet Union, the gross domestic product (GDP) of Kyrgyzstan plummeted after the country gained its independence in 1991. Prior to independence, the Kyrgyz economy was highly dependent on that of the Soviet Union, and the loss of key inputs caused severe economic contraction in the 1990s. Real GDP diminished by half during the first four years of independence.

In 1993, the annual consumer price index (CPI) was running wildly at 700 per cent, but the National Bank's stringent monetary policies reduced it to around 10 per cent by mid-1998. The Russian financial crisis the same year caused a short-lived

spike in CPI, but since 2001 inflation has been at single-digit levels. In 2006, however, inflation accelerated again, and in 2007 it was 10.2 per cent.

The market reform programme pursued in the 1990s has been partly abandoned as the State assumed a greater planning role in the late 1990s and early 2000s. GDP got on an upward path in 1996 mainly due to the growth of agriculture and the development of the Kumtor gold mine, which currently produces about 10 per cent of the country's GDP. In 2007, GDP was 77 per cent higher than in 1995.

The March 2005 "Tulip Revolution" was relatively non-violent and provided a possibility to advance reforms in the Government. While new presidential elections were held in July 2005, political tensions slowed the process of change. The political unrest adversely affected GDP, stalling growth for 2005, but inflation remained low. However, the combined effect of rising GDP and the strengthened som<sup>1</sup> caused current price per capita GDP to increase from US\$ 436 in 2004 to \$725 in 2007. This development has decreased poverty levels significantly, especially extreme poverty.

Since 2002, the sectoral shares of the economy have showed a clear trend of the economy moving from primarily agricultural and mining production to service industries – which made up almost half (46.9%) of the country's economic activity in 2006 (figure I.2).

Firm fiscal policy, aided by recent strong growth, diminished public debt from almost 100 per cent of GDP in 2004 to 58 per cent in 2007. Net foreign direct investment (FDI) has also seen a similar positive development since 2003. In 2006, net FDI flows as a percentage of GDP stood at 6.4 per cent.

Kyrgyzstan imports gas from neighbouring countries, but relies on domestically produced hydroelectric power for other energy needs. The energy companies, however, face significant debt obligations and, despite some ongoing improvement in cash collection, the sector requires financial restructuring to become attractive for investment.

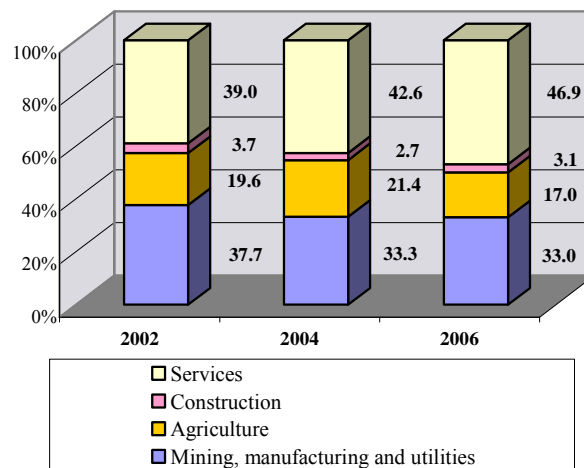
Economic performance has been affected by accidents and declining yields at the Kumtor gold mine, which accounts for about 30 per cent of industrial output. In recent years, political

<sup>1</sup> The monetary unit of Kyrgyzstan; its International Organization for Standardization (ISO) code is KGS

**Table I.1: Demographic and health indices, 2000–2006**

	2000	2001	2002	2003	2004	2005	2006
Population (in millions)	4.9	4.9	5.0	5.0	5.1	5.1	5.2
Birth rate (per 1,000)	..	..	20.2	20.9	21.6	21.4	23.3
Total fertility rate	2.4	2.4	2.5	2.5	2.6	..	..
Life expectancy at birth, in years	..	..	..	..	..	..	..
Life expectancy at birth, in years, male	63.8	64.5	64.1	64.1	63.5	63.8	..
Life expectancy at birth, in years, female	72.0	73.0	72.1	71.9	71.8	71.8	..
Percentage of population aged 0–14 years	34.8	34.0	33.2	32.8	31.8	31.2	..
Percentage of population aged 65+ years	5.5	5.5	5.5	5.5	5.6	..	..
Mortality rate (per 1,000)	..	..	7.1	7.1	6.9	7.2	7.4
Infant mortality rate (per 1,000)	23.0	21.6	21.1	20.7	25.6	29.7	..

Source: UNECE database, accessed August 2008.

**Figure I.2: GDP by sector in 2002, 2004 and 2006, as per cent of total GDP**

Source: Economist Intelligence Unit, Country Report Kyrgyzstan, 2007.

turbulence has introduced a new source of economic volatility and reduced the country's ability to carry out effective economic policies. The average annual GDP growth was 4.5 per cent in the period 2000–2007. However, this growth has not been steady and GDP contracted in 2002 and 2005. Kyrgyzstan has been under two Poverty Reduction and Growth Facility programmes funded by the International Monetary Fund (2001–2004 and 2005–2008), with a focus on reducing macroeconomic imbalances and alleviating poverty.

Kyrgyzstan faces a significant external debt burden which considerably limits available policy options. The ratio of public external debt to GDP declined to 55 per cent by the end of 2007, down from 95 per cent at the end of 2003. Annual debt servicing is projected to be around 3.5 per cent of GDP over the next few years.

Corruption and the size of the informal economy are important issues. The corruption perception index

published by Transparency International ranked Kyrgyzstan 150<sup>th</sup> out of 179 countries surveyed (with the first being the least and 179<sup>th</sup> the most corrupt). The shadow economy was estimated at 60 billion KGS in 2007 (more than 40% of GDP).

### I.5 Institutions

The President, elected by popular vote for a five-year term, is the Head of State. The President appoints the Prime Minister following to the nomination by the Parliament. The party which received a majority in the parliamentary elections (more than 50% of the seats) has a right to propose its candidate for the post of the Prime Minister. Ministers are appointed by the President according to the nomination of the Prime Minister (except for the Ministers of Foreign Affairs, Internal Affairs and Defence, who are chosen by the President).

The executive branch comprises the President, the Prime Minister and a cabinet consisting of two

deputy prime ministers, 15 ministers, and the heads of six national committees. The Prime Minister is appointed by the party that receives majority in the parliamentary elections. The President does not have the power to dismiss the Parliament.

Kyrgyzstan has universal suffrage with the minimum voting age of 18 years. The unicameral legislative assembly, the Supreme Council (*Zhogorku Kenesh*), has 90 members who are directly elected for five-year terms.

The Constitution provides for an independent judiciary, although the President has substantial power over the judiciary as he/she recommends appointments to both of the main judicial institutions: the Supreme Court and the Constitutional Court. The Supreme Court is the highest appeals court for civil and criminal cases. The Constitutional Court rules on constitutional interpretations and on the validity of presidential elections. The members of both courts are elected to 10-year terms by the Supreme Council, after being nominated by the President. The President appoints judges at the subnational level to seven-year terms.

Most cases originate in local courts and move via the appeals process to the municipal or regional courts, with the Supreme Court being the final court of appeal. Property and family law disputes and low-level criminal cases are heard by traditional elders' courts, which are supervised by the Prosecutor's Office. Economic disputes and military cases are heard in specialized courts.

Administratively, the country is divided into seven oblasts and the municipality of Bishkek and Osh. Oblasts are divided into a total of 40 rayons, which are divided into rural communities, each comprising up to 20 small settlements. Each oblast is headed by a governor (*akim*) appointed by the President. District administrators are appointed by the central government, while rural communities are governed by directly elected mayors and councils.

## I.6 Economic activities and their impact on the environment

### *Agriculture*

Agriculture is a significant sector of the economy. Land and agrarian reform divided more than 75 per cent of cultivated land into land shares that are now privately owned by farmers. In consequence, over 80 per cent of the rural population is agricultural landowners. In 2007, the agricultural sector produced 35.3 per cent of the total GDP and employed 55 per cent of the total labour force.

Because of its importance, agriculture is also a major user of natural resources, in particular water, of which it is the principal one: in 2006, agriculture accounted for about 93 per cent of total water consumption. Irrigation is extremely wasteful because the distribution infrastructure is old and poorly maintained. The soil erosion and salinization are the most important problems contributing to improperly irrigated farmland. According to some estimations, 60 per cent of the country's land area is affected by topsoil loss, and 6 per cent by salinization.



*Tian Shan range, seen from Bishkek*

**Table I.2: Selected economic indicators, 2000–2007**

	2000	2001	2002	2003	2004	2005	2006	2007
GDP (% change over previous year, at prices and PPP's <sup>1)</sup> of 2005)	5.4	5.3	0.0	7.0	7.0	-0.2	3.1	8.2
GDP (million US\$ at prices and PPP's of 2005)	7,380.0	7,773.0	7,771.0	8,318.0	8,902.0	8,887.0	9,162.0	9,915.0
GDP (million US\$ at prices and PPP's of current year)		7,041.0	7,163.0	7,830.0	8,621.0	8,887.0	9,458.0	10,510.0
GDP in 2005 prices (million KGS)	83,793.0	88,252.0	88,237.0	94,440.0	101,077.0	100,899.0	104,030.0	112,572.0
GDP in current prices (million KGS)	65,358.0	73,883.0	75,367.0	83,872.0	94,351.0	100,899.0	113,800.0	139,749.0
GDP per capita (US\$ at prices and PPP's of 2005)	1,510.0	1,578.0	1,565.0	1,660.0	1,758.0	1,737.0	1,774.0	1,904.0
GDP per capita (US\$ at prices and PPP's of current year)	..	1,429.0	1,443.0	1,563.0	1,702.0	1,737.0	1,831.0	2,018.0
CPI (% change over the preceding year, annual average)	19.7	6.9	2.1	3.0	4.1	4.4	5.6	10.2
PPI <sup>2)</sup> (% change over the preceding year, annual average)	32.0	9.1	5.3	5.6	8.8	3.1	15.9	11.8
Registered unemployment (% of labour force, end of period)	3.1	3.2	3.1	2.9	2.9	3.3	3.5	..
Current account balance (million US\$)	-123.0	-52.0	-61.0	-61.0	3.0	-60.0	-299.0	-263.0
Current account balance (as % of GDP)	-9.0	-3.4	-3.8	-3.2	0.2	-2.4	-10.6	-7.0
Net FDI <sup>3)</sup> inflows (million US\$)	-7.0	-1.0	5.0	46.0	132.0	43.0	182.0	..
Net FDI flows (as % of GDP)		-0.1	0.3	2.4	6.0	1.7	6.4	..
Cumulative FDI (million US\$)	118.0	117.0	122.0	168.0	300.0	343.0	568.0	..
Foreign exchange reserves (million US\$)	..	..	..	..	..	..	..	..
Gross external debt (million US\$)	..	..	..	2,262.0	2,428.0	2,366.0	2,667.0	3,215.0
Exports of goods and services (million US\$, PPP)	..	2,587.0	2,836.0	3,030.0	3,670.0	3,404.0	3,943.0	4,692.0
Imports of goods and services (million US\$, PPP)	..	2,608.0	3,105.0	3,544.0	4,420.0	5,046.0	7,469.0	9,439.0
Net exports of goods and services (million US\$, PPP)	..	-21.0	-269.0	-514.0	-750.0	-1,642.0	-3,526.0	-4,747.0
Ratio of gross debt to exports (%)	..	..	..	74.7	66.2	69.5	67.6	68.5
Ratio of gross debt to GDP (%)	..	..	..	117.7	109.8	96.2	94.1	85.8
Exchange rates: annual averages (KGS / US\$)	47.70	48.38	46.94	43.65	42.65	41.01	40.15	37.32
Population (million)	4.89	4.93	4.97	5.01	5.07	5.12	5.16	5,16 <sup>4)</sup>

Source: UNECE statistical database, accessed November 2008.

Notes:

- 1) Purchasing power parity, PPP
- 2) Producer price index, PPI
- 3) Foreign direct investment, FDI
- 4) Estimate



**Table I.3: Ministries (as of 17 September 2008)**

Ministry of Foreign Affairs
Ministry of Internal Affairs
Ministry of Health
Ministry of Culture and Information
Ministry of Defence
Ministry of Education and Science
Ministry of Agriculture, Water Resources and Processing Industry
Ministry of Transport and Communications
Ministry of Labour and Social Protection
Ministry of Finance
Ministry of Emergencies
Ministry of Economic Development and Trade
Ministry of Justice
Ministry of Industry, Energy and Fuel Resources

Source: Government of Kyrgyzstan website  
([http://www.gov.kg/index.php?name=EZCMS&menu=3605&page\\_id=246](http://www.gov.kg/index.php?name=EZCMS&menu=3605&page_id=246)),  
accessed 17 September 2008.

Uncertain land tenure and financial insecurity have caused many private farmers to concentrate their capital in traditional raising of livestock, which has subjected new lands to the problem of overgrazing. In 1994, the size of livestock herds averaged twice the carrying capacity of pasture land, continuing the serious overgrazing problem and consequent soil erosion that began when the herds were at their peak in the late 1980s.

#### *Forestry*

Forests cover 4.3 per cent of Kyrgyzstan's land area and there is no real timber production because only sanitary cuttings are made. The main commercial product of Kyrgyz forests is walnuts. Economically, the forest sector is not so important: the combined gross output of hunting and forestry activities amounts to about \$2.42 million (97 million KGS) or 0.09 per cent of GDP. Of this, industrial roundwood production value is estimated at \$0.5 million, or about 0.008 per cent of the country's GDP. The forests are much more important and valuable as protective barriers against landslides and erosion.

#### *Energy*

Development of hydroenergy, which accounts for around 90 per cent of generated electricity, has caused a set of interconnected problems. The flooding of agricultural areas below reservoirs of hydroelectric projects has exacerbated the inherent agricultural land shortage. For example, the construction of the Toktogul Reservoir, the largest on the Naryn (built in 1976 and possessing the largest power plant in the country), involved the flooding of 130 km<sup>2</sup> of fertile land. At the same time, these

projects constrict downstream water supply, e.g. Toktogul deprives the lower reaches of the Syr Darya in Uzbekistan and the Aral Sea basin of substantial amounts of water. In addition, the dams pose the risk of downstream flooding if a natural disaster or inadequate maintenance damages or breaches them. The Naryn basin, where many hydroelectric projects are located, is especially active seismically, and several plants are operating in zones where quake strengths have reached eight or nine points on the Richter scale.

#### *Industry*

After the collapse of the Soviet Union in 1991, the World Bank and the European Bank for Reconstruction and Development (EBRD) advised the country to exploit its gold deposits and privatize the mining industry. Foreign investors stepped in, and between 1995 and 2001 the mining sector brought in about 55 per cent of country's FDI.

#### *Uranium waste*

Uranium has been mined and processed at Mailuu Suu in southern Kyrgyzstan since 1945. In addition to local ore production, uranium ores from Bulgaria, China, Czechoslovakia and East Germany were processed in Mailuu Suu. After the shutdown of operations in 1968, two mills, eight mining waste rock piles and 23 tailings ponds were left behind. The total mass of the uranium tailings contained in these ponds is 2.3 million tons. Although some of these tailings deposits have been covered with gravel and clay, most pose a considerable hazard to the environment. Firstly, the landslides could destroy some of the tailings deposits, causing the release of

the tailings into the nearby stream. Secondly, several smaller tailings deposits could be subject to flooding from the nearby stream. Thirdly, the drainage systems initially built to service the tailings deposits are no longer functional. Finally, there are no access restrictions, and the surface layer over the deposits is being used for pasture.

### **I.7 Environmental situation**

Because Kyrgyzstan's role in the Soviet economic system involved neither heavy industry nor large-scale cotton production, it was spared the enormous environmental problems experienced by its Central Asian neighbors. The economic downturn of the early 1990s also mitigated some of the more serious effects of former industrial and agricultural policies. Nevertheless, there are serious environmental problems stemming from natural disasters, inefficient use of water, pollution of water resources, land degradation and improper agricultural practices.

#### *Air pollution*

The latest available emissions figures are from 2000. Air pollution emissions dropped by 70 per cent in the 1990s when Kyrgyzstan's industrial production decreased. This trend was reversed when the economy picked up again, underlining the linkage of the industrial production and emissions. In fact, emissions per unit of GDP rose 177 per cent from 1990 to 2000 according to a 2003 ADB study<sup>2</sup>, which found no evidence of the decoupling of emissions from GDP, a decoupling which has taken place in Eastern and Central Europe.

The main stationary emission sources are the energy industry, the construction materials industry and the mining and processing industries. Emissions of pollutants from all stationary sources in 1999 amounted to 306,000 tons. The situation is exacerbated by the energy industry's use of solid fuel with relatively low calorie and high ash content, which makes emissions higher per produced energy unit.

In 1999, 37 per cent (187,000 tons) of the total emissions came from mobile sources, mainly from motor transport. Increased automobile use has made air pollution a problem in urban centres. Bishkek has about 90,000 vehicles, which annually produce up to 70,000 tons of emissions. Respiratory diseases are

common in almost all regions of Kyrgyzstan, and make up one third of disease nationwide. The situation is the worst in Bishkek, where the level of air pollution is the highest and sometimes air emissions exceed agreed limits by several times.

Kyrgyzstan does not produce any ozone-depleting substances, equipment or goods, but does import them. Total consumption of ozone-depleting substances has more than halved from 79.5 tons in 2000 to 22.7 tons in 2005.

#### *Biodiversity*

Kyrgyzstan has enormously varied habitats with a high density of endemic species of Himalayan flora and fauna. Despite of its small size, Kyrgyzstan hosts nearly 1 per cent of the Earth's known species and has above-average richness in Central Asian species. Human activity has affected all ecosystems and species composition. Ecosystems such as foothill steppes and deserts have been devastated and practically disappeared. The threat to biodiversity comes in many different forms and menaces diverse ecosystems. The fruit and nut forests in the south are threatened by overuse; mountain forests and meadows as well as steppe near the habitation are affected by overgrazing; and some semi-desert and dry steppe is vulnerable with relation to grazing. Loss of forest in recent decades has been conspicuous, e.g. the fruit and nut forests have diminished to the half of their original size.

Habitat changes have pushed some species on the brink of extinction, for instance, bustards and steppe eagles have stopped nesting when steppes were ploughed, while otters and wetland birds have suffered from the drainage of wetlands. Pollution from agriculture (especially pesticides) and mining has significantly affected flora and fauna.

The Government has tried to tackle the biodiversity issue by adopting the *Biodiversity Strategy and Action Plan* in 2002, but many experts think the Plan is outdated and see a need to revise and update it with a new strategy. A further hindrance for policymaking has been the lack of funding. The *Country Development Strategy 2007–2010* estimates funding needs for biodiversity programmes at about \$60 million, but only \$10 million is expected to come from State budget, with the rest expected to be covered from other sources (see chapter 8).

<sup>2</sup> Asian Development Bank, Economics and Research Department working paper no. 36

### Box I.1: Kumtor gold mine

The largest investment in the mining sector was in Kumtor, an open-pit gold mine located 4,000 m above sea level in the permafrost and glaciers of the Tien Shan mountains, about 350 km south-east of the capital Bishkek near the Chinese border. Kumtor is one of the largest gold deposits – and the second-highest gold-mining operation – in the world.

Kumtor has been essential to the Kyrgyz economy and has been its mainstay in recent years. In 2005, the mine's production accounted for about 6.2 per cent of GDP and 38.5 per cent of industrial output. The mine started operations in 1997 and had produced more than 5.8 million ounces (180,000 kg) of gold through the end of 2006. In the past few years, the estimate of the proven and probable reserves has increased significantly (estimated at 5 million oz.) and this production forecast has been extended for the period 2008–2013.

The Kumtor mine was linked to a major environmental incident in 1998 when a truck en route to Kumtor carrying 1,762 kg of sodium cyanide, a chemical used to dissolve gold from granulated ore, fell into the Barskaun River (see [http://en.wikipedia.org/wiki/Kumtor\\_Gold\\_Mine](http://en.wikipedia.org/wiki/Kumtor_Gold_Mine)). The company notified residents of nearby Barskaun, who used the water for drinking and irrigation, five hours after the accident. According to the non-governmental organization CEE Bankwatch Network, over 2,500 people were poisoned, with 850 hospitalized and at least four fatalities.

### *Land degradation and desertification*

Types of land degradation are related to altitude: mountainous areas are affected by landslides, pasture degradation and deforestation; foothill areas suffer from water and wind erosion and the loss of soil fertility; and valleys are affected by salinization, irrigation erosion and waterlogging.

Recently, the human impact on nature has started to dominate land degradation. Increases in small-scale farming and animal husbandry are causing soil fertility loss and land degradation because current agricultural practices are not appropriate. Anthropogenic pressures on land are also visible in and around Bishkek and Osh, where uncontrolled human settlement has increased substantially in the past few years.

Land degradation has had a huge impact on the country's economy. Irrigation erosion is affecting 97 per cent of the irrigated land and in most places the humus content of agricultural land has decreased between 30 to 45 per cent as compared to virgin land. Together, all forms of land degradation are estimated to have reduced the crop yields between 20 and 60 per cent (see chapter 7).

### *Natural disasters*

Kyrgyzstan is exposed to many forms of dangerous natural disasters due to its mountainous geography. Earthquakes, debris flows, flash floods, avalanches, landslides and rock falls take place with constant regularity.

The whole country is classified as a zone of high tectonic activity and an estimated 40 per cent of the population lives in a point 9 (Richter scale) zone

which includes Bishkek. The most vulnerable areas are valleys where human settlements, transport and other infrastructure are concentrated. As the population density is high, the potential loss of life and property is very high. The risk to human life is exacerbated by the fact that an important percentage of the housing stock is not sufficiently quake-resistant. The areas most frequently affected by earthquakes are the Jalal-Abad and Osh oblasts. The most recent deadly earthquake struck Osh Oblast in October 2008, killing more than 70 people.

In the high-altitude country, snow and ice create a range of natural hazards. Heavy snowfall can cause major flooding during the snowmelt, and sometimes glacial lake outbursts cause floods. Climate change has also started to have an effect on natural disasters, e.g. an unusually high number of avalanches, floods, and landslides in 2004 were attributed to the melting of glaciers in the eastern mountains. Avalanches can cause significant material damage to the infrastructure, but the main risk is loss of life. Between 1983 and 1993, avalanches killed more people than all other hazards combined – including earthquakes.

### *Waste disposal*

The collection of municipal waste in urban areas has been drastically reduced since the beginning of the 1990s due to the financial difficulties experienced by the municipal sector. In rural areas, many settlements do not have any regular waste collection at all.

Almost all municipal waste disposal sites are lacking bottom-sealing to prevent the pollution of soil and groundwater, and there is no collection of drainage water. Due to the lack of inspection of delivered waste, hazardous waste such as from household

chemicals, luminescence devices, mercury lamps, asphalt, oil-contaminated sand, paint, hospital waste and pesticides can be found in the municipal waste disposal sites. The decrease in waste collected by public collection systems has also increased the number of illegal dumping sites. There is a great risk that leachate from both legal and illegal waste disposal sites may pollute the groundwater and/or surface water bodies.

### *Water*

The water allocation schemes developed under the Soviet regime between Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan are still in force, and give Kyrgyzstan a right to use 24 per cent of the water that rises on Kyrgyz territory, which on average represents a volume of 11.6 km<sup>3</sup>/year.

Kyrgyzstan has many lakes, but some are saline and others are located either in remote areas or above 3,000 m and therefore inaccessible for exploitation. Out of the 1,745 km<sup>3</sup> of total water reserve in these lakes, only 7 km<sup>3</sup> is fresh water and available for human consumption. There is also 23.4 km<sup>3</sup> of water in 13 artificial reservoirs, which regulate the water flow for hydropower production, irrigation and flood protection. In addition, run-off from glaciers, together with seasonal snowmelt, produces 60 to 80 per cent of the water in the rivers, which is crucial for irrigated agriculture (see chapter 6).

In the future, climate change is expected to have an effect on the water situation. The scenarios in the Kyrgyz Republic's first assessment report (2003) under the United Nations *Framework Convention on Climate Change* (UNFCCC) indicate that average annual warming will in the short run increase annual water flow due to the increased melting of permanent snowfields and glaciers. In the long run, however, the effects of climate change will reduce total annual flow, change seasonal surface water flow patterns and increase annual fluctuations of water flows.

The water distribution infrastructure is not properly funded and maintained. Currently, an estimated 70 per cent of the country's water supply network is in need of repair or replacement, and about 70 per cent of the drinking water in rural areas is abstracted from surface sources. This is in contrast to during the Soviet times, when 90 per cent was abstracted from groundwater basins (see chapter 6).

The areas with the worst water quality are the heavily populated regions of the Chu Valley and Osh and Jalal-Abad oblasts and the areas along the rivers flowing into Lake Issyk-Kul. Some aquifers near industrial and mining centres have been contaminated by heavy metals, oils and sanitary wastes, while the use of surface sources make users vulnerable to agricultural run-off and livestock waste.

Map I.1: Map of Kyrgyzstan



Source: UN Cartographic section, 2009.

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



***PART I: POLICYMAKING, PLANNING AND  
IMPLEMENTATION***





## 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 Concept*<sup>1</sup>, was adopted in 1997 and reused 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 1995 *National Environmental Action Plan* and the 1998 *National Strategy on Sustainable Human Development*, the 1998 *Concept on Strengthening and Development of the Environmental Protection Activities* and endorsement of the first version of the 1997 *Ecological Security*

*Concept*. 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 1997 *Ecological Security Concept* (ESC) 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:

- Formation of an effective and transparent State;
- Building a fair society; and
- 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

<sup>1</sup> Translated as the 1997 Ecological Safety Concept in the first EPR.

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 Concept 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 for 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 use of nature;
- 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 Concept

The *Ecological Security Concept*, approved by the President in 2007, replaced the first *Ecological Security Concept* of 1997 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;

- 2015–2020 – improving the quality of environment and achieving sustainable nature use.

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

#### Other strategic documents

The draft *Concept of Transition to Sustainable Development until 2035*<sup>2</sup> (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.

The 2004 *Concept of Development of Forestry up to 2025*, the 2004 *National Forest Programme for 2005–2015* and the 2006 *National Action Plan of Forestry Development for 2006–2010* present, in combination, three successive stages of planning of actions by the Government:

- Preparation of outlines for long-term strategic planning (i.e. a concept);
- Strategic long-term planning (i.e. a strategy or long-term programme); and
- 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 2001 *Law on Industrial and Domestic Waste*. 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 KGS 186 million. This includes KGS 50 million from the national budget, KGS 20 million from regional and local budgets and KGS 15 million 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,

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

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).

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 form 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

#### **Box 1.1: Implementation of the Ecological Security Concept**

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 on Implementation of the Ecological Security Concept, No. 294/2008

#### **Box 1.2: Main environmental laws (as of 2008)**

1994 Law on Water  
 1994 Law on Specially Protected Natural Areas  
 1997 Law on Fishery  
 1997 Law on Subsoil  
 1999 Land Code  
 1999 Forest Code  
 1999 Law on Environmental Protection (framework law on environmental protection)  
 1999 Law on Fauna  
 1999 Law on Biosphere Territories  
 1999 Law on Environmental Expertise  
 1999 Law on Air Protection  
 1999 Law on Drinking Water  
 2001 Law on Industrial and Domestic Waste  
 2001 Law on Protection and Use of Flora  
 2001 Law on Tailing Sites and Slag Heaps  
 2002 Law on Mountainous Areas  
 2004 Law on Sustainable Development of the Environmental and Economic System, Issyk-Kul  
 2005 Water Code  
 2006 Law on the Ozone Layer Protection  
 2007 Law on State Policy and Regulation in the Sphere of Emission and Absorption of Greenhouse Gases

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 1994 *Law on Water*, the 1997 *Law on Fishery* and *Law on Subsoil*, and the 1999 *Law on Fauna, Land Code* and *Forest Code*). 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 2001 *Law on Industrial and Domestic Waste* laid down general rules that apply to all categories of waste, while the 2001 *Law 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 on 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 on Substances That Deplete the Ozone Layer* 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.

On January 15, 2009 the Zhogorku Kenesh (Parliament) adopted the *Environmental Code*, which is a codified act of environmental laws. This entails that all or some previous environmental laws, as well as a part of the subsidiary environmental legislation, would be annulled.

In comparison with the existing environmental legislation, the *Environmental Code* provides more detailed regulation and strengthens 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; and
- International and transboundary cooperation.

Adoption of the *Environmental Code* by Kyrgyzstan dramatically changes the legislative frameworks for most thematic areas covered in chapters 1 to 5 of the present review.

Many legislative new elements proposed by the *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 Code, as some of its parts 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, and therefore, the whole EIA and future IPPC process in Kyrgyzstan will 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 Code, which still deals only with eco-education objectives.

The adopted *Environmental Code* with its more detailed rules will likely reduce the need to develop subsidiary environmental legislation. At the same time, the adopted 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 (SAEPF) 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 restructuring 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 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 regulations on SAEPF, approved by the 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.

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.).

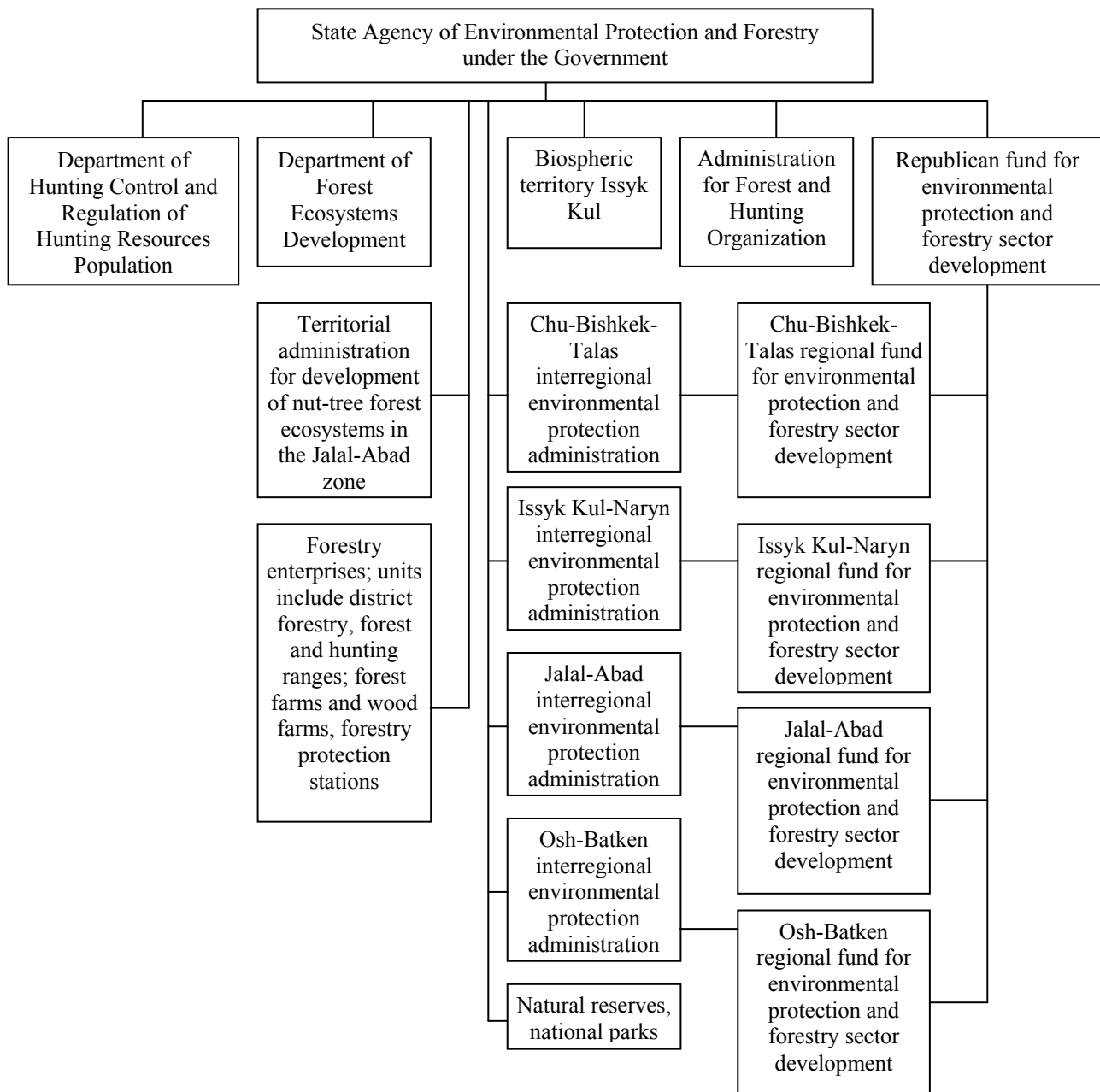
#### *Government bodies involved in environmental protection*

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



*Bishkek, Capital City*



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

Source: Resolution of the Government, No 139 of 10 April 2008

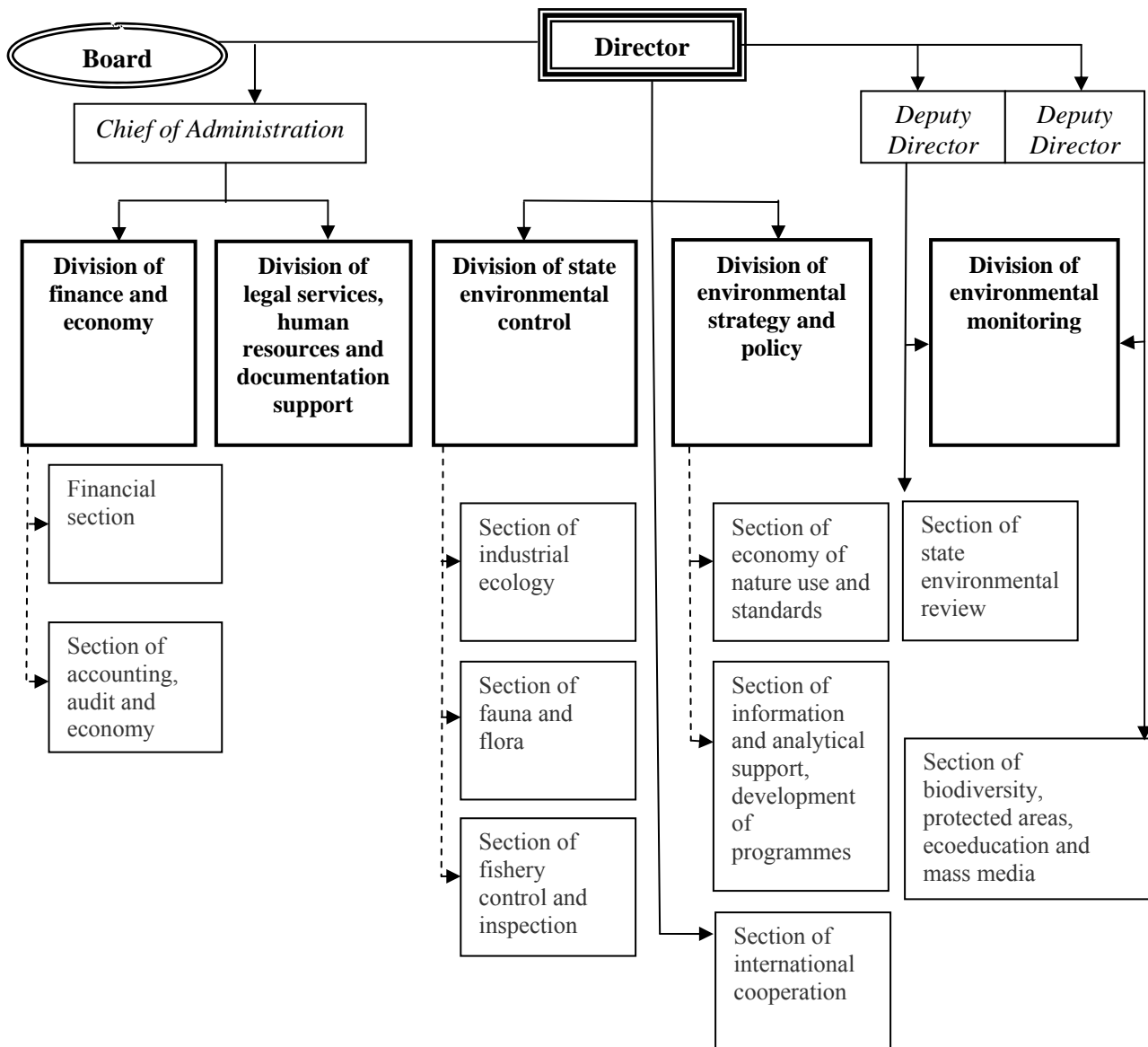
of the ambient air and water resources, was left within the structure of the Ministry of Emergencies. In addition, the latter retained competence of monitoring and rehabilitation of uranium tailing sites.

The Ministry of Health 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

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



Source: Order of the Prime Minister, No 310 of 12 August 2008.

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. The *Law on Use of Renewable Energy* was adopted on 31 December 2008.

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 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 *aiyl* 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; and
- 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. However, there are cases when the Director of the SAEPP chairs different inter-agency commissions, e.g. the National Committee on Climate Change Consequences.

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.

## 1.6 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 *National 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.*

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, state committees and administrative 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, state committees and administrative 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; and*
- (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*, 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. 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; waste management and its transboundary transfer, including radioactive waste; and also 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) report. 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

Source: SAEPF, May 2008 and revised in August 2008

According to the new organizational scheme approved in 2008 by Government Resolution No. 139, 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 205 environmental inspectors employed by SAEPF and its regional administrations (19 inspectors at the central office). 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*, No. 168; see Chapter 3) was issued regulating the functions of public inspectors for environmental protection. The Statute on Voluntary Inspectors was amended by the Director of the SAEPF (Order No. 81 2006). 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 is environmental 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, whose current training is clearly insufficient.

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<sup>1</sup>, 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 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 1999 *Law on Environmental Protection*, the 1999 *Law on Environmental Expertise*, the 1997 *Instruction on Environmental Impact Assessment* and the 1997 *Instruction on State Environmental Expertise*) 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<sup>2</sup> (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 Environmental 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

<sup>1</sup> 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".

<sup>2</sup> 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.

**Box 2.2: Training for State environmental inspectors**

SAEPF provides one training session annually for 35 environmental inspectors. 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.

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 of 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 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 19/2000, which has not been officially approved (or registered by the Ministry of Justice). However, general provisions for their implementation are included in the 2009 *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 Industrial and Domestic Waste*; the 1999 *Instruction on the Way to Regulate the Treatment of Waste*; and *Government Resolution No. 193/1999 on the Control of Transboundary Movements of Hazardous 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*).

Environmental permits are issued in accordance with the 1999 *Law on Environmental Protection*, the 1999 *Law on Air Protection*, the 2001 *Law on Industrial and Domestic Waste* and *Government Resolution No. 103/2004 on the types of permits issued by government authorities*. Licenses for hazardous waste management are based on the 1997 *Law on Licensing*. In addition, the 2001 *Law on Industrial Safety* regulates the issuance of permits for operating hazardous industrial installations and primarily covers emergency preparedness issues.

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.

The validity of permits in Kyrgyzstan 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); and
- 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.

**Table 2.1: Environmental permits issued by SAEPF in 2007**

Permit for	Number	Validity
Emissions of pollutants into the environment	189	1 year
Discharge of pollutants into the environment	653	1 - 3 years
Waste disposal	573	1 year
Import and export of ozone-depleting substances	1,354	Issued only one time
Import of used car tyres (as waste)	64	Issued only one time
Use of animals for research purposes	15	Issued only one time
Import and export of plants and animals	459	Issued only one time

Source: SAEPF, State Environmental Control Division/State Environmental Expertise Section. May 2008.

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, the *Environmental Code*, containing provisions for an integrated permitting system, was adopted in 2009.

### 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 No. 533/2007). 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* 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 Processing Industries, the State Agency of 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 due to 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 (KMC<sup>3</sup>) 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 strategic documents:

- The 2007 *Country Development Strategy for 2007–2010* (CDS),
- The 2007 *Ecological Security Concept* (ESC).

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

<sup>3</sup> The set of national metrological standards for Kyrgyzstan



*Industrial facility, Bishkek Oblast*

production centre as in items 24 and 25 of 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 533/2007 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 control of environmental protection, rational use of natural resources and securing ecological safety*, approved by Government Resolution No. 295/2000;
- The *Instruction on carrying State control on stationary sources polluting the atmospheric air*, approved by Ministerial Order No. 114/1999;
- 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 806/2004.
- 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 Economic Entities*,

approved by Government Resolution No. 533/2007.

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.

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

**Table 2.2: Comparison of enforcement activities in 2006 and 2007**

Activity	2006	2007	Percentage increase from 2006 to 2007
Inspections	6,215	7,015	11
Prescribed fines	1,746	1,839	5
Requested fines	1,349	1,534	12
Prescribed sanctions	1,023	1,212	16
Requested sanctions	872	1,057	18

Source: Division of State Environmental Control, May 2008.

Note: Out of 3,780 prescriptions issued in 2007, 3,337 (or 88%) were fulfilled.

### 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 1999 *Law on Biosphere Territories* and 2004 *Law on Sustainable Development of Environmental and 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 1999 *Law on Environmental Expertise*. 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 the Environmental and 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 1994 *Law on Specially Protected Natural Areas*.
- *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.

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.

Government Resolution No. 91/2007 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 No. 6/2005 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 ensured. 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 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 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) *Prolong the duration of permit validity up to 5 to 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 State Committee on Statistics 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 Government 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 and conduct 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, accordingly to the first EPR, needed 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 there is no single automated station in the country 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 do not establish causal relationships to help 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*

Kyrgyzhydromet 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 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 Mailuu-Suu 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 (PM<sub>2.5</sub> and PM<sub>10</sub>), volatile organic compounds and persistent organic pollutants (POPs) – are not measured in Kyrgyzstan.

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.

#### *Inland water monitoring*

Kyrgyzhydromet currently monitors hydrochemical parameters of surface water quality at 24 gauges on 11 rivers, as compared with 105 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. Discharges reported to the Division of State Environmental Control 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.

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

Network	2000	2001	2002	2003	2004	2005	2006	2007	2008
<b>Air quality monitoring</b>									
Cities covered by monitoring	4	4	4	4	5	5	5	5	5
Fixed monitoring stations	13	13	13	13	14	14	14	14	14
<b>Monitoring of surface water quality</b>									
Water bodies monitored	10	11	10	10	11	11	11	12	11
Hydrochemical gauges	22	22	22	22	23	23	23	23	24
Background monitoring	1	1	1	1	1	1	1	1	2
<b>Ground water monitoring</b>	1,513	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,328
<b>Radiation monitoring</b>									
Stations measuring daily gamma-radiation exposure	12	15	18	19	18	20	21	20	20
Stations taking precipitation samples to calculate aggregate beta-activity	4	4	4	2	2	2	4	4	4
<b>Analytical laboratories</b>	2	2	2	2	3	3	3	3	3

Sources: Kyrgyzhydromet. Communication to the UNECE EPR-team and country report to the UNECE Working Group on Environmental Monitoring 2007.

Note: n/a - no data available.

Map 3.1: Main environmental monitoring networks in Kyrgyzstan, 2008



Source: Kyrgyzhydromet, 2008.

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

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 once a month at 74 points over the period of three months. Kyrgyzhydromet recognizes the need to establish permanent observation points to measure pollution from shore 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, 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 of 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 Division of State Environmental Control 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 the country.

According to the 2007 *Ecological Security Concept* (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 of 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 of 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 Resolution of April 2004, the Government adopted the *Programme on Study, Conservation and Rational Use of Argali for 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 1999 *Law on Fauna* and the 2001 *Law on Protection and Use of Flora* 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 2007 *Ecological Security Concept* 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 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<sup>1</sup> 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 Mailuu-Suu (on uranium production, see chapter 7, box 7.3). The

<sup>1</sup> International Organization for Standardization and the International Electrotechnical Commission.

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 of 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 to equip the central environmental authorities with computers, train civil servants in data management and establish a pilot environmental data management system at the central 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 State 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 State 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 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 State 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 2007 *Ecological Security Concept*, 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 the Ministry of Justice and its territorial bodies free of charge.

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 quarterly newspaper (*Jer Ene*). Some 1,000 copies are circulated in the country free of charge. 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 Resolution on *the Adoption of Unified Requirements for the Creation and Operation of Websites of Public Authorities and Institutions of Local Self-Governments* of 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. Kyrgyzhydromet 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)

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, according to NGOs, the public in Kyrgyzstan is 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 No. 6/2006, 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 No.157/2007), 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 2007 *Country Development Strategy*, the 2007 *Ecological Security Concept*, the Governmental Resolution on Ecological Posts and the 2009 *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 Order of the Ministry of Ecology and Emergencies No.168/2005 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 environmental 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 September 1997, 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

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

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

Source: United Nations Statistics Division, 2008.

Note: n/a – no data available.

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 the SEE authority. A draft revised instruction is being discussed with NGO 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 environmental 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 Resolutions: *On the Construction of a Cement-Producing Plant in Kyzyl-Kyia City*, No.611/2005; *On the Construction of a Cement- and Slate-Producing Plant in Nookatskom Rayon of Osh Oblast*, No.199/2006; and *On the Construction of a Ferroalloy Plant*, No. 360/2007.

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 Chyrypykty-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 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 Resolution on the Construction of a Ferroalloy Plant in Kyrgyzstan, No.360/2007. It claimed that approval by the Government of the proposal of the Avinien company to construct in Tash-Kumyr city of Jalal-Abad 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 Resolution, No. 360/2007, 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 Resolution, No. 360/2007 the authorization to start construction work in parallel with the project design.

Source: SAEPF website and the IEE website (www.eco-expertise.org), 2008

### 3.5 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.

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

**Table 3.3: Training of environmental specialists, 2000-2006**

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

Source: State Committee of Statistics, 2007.

Note: n/a – no data available.

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*

The 2006 *Law on Hydrometeorological Activity* 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 responsibility of its Environmental Monitoring Division to manage 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<sup>2</sup> 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.

The Action Plan of the *Country Development Strategy* envisages the development by SAEPF of a unified environmental monitoring programme by 2010.

Consistent with the *Country Development Strategy*, the 2007 *Ecological Security Concept* is 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 Concept*, 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;

- 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;
- Publication of an encyclopedia of country flora and fauna, in the period 2016–2020.

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

#### *Public participation*

The 2001 Regional Environmental Action Plan for Central Asia 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.

By the 2001 *Law on Accession of the Kyrgyz Republic to the Convention of the United Nations Economic Commission for Europe on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental matters*, Kyrgyzstan acceded to the Aarhus Convention. This Law promoted direct implementation of the Convention's provisions and some other legal acts adopted thereafter by the Parliament, e.g. the 2007 *Constitution of the Kyrgyz Republic*, the 2006 *Law on Access to Information Available at Public Authorities and Institutions of Local Self-Government of the Kyrgyz Republic*, and the 2007 *Law on the Procedure for Consideration of Citizens' Appeals and the Decree of the President on Measures to Expand, Regulate and Implement in Practice Ways of Interaction of Public Authorities, Institutions of Local Self-Government and Civil Society in the Kyrgyz Republic, No. 241/2006*.

<sup>2</sup> Geographic information system



*Consultation with NGOs during the EPR mission, UNDP office, Bishkek 2008*

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 2007 *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 2007 *Ecological Security Concept* 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.

This Concept lists 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*, introduced article 48 on environmental education and awareness-raising. The 2003 *Law on Education* does not mention environmental education or Education for Sustainable Development (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.

Action Plan until 2010 to the Agenda 21 approved by Government Resolution No. 411/2002, 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”.

Formal education management is under the competence of the Ministry of Education and Science. In 2002 this Ministry established an interdepartmental expert council to consider and adopt State high education standards, textbooks and manuals. The council, which includes environmental experts, adopted or prepared for adoption standards on some environmental curricula (“Ecology”, “Ecology and Rational Use of Natural Resources”, “Bio-Ecology”, “Environmental Protection”, “Integrated Use and Protection of Water Resources”,

“Agro-Ecology”, “Geo-Ecology” and “Engineering Safeguards of the Environment”).

The Ministry of Education and Science, by its Order No. 961/1/2003, and the Ministry of Ecology and Emergencies, by its Order No. C498/2003, 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 Resolution No. 74/2005, 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 Resolution No.504/2002, the 2002 *Concept of Development of Education in the Kyrgyz Republic until 2010*, the education section of the *Country Development Strategy for 2007–2010* and the *Education Development Strategy of the Kyrgyz Republic (2007–2010)* approved by the Ministry of Education and Science in October 2006 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 2007 *Ecological Security Concept*, which the Agency prepared and the President 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 plans and programmes;
- State support for the environmental education system.

The ESD principles are included in a separate section in the 2009 Environmental Code.

### 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 accelerate the review of the situation with regard to environmental monitoring in the country, to develop a strategy with an action plan for necessary 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<sub>10</sub>, 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 and coordinate 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 of 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 of Environmental Protection and Forestry, together with the State 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 2007 Belgrade Ministerial Conference “Environment for Europe” 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 of 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 environmental 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 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 of 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 judicial bodies 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 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 3.5:*

*The Ministry of Education and Science, in cooperation with the State Agency of 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 the 2007 *Constitution* and the 2007 *Country Development Strategy*. 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 a 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 Concept* (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).

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.

#### **Box 4.1: Priorities for international environmental cooperation**

- Desertification: land and soil management
- Biodiversity and forest conservation
- Water resources management
- Climate change
- Risk management
- Energy efficiency
- Ozone layer and air protection
- Chemicals and hazardous waste management

#### *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.

Kyrgyzstan is a party to 13 major MEAs and three Protocols. Since the first EPR, the country has ratified seven international conventions and three protocols: the *Convention on Long-range Transboundary Air Pollution* (LRTAP Convention), the 2000 *Vienna Convention for the Protection of the Ozone Layer* and *Montreal Protocol on Ozone Depleting Agents in 2000*, the *Convention on Environmental Impact Assessment in a Transboundary Context* (Espoo Convention) in 2001, the *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters* (Aarhus Convention) in 2001, the *Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat* in 2002, the *Kyoto Protocol* in 2003, the *Cartagena Protocol on Biological Safety* in 2005, the *Stockholm Convention on Persistent Organic Pollutants* (POPs) in 2006, and the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES) in 2007.

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).

### 4.3 International assistance

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<sup>1</sup> 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)

<sup>1</sup> Technical Aid to the Commonwealth of Independent States.

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](http://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)

- 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)

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.

#### 4.4 International cooperation on environmental issues of national importance

Main priorities for international environmental cooperation (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).

#### Box 4.2: Responsible bodies for the implementation of MEAs

State Agency of Environmental Protection and Forestry

*Aarhus Convention*  
*Basel Convention*<sup>2</sup>  
*Cartagena Protocol*  
*CITES*  
*CLRTAP Convention*  
*Convention on Biological Diversity*  
*Espoo Convention*  
*Kyoto Protocol*  
*Montreal Protocol*  
*Ramsar Convention*  
*Rotterdam Convention*<sup>3</sup>  
*Stockholm Convention*  
*United Nations Framework Convention on Climate Change*  
*Vienna Convention*

Ministry of Agriculture, Water Resources and Processing Industry

*Convention to Combat Desertification*  
*Agreements on transboundary water pollution*

Ministry of Emergencies

*Convention on Transboundary Effects of Industrial Accidents.*

Ministry for Foreign Affairs

*Coordinating agency with international organizations*

Ministry of Finance

*Responsible body for international financial assistance*

<sup>2</sup> *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*

<sup>3</sup> *Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade*

### *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. NFP is a comprehensive programme which 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.

NFP has been established under the Central Asian Countries Initiative for Sustainable Land Management (CACILM). NCC will be the main coordination mechanism for the CACILM/NFP 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 for 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

#### **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.



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* (accessed 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.

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 Concept, 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 *Forest Code*, the *National Action Plan for 2001–2005*, the 2004 *Concept of Development of Forestry until 2025* and the 2004 *National Forest Programme for 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 (CO<sub>2</sub>) emissions in total, with an average of 1.1 tons of CO<sub>2</sub> 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.

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 B 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 the 2007 *Law on State Policy and Regulation in the Sphere of Emission and Absorption of Greenhouse Gases*, more specific regulatory measures are still needed, as at the moment national standards do not establish limitations on CO<sub>2</sub> emissions.

A project funded by GEF ("Enabling Activities for the Preparation of the Second National Communication to UNFCCC") was 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, and 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. The new *Programme for 2009-2010* was approved in 2008 (*Resolution of the Government No.374/2008*). 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 the 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

**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.

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 SAEPP, 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, SAEPP, 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 “Management and Disposal of PCBs<sup>4</sup> 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”) 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 2008 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

<sup>4</sup> Polychlorinated biphenyls

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 SAEPPF. 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 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 under way 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 taken 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<sup>5</sup> 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: (a) 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).

#### Environmental Impact Assessment

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.

#### *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.

<sup>5</sup> 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.

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.

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 2001 *Law on Intergovernmental Use of Water Objects, Water Resources and Water Economy Facilities*. 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 2005 *Water Code*,

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 between 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



*Issyk Kul Lake*

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.
- The Central Asian Inter-State Commission for Sustainable Development (ICSD) is the leading partner in the Central Asian Initiative for Sustainable Development, and 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 (europeandcis.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.

**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 of Water Resources of Inter-State Sources*. This agreement was adopted in August 2008; the joint body under it is ICWC.

**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 Twenty-first Century* and the *Action Plan 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.

Kyrgyzstan participates in four intergovernmental partnerships for sustainable development: the Central Asian Initiative for Sustainable Development (2002–2012), the Intergovernmental Forum in Mining, Minerals, Metals and Sustainable Development

(2005–), the International Partnership for Sustainable Development in Mountain Regions (2002–), and the Water, Sanitation and Hygiene for All Initiative (2002–2012).

*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 4.8). MDG 7, on ensuring environmental sustainability, is in full compliance with the objectives reflected in the Kyrgyz Constitution, the *Country Development Strategy*, the *Ecological Security Concept* 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 m<sup>2</sup> 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 (CO<sub>2</sub> 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

#### 4.7 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 Concept* 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 has 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 has been 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 having set up their own strategy, the Joint Country Support Strategy, to improve the efficiency of their assistance to the country, based on the CDS, 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 on Water and Health*. Moreover, Kyrgyzstan needs to secure the financing of MEAs implementation.

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, the protocols to the LTRAP Convention, in particular the EMEP Protocol and the Protocol on Heavy Metals, and the Protocol on Water and Health;*
- (c) *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 2000 agreement between Kazakhstan and Kyrgyzstan *On the Use of Water Management Facilities of Intergovernmental Status on the Rivers*

*Chu and Talas* 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.*

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 4.4:

*The Government should create a separate budget line for obligatory contributions to MEAs.*

***PART II: MOBILIZING FINANCIAL RESOURCES FOR  
ENVIRONMENTAL PROTECTION***



## 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 1999 *Law on Environmental Protection*.

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 Concept* 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 Resolution No. 269/1995. The 2008 *Law on Payments Rates for the Use of Fauna and Flora*, 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 No. 57/2005*. 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 No. 76/2008*). The new *Tax Code*, which entered 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.<sup>1</sup>

### *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 2002 *Law on the Rate of Fees for Environmental Pollution* established a single rate of payment for all substances, fixed at KGS 1.2 per equivalent ton of pollutant. The Government Resolution No. 823/2004 defined a detailed procedure for the calculation of pollution charges, allowing for the effective differentiation of rates according to various criteria including toxicity.

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. The Government Resolution No. 107/2006 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

<sup>1</sup> Ministry of Finance, Medium-Term Budgetary Framework of the Kyrgyz Republic, 2009–2011, 2008.

organizations financed by the public budget or households, provided emissions remain within certain limits.

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 SAEPP 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.

Revenues from pollution charges have risen 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

#### **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 2002 *Law on the Rate of Fees for Environmental Pollution* defined a basic payment rate equal to KGS 1.2 per ton of pollutant substance. The Government Resolution No. 823/2004 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.

**Table 5.1: Revenues from pollution charges**

<b>Pollution charges revenues, in thousand soms</b>				
	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Total</b>	<b>17,946</b>	<b>23,979</b>	<b>23,712</b>	<b>33,582</b>
Air-fixed	10,971	8,755	10,960	15,676
Air-mobile	3,096	6,567	4,364	12,131
Water	1,957	2,460	2,370	986
Waste	1,921	6,198	6,018	4,790

<b>Pollution charges revenues, percentage</b>				
	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Air-fixed	61.14	36.51	46.22	46.68
Air-mobile	17.25	27.38	18.40	36.12
Water	10.91	10.26	10.00	2.93
Waste	10.71	25.85	25.38	14.26

<b>Memo</b>				
	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Pollution charges, in million US\$	0.421	0.585	0.591	0.900
As % of GDP	0.019	0.024	0.021	0.024

Source: State Agency for Environment Protection and Forestry Development, 2008.

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.<sup>2</sup> The possible creditors for implementing debt-for-environment swaps are mentioned in the report, namely Germany, France, Russia, Turkey, and in the far future – China and Uzbekistan.

Besides, the provisions of the Intergovernmental agreement that was concluded between the

Governments of Kyrgyzstan and Germany (2002) envisage different debt swaps, including debt-for-environment, debt-for-poverty alleviation, including healthcare and debt-for-education. As a result of the agreement the debt-for-healthcare swap has taken place and some 350 thousand EUR were directed to tackle healthcare issues. 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.<sup>3</sup> 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

<sup>2</sup> OECD, Pre-feasibility analysis, project pipelines and institutional support for debt-for-environment swap in the Kyrgyz Republic, 2005.

<sup>3</sup> UNDP, Kyrgyzstan. Environment and natural resources for sustainable development, 2007.



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.<sup>4</sup> Tariffs charged for State services have remained unchanged since 1999 (KGS 30 per 1,000 m<sup>3</sup>, 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.<sup>5</sup>

At the moment, tariffs cover only 30–37 per cent of the value of the services provided.<sup>6</sup> 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.<sup>7</sup> 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.<sup>8</sup>

### *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.

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 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.

<sup>4</sup> OECD, Policies for a better environment. Progress in Eastern Europe, Caucasus and Central Asia

<sup>5</sup> ADB, Country water action, Kyrgyz Republic. Paying for irrigation water, May 2008. (plus text of the 1999 Law).

<sup>6</sup> Ministry of Finance, Medium-Term Budgetary Framework of the Kyrgyz Republic, 2009–2011, 2008.

<sup>7</sup> ADB, Technical assistance 4405-KGZ, Study on pricing systems and cost-recovery mechanisms for irrigation, 2005.

<sup>8</sup> UNDP, Kyrgyzstan. Environment and natural resources for sustainable development, 2007.

**Table 5.2: Consumer price index growth, percentage, year end**

	2003	2004	2005	2006	2007
CPI	5.57	2.76	4.94	5.10	20.09
Electricity, gas and other fuels	1.70	13.85	0.85	7.23	17.28
Of which:					
Gas	6.02	13.47	6.20	17.29	21.80
Solid fuel	3.41	27.57	0.65	0.11	36.69
Water supply	0.77	-0.02	0.48	2.27	6.07

Source: State Committee on Statistics, 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.<sup>9</sup>

### 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.<sup>10</sup>

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 US\$ cents per 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.

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 minibuses 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%).<sup>11</sup>

Tariffs are differentiated according to type of user. By the end of May 2008, Vodokanal Bishkek charged 1.9 KGS per m<sup>3</sup> 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 m<sup>3</sup>. 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.

<sup>9</sup> ADB, Kyrgyz Republic: Country environmental analysis, January 2004.

<sup>10</sup> OECD, Policies for a better environment. Progress in Eastern Europe, Caucasus and Central Asia.

<sup>11</sup> Ministry of Finance, Medium-Term Budgetary Framework of the Kyrgyz Republic, 2009–2011, 2008.

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

	1998	2000	2002	2004	2006
Diesel	27	33	25	43	54
Super-gasoline	47	44	39	48	64
Ratio	1.74	1.33	1.56	1.12	1.19

Source: GTZ, 2008.

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 the scope for use of economic instruments for waste management. In rural areas, there is practically no system for waste collection 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.

State *Programme (2006–2010) on Use of Industrial and Domestic 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<sup>12</sup> 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.

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

<sup>12</sup> The official name as stated in the presidential Decree. Hereafter, national fund.

**Box 5.2: Chronology of the system of environmental funds**

1992: Establishment of Local and Republican Funds of Environmental Protection.  
 1999: Creation of the Fund for the Development of Forestry  
 2006: Merger of these two funds and establishment of the system of Local and Republican Funds of Environmental Protection and Forestry Development  
 2008: The number of local funds is reduced from seven to four

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.

*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).

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.

*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 Concept* 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 5.4: Environmental funds: total revenues and expenditures, 2003-2007**

	Local (in thousand soms)		National (in thousand soms)		Total (in thousand soms)		Total (as percentage of GDP)		
	Revenues	Expenditures	Revenues	Expenditures	Revenues	Expenditures	Revenues	Expenditures	Environmental expenditures
2003	15,875	14,341	8,824	8,623	24,700	22,964	0.029	0.027	0.012
2004	17,097	16,671	5,505	5,208	22,602	21,879	0.027	0.026	0.009
2005	19,342	18,740	5,555	6,035	24,897	24,775	0.030	0.030	0.011
2006	22,026	22,250	19,734	13,961	41,760	36,212	0.050	0.043	0.017
2007	31,260	30,887	26,303	26,476	57,563	57,363	0.069	0.068	0.026

Source: State Agency of Environment Protection and Forestry Development, 2008.

### 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.

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 SAEPF. 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

**Table 5.5: Structure of revenues of environmental funds, percentage, 2007**

Local		National	
<b>Total</b>	<b>100</b>	<b>Total</b>	<b>100</b>
Pollution charges	78.4	Transfers from local funds	42.1
Forestry revenues	6.2	Kumtor	32.4
Environmental lawsuits	11.8	Use of natural resources	7.9
Use of natural resources	3.3	Hunting	7.5
Other	0.3	Issyk-Kul	4.3
		Targeted revenues	4.5
		Other	1.4

Source: State Agency for Environment Protection and Forestry Development, 2008.

**Table 5.6: Environmental funds expenditures on environmental measures, 2007**

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

Source: State Agency of Environment Protection and Forestry Development, 2008.

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.

Spending by environmental funds in the repair of environmental infrastructure represents almost half of capital spending in 2006–2010. In current terms (in \$), 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.

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

**Table 5.7: Environmental expenditures, per cent of GDP, 2000-2006**

	2000	2001	2002	2003	2004	2005	2006
<b>Total</b>	<b>0.42</b>	<b>0.44</b>	<b>0.40</b>	<b>0.36</b>	<b>0.45</b>	<b>0.40</b>	<b>0.46</b>
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:							
Constant 2003 US\$, in million	6.36	7.50	6.93	6.97	9.70	9.25	11.91
Per capita, constant 2003 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

Source: State Committee on Statistics, UNECE secretariat calculations, 2008.

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

	2000	2001	2002	2003	2004	2005	2006
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Water	11.7	12.9	17.4	17.4	5.5	1.1	0.0
Air	0.0	0.0	0.0	0.0	8.8	0.0	0.0
Land	88.3	87.1	82.6	82.6	85.9	98.9	90.8
Waste	0.0	0.0	0.0	0.0	0.0	0.0	9.2

Source: State Committee on Statistics, UNECE secretariat calculations, 2008.

investments in this area was 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 State Committee on Statistics 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.<sup>13</sup>

The *Country Development Strategy* defines medium-term priorities for the country's development 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.<sup>14</sup> 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.<sup>15</sup>

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.

<sup>13</sup> IMF, Kyrgyz Republic. Reassessment on the observance of standards and codes. Fiscal transparency module, 30 April 2008.

<sup>14</sup> IMF Country Report No. 07/369, November 2007.

<sup>15</sup> Ministry of Finance The Medium-Term Budgetary Framework of the Kyrgyz Republic, 2009-2011, 2008.



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

<b>Total</b>	<b>451.37</b>
Agriculture	207.14
Water	94.17
Energy	61.29
Land degradation	28.42
Biodiversity	28.25
General	24.33
Science and technology	5.26
Climate	2.26
Waste disposal and management	0.25

Source: UNDP and State Agency for Environment Protection and Forestry Development, 2007.

Note: Some regional programmes are included.

## 5.6 Domestic private spending

According to OECD figures<sup>16</sup>, 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). Bilateral donors and multilateral organizations have

<sup>16</sup> OECD, Trends in Environmental Finance in Eastern Europe, Caucasus and Central Asia, 2007.



*Resort at the Issyk Kul Lake, 2008*

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.

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.<sup>17</sup> 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).<sup>18</sup> 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.

<sup>17</sup> IMF country report no. 07/369, November 2007

<sup>18</sup> ADB, Kyrgyz Republic: Country environmental analysis, January 2004

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).

## 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.*

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, together with the Ministry of Finance, the National Agency on Local Self-Governance Bodies, the Ministry of Industry, Energy and Fuel Resources and the Ministry of Labour and Social Protection 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 and project-selection criteria, monitoring and assessment mechanisms. Annual reports should be published on the activities of the funds.*

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.

*See also Recommendation 1.1 in chapter 1.*

***PART III: INTEGRATION OF ENVIRONMENTAL  
CONCERNS INTO ECONOMIC SECTORS AND  
PROMOTION OF SUSTAINABLE DEVELOPMENT***



## 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 has 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 Chjatkal, 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.

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 km<sup>3</sup>. This is an increase of 6.3 per cent as compared to the previous period, in which the average annual flow was 48.9

km<sup>3</sup>. This is due to climate change and global warming.

There are 1,923 lakes in Kyrgyzstan with a total water surface of 6,836 km<sup>2</sup>. Lake Issyk-Kul is the country's largest lake by far, with a surface area of 6,249 km<sup>2</sup>. Other major lakes are Son-Kul (275 km<sup>2</sup>) and Chatyr-Kul (153 km<sup>2</sup>). The total water reserve in lakes is estimated at 1,745 km<sup>3</sup>; however, only a very small part of this reserve is available for human consumption and use. About 1,738 km<sup>3</sup> (or 99 per cent of total reserves) is saline water of the Lake Issyk-Kul. Freshwater reserves in small other lakes are only about 7 km<sup>3</sup>. 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 km<sup>3</sup> 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 km<sup>3</sup>).

Kyrgyzstan has huge groundwater resources. The operational reserves are estimated at 5.3 km<sup>3</sup> a year. The potential reserves are estimated at 11 km<sup>3</sup> 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 km<sup>2</sup>, or about 4.2 per cent of Kyrgyz territory. The estimated amount of freshwater preserved in the glaciers is 650 km<sup>3</sup>. 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

Map 6.1: Map of river basins



Source: UNEP and Envsec.org, 2009.

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



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 km<sup>3</sup>/year. In addition, Kyrgyzstan can also dispose of part of the annual water flow of 6.2 km<sup>3</sup> 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 km<sup>3</sup> of surface water annually. Today, the annual abstracted quantity of surface water is 8 km<sup>3</sup>, 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 table 6.1 and figure 6.1).

**Table 6.1: Water use, million m<sup>3</sup>, 2006**

	2006
<b>Water abstraction</b>	<b>8,007</b>
Water use, including	4,533
Industry	72
Agriculture and Irrigation	4,215
Households	128
Other	116
Losses during transportation	1,830

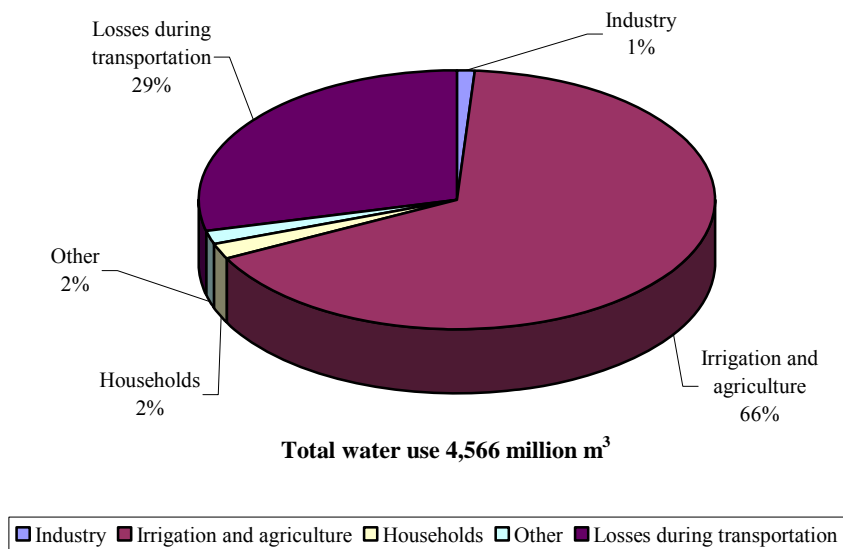
Source: State Committee on Statistics, State Agency of Environmental Protection and Forestry, and UNDP. Statistical Compendium: Environmental protection in Kyrgyz Republic. Bishkek 2008.

#### *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.

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.

**Figure 6.1: Water use, 2006**

Source: State Committee on Statistics of Kyrgyz Republic, State Agency of Environmental Protection and Forestry, and UNDP. Statistical Compendium: Environmental protection in Kyrgyz Republic. Bishkek, 2008.

### 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, covering 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 figures 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).

### *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 m<sup>3</sup> in 1991 to 138 million m<sup>3</sup> in 1998 and then to 72 million m<sup>3</sup> in 2006. Since the first review,

**Table 6.2: Water supply sources, per cent of population served as of 1 January 2006**

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

Source: State Agency of Environment Protection and Forestry, 2007.

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 Associations of Water Users* 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,

**Table 6.3: Status of centralized drinking water supply sources and water quality**

Indicator	Underground water supply	Surface water supply
Number of centralized water abstraction sources	1,207.0	93.0
% 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	31,953.0	275.0
% of samples not complying with hygienic standards	0.2	11.1
Number of samples checked for microbiological indicators	2,860.0	163.0
% of samples not complying with hygienic standards	6.2	17.1

Source: Ministry of Health, 2003.

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 casualties 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 0.4 million tons in 2003 and 0.3 million tons in 2006. The Government plans to increase the exploitation of



*Mountain stream in Grigorievka Canyon (Biosphere Reserve)*

the considerable remaining deposits to reduce the country's dependency on foreign energy resources.

The large quantity 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 m<sup>3</sup> 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**

##### *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,

**Box 6.1: National Water Council**

As of 2008, the issues of inter-agency and intersectoral cooperation are being tackled within the framework of implementation of the integrated approach to water resources management. In February 2006, based on provisions of the *Water Code* and in view of coordination of activities of State bodies dealing with water management, water use and protection, a National Water Council was established. It is responsible for establishing river basin districts, setting up basin councils and serving as the competent authority for approving basin management plans developed by the basin councils.

The Prime Minister is the Chairman of this Council, and the heads of a number of ministries, committees, agencies and State administrations, as well as the State Union of Enterprises of Housing and Communal Services, are its members. The State Agency of Environmental Protection and Forestry is not a member, although being responsible of controlling pollution pressures on water bodies it is an important partner.

By the end of 2008, The Council had never met.

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 1997 *National Environmental Health Action Plan* 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; and
- 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 Management in the Ministry of Agriculture, Water Management and Processing Industry.

#### *The institutional framework*

A number of institutions are responsible for the water sector:

- The Ministry of Agriculture, Water Management and Processing Industry 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.
- SAEPP 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 Kyrgyzkylkommunsoyuz 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.

#### *Institutions 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. The functioning of monitoring institutions was considerably 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, and coordination of activities amongst these institutions has been seriously weakened.

The quality and quantity of surface water are 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

### 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 of 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).

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 of 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 than 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 Industry 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 (SPECAs); 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 as soon as possible and implement 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 the 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. Moreover, this problem should be worked out with neighbouring countries, which could be affected by such adverse impact. The principles set up in the UNECE conventions dealing with transboundary issues could be useful in providing guidance to tackle this approach.

*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. In this approach the Government should take into consideration work and experience under UNECE multilateral environmental agreements.*

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 limitations 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 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 Eastern Europe, Caucasus and Central Asia (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 renewing 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.*

## Chapter 7

# LAND MANAGEMENT AND PROTECTION

### 7.1 Land cover and land use

Kyrgyz territory falls into four main geomorphological 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.

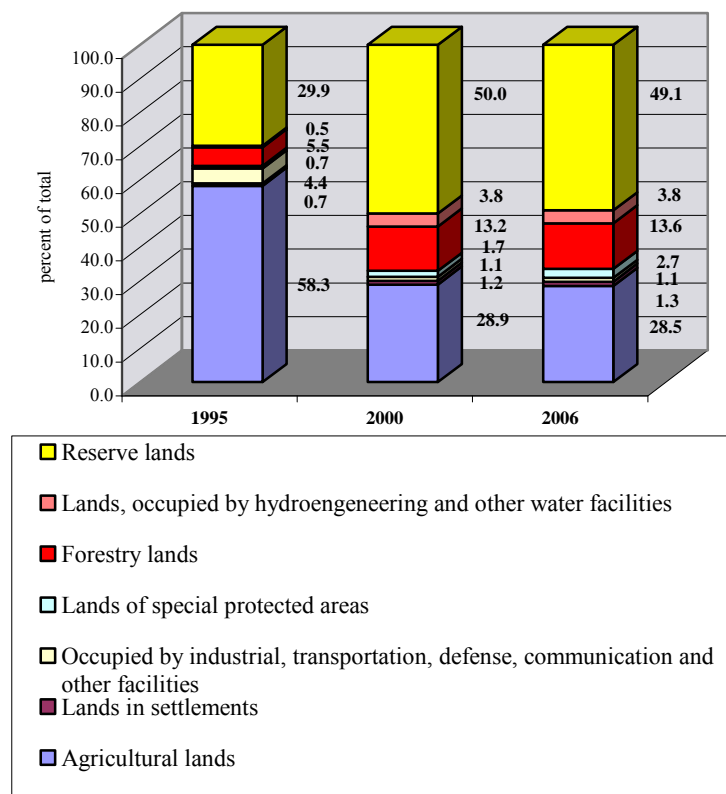
The soil cover in Kyrgyzstan is represented by a wide variety of soil zones, including desert, desert steppe, dry steppe, mountain-forest-meadow steppe, mountain meadow, meadow steppe (sub-alpine and alpine), high-mountain steppe and high-mountain desert. Geo-morphological and climate conditions, together 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 1999 *Land Code* No, the land fund includes seven distinct land categories forming the country's land structure (figure 7.1).

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.

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



Source: Protection of the Environment in Kyrgyz Republic 2000–2006, Statistic Data, Bishkek, 2008.

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

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 agrotechnologies 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 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.

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.

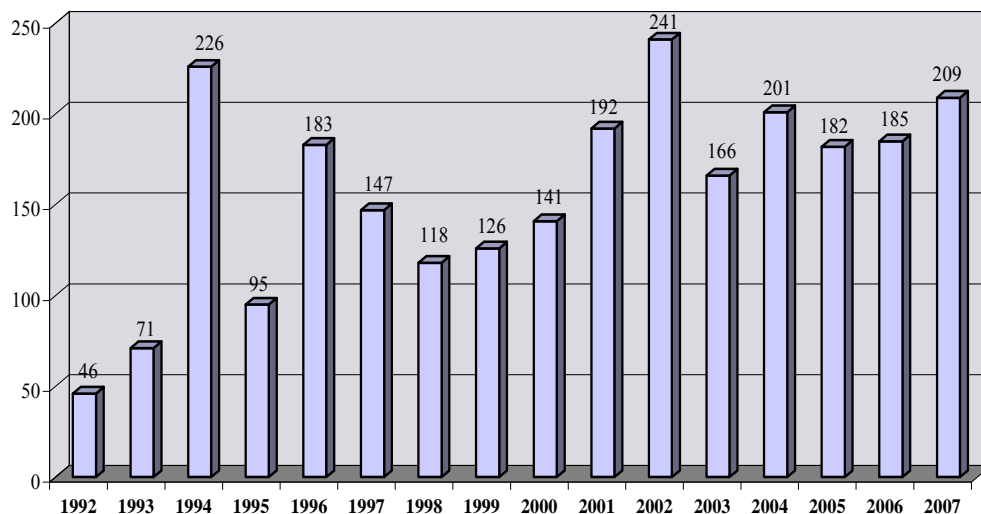
These forecasts are the basis for taking precautionary steps to protect the population from possible emergency impacts occurring from expected high-risk processes and events. In addition, based on the analysis of forecast materials, at the Government's expense and with the use of international assistance, 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.

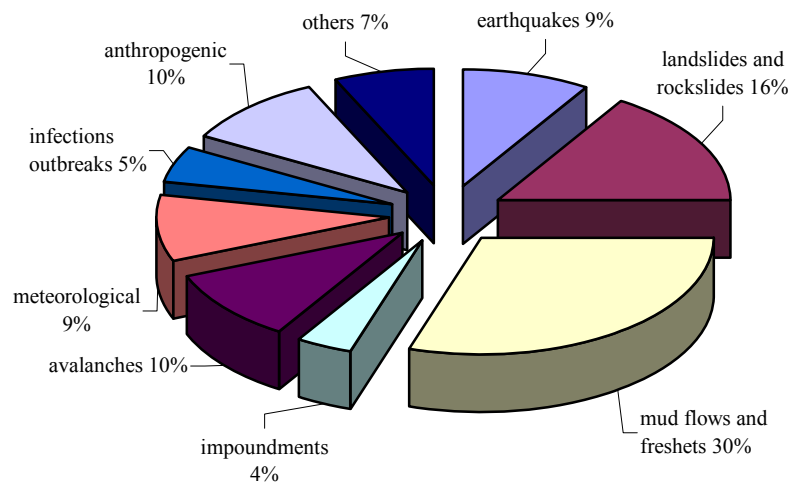
#### *Agricultural practices*

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 7.2: Frequency of emergencies, 1992–2007**



Source: Ministry of Emergencies, 2008.

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

Source: Ministry of Emergencies, 2008.

### Land degradation

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.

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

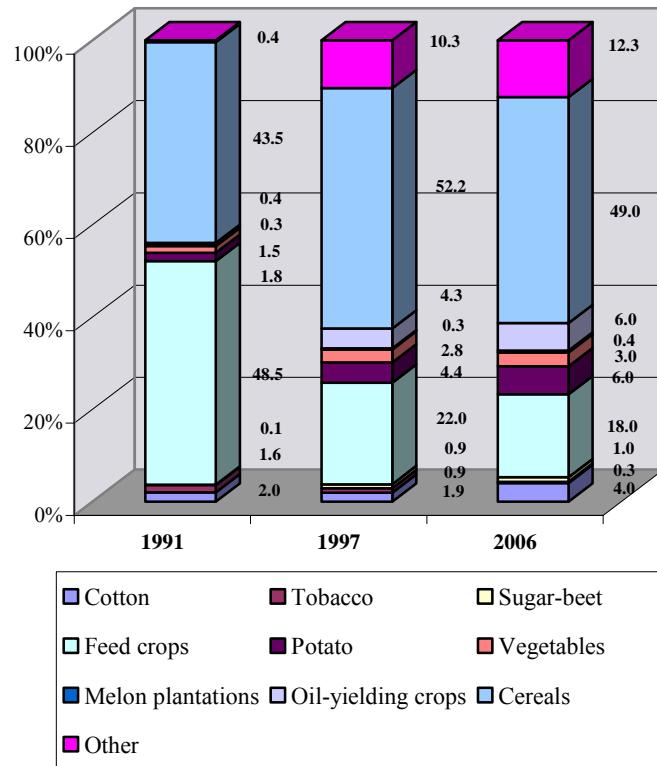
National Academy of Sciences has not yet been published.

Erosion, and in particular wind erosion, is of a special concern. 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.

**Figure 7.4: Structure of area under cultivation, percentage, 1991, 1997 and 2006**

Source: AgroPress, special issue devoted to the eightieth anniversary, Ministry of Agriculture, Water Management and Processing Industry, November, 2007.

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 Persistent Organic Pollutants (POP) (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 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 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.

The 2009 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.

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

Types of degraded land	1990–1999		2000–2005	
	million ha	% of total area	million ha	% of total area
Eroded (wind, water, and pasturable erosion)	5.40	27.00	5.70	28.50
Salinized soils	1.17	5.85	1.18	5.90
Waterlogged	0.09	0.01	0.12	0.01
Rocky	3.80	19.00	4.00	20.00

Source: Kyrgyz Republic. Third National Report on UNCCD<sup>1</sup> Implementation, Bishkek, 2006.

<sup>1</sup> United Nations Convention to Combat Desertification.



**Table 7.2: Regional distribution of land degradation, thousand ha**

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

Source: National Report of the State of Kyrgyzstan Environment, 2001–2003.

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.

#### *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 m<sup>3</sup> 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. 161/1999, the maintenance and rehabilitation of 36 tailing sites with a total size of 13.35 million m<sup>3</sup> and 25 refuse heaps totaling 2.35 million m<sup>3</sup> 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 m<sup>3</sup>; non-ferrous metal waste, 5.15 million m<sup>3</sup>. 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.

### **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 1999 *Forest Code*, as well as other laws

### 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.

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 Providing Pastures for Rent and Use*.

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 Lands*, 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* No. 696/2006). Finally, the two terms appear in the *Regulations on*

*Monitoring of Agricultural Land* 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.

The *Law on Pasture* was adopted in December 2008. The law contains the necessary provisions to improve management of pasture resources on the basis of decentralization and increasing the role of local communities. The law creates 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.

Currently, there is no well-tested consolidated regulatory framework that would enable a clear protection of land property. The legal regulation of land management and protection is not able to cope with the new context existing after independence.

**Box 7.2: Ecological hot spot of Mailuu-Suu**

There are 23 tailing sites (1.99 million m<sup>3</sup>) and 13 refuse heaps (940,500 m<sup>3</sup>) 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.

*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 2000 *Law on Agricultural Land Management* 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.

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.

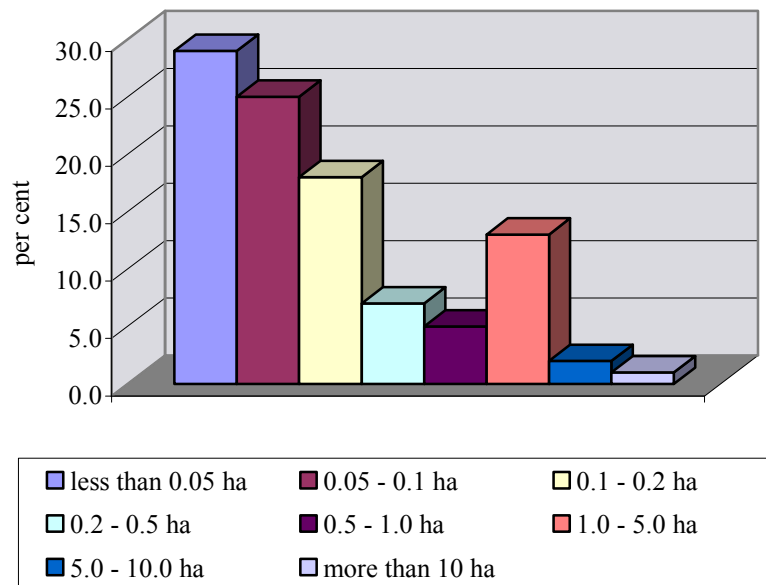
Land privatization and poverty have resulted in about 30 per cent of arable land being uncultivated. These uncultivated lands have begun to become overgrown with weed vegetation and reed, and rehabilitating them for cultivation and crop rotation will require substantial investment.

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 United States Agency for International Development (USAID)-sponsored Land Reform and Market Development Project (2006–2008) has shown (a) that the actual land under cultivation is roughly

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

Source: UNDP Kyrgyzstan and State Agency for Environmental Protection and Forestry. Kyrgyzstan Environment and Natural Resources for Sustainable Development, Bishkek, 2007.

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. Following the Government Resolution (No. 204/2008) in 2008-2009 the State Project Institute "Kyrgyzgiprozem" of the Gosregistr has been carrying out the land inventory of the LRF in 350 municipalities (*aiyl okmotu*).

#### *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 (*rayons*), 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 in 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 2007 *Ecological Security Concept*, 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 for 2000–2005*, the *Melioration Programme for 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, and Global Mechanism/UNDP); the Kyrgyz Agriculture Support Services Project (1998–2006; Swiss Agency for Development and Cooperation, and 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; Gesellschaft für Technische Zusammenarbeit (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 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 (d) the development of a property market. Gosregistr includes local registration bodies, and organizations carrying out development of geodesic and cartographic work.
- The Institute “Kyrgyzgiprozem” 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’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 competence, 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 falls under the Division of State Environmental Control, 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 “Kyrgyzgiprozem” 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.



*Haymaking in Bishkek oblast.*

#### *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, Kyrgyzgiprozem 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 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, the *Agricultural Land*

*Monitoring Programme for 1999–2005 and Beyond* was adopted by the Government Decree No. 115/1999. Unfortunately, due to financial constraints it has not been put into practice.

#### **7.4 Conclusions and recommendations**

Land degradation – primarily due to water erosion, desertification, salinization and waterlogging – poses a very serious challenge in Kyrgyzstan. The Government adopted the 2000 *National Action Programme to Combat Desertification* and the *National Framework Programme on Land Management for 2006–2016* within the framework of the 2006 *Central Asian Countries Initiative for Land Management*. The programmes focus on sustainable land management, increased productivity of agricultural land and poverty alleviation in rural areas. The programmes recognize the basic challenge of making the concept of sustainable land management one of the Government's main priorities, and having it guide its development strategies, policy, institutions and budgetary processes.

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 for 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 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, making amendments to these programmes, as necessary. 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 Processing Industry should promote 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.

Therefore, 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 appropriate ministries and agencies involved in environmental protection should elaborate and submit to the Government for approval a State programme to promote traditional cattle-raising practices as well as modern, scientifically grounded and environmental 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 geographic information system



(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 for 1999–2005 and Beyond* 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 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.

Records for different taxa<sup>1</sup> 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.

### *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-leafed), 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.

### *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.

<sup>1</sup> Taxa, plural of taxon: any taxonomic group or rank

**Table 8.1: Species richness and number of threatened species**

Taxonomic group	Number of species	Percentage of world number	Number of species in the national <i>Red Book</i> *	Percentage of Red Book species
Lower plants	3,676	5.0	4	0.1
Higher plants	3,786	1.5	95	2.5
Annelid worms	1,282	3.5	0	0.0
Molluscs	168	0.3	0	0.0
Insects	10,242	1.2	18	0.2
Fish	75	0.4	6	8.0
Amphibians	4	0.1	2	50.0
Reptiles	33	0.5	8	24.2
Birds	368	4.1	53	14.4
Mammals	83	2.1	26	31.3

Source: SAEPF, GEF, CBD, UNDP. 2006. Third National Report on Biodiversity Conservation in Kyrgyz Republic. \* Number of *Red Book* species is updated based on the 2008 official list.

**Table 8.2: Ecosystems, ha**

Ecosystem	Source of data		
	1	2	3
Spruce forest	277,200	..	301,700
Spruce-fir forests	..	322,000	..
Juniper forest	268,000	471,000	254,832
Broad-leaved forest	46,400	..	8,367
River forest (tugai)	22,600	..	..
Maple forests	..	8,000	..
Walnut forests	..	94,000	92,875
Small leaved forest	71,100	69,000	104,064
Pistachios and almonds	..	50,000	45,847
Deciduous bushes	..	571,000	..
Mid-mountain deciduous shrubland	97,000	..	387,196
Mid-mountain pterophilic shrubland	231,700	..	..
Savannah	608,100	..	..
Almond and pistachio forest	18,200	..	..
Glacier and subglacier	1,152,700	744,000	1,968,278
Cryophilic meadow	2,724,200	..	1,726,349
Alpine meadows	..	3,363,000	..
Sub-alpine meadows	..	1,773,000	1,320,799
Cryophilic steppe	2,141,300	..	2,247,457
Cryophilic desert	191,100	..	195,344
Mid-mountain meadow	876,400	373,000	889,819
Mid-mountain steppe	1,764,300	..	2,480,353
Mid-mountain desert	254,300	..	138,434
Mid-mountain savannahs	..	6,367,000	236,189
Mid-mountain redini	..	..	23,151
Mountainous dry-farming land (bogara)	279,100	..	..
Foothill steppe	82,300	..	19,270
Foothill desert	876,800	..	557,161
Foothill savannahs	..	1,956,000	..
Pterophilic lowland shrub	18,100	..	..
Lakes and wetlands	39,300	34,000	707,614
Rock	..	1,304,000	915,067
Cultivated land (anthropogenic)	1,247,500	1,935,000	3,211,171

Sources: 1) MEP 2002. Kyrgyz Republic Biodiversity Strategy and Action Plan; 2) SAEPF, UNDP 2007. Kyrgyzstan Environment and Natural Resources for Sustainable Development; 3) SAEPF, GEF, CBD, UNDP, 2006. Third National Report on Biodiversity Conservation in Kyrgyz Republic: Use of Biodiversity

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.

#### *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 2007 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

### Box 8.1: Values of biodiversity in Kyrgyzstan

Biodiversity 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.

*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.

Source: MEP. 2002. Kyrgyz Republic Biodiversity Strategy and Action Plan.

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 2007 *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 of 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 16.5% of the territory). However, the forested area in 2005 makes up only 869,000 ha, or 4.3 per cent of the country's territory. In addition, there are 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 production forests in Kyrgyzstan, as such (table 8.3). Limited production of industrial timber and fuelwood takes place in "multiple-use" function forests and totals about 27,300 m<sup>3</sup> 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 m<sup>3</sup>, 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 a vital role in terms of providing

social services (e.g. recreation, sanitation, fuelwood, non-timber forest products).

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.

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.

**Table 8.3: Forest use categories, thousand ha**

Category / function	1990	2000	2005
<b>Total</b>	<b>836.4</b>	<b>858.3</b>	<b>869.3</b>
Production	0.0	0.0	0.0
Protection of soil and water	685.3	680.3	677.8
Biodiversity conservation	26.1	51.5	64.2
Social services	16.9	14.4	13.2
Multiple use	108.1	112.1	114.1

Source: FAO. Global Forest Resources Assessment 2010 and Kyrgyzstan Country Report. 2008.

**Table 8.4: Production of industrial timber and fuelwood, thousand m<sup>3</sup> under bark**

	2000	2001	2002	2003	2004	2005	2006
Roundwood	13.1	13.3	11.1	11.2	9.3	9.3	9.3
Fuelwood	33.3	29.7	24.7	24.9	18.0	18.0	18.0

Source: FAO 2008. Global Forest resources Assessment 2010: Guidelines for country Reporting Forestry Resources Assessment 2010. Final draft.



**Table 8.5: Estimated production and legal supply of industrial timber and fuelwood, thousand m<sup>3</sup>**

Country	Time period	Industrial timber			Fuelwood		
		Estimated production from forest areas	Legal supply from forest areas	Ratio	Estimated production from forest areas	Legal supply from forest areas	Ratio
Albania	2002	444	83	5.3	2 302	222	10.4
Armenia	2003	150	20	7.5	587	50	11.7
Azerbaijan	2004	11–456	0.6	n/a	n/a	10	n/a
Georgia	2004	550	70	7.9	2 000	300	6.7
Kyrgyzstan	2002–2004	n/a	11	-	330	22	15
Republic of Moldova	2004	n/a	44	-	750	359	2.1
Uzbekistan	2004	n/a	8	-	n/a	18	-

Source: Savcor Indufor, 2005. Study on ensuring sustainability of forests and livelihoods through improved governance and control of illegal logging for economies in transition. Discussion paper.

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 SAEPP. 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).

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<sup>2</sup> Red Data List Categories<sup>3</sup> 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<sup>4</sup> 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<sup>5</sup> to vulnerable<sup>6</sup>. Such down-listing has not yet occurred in Kyrgyzstan;

<sup>2</sup> International Union for Conservation of Nature

<sup>3</sup> 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)

<sup>4</sup> A taxon is critically endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.

<sup>5</sup> 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.

<sup>6</sup> 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 (*Buffo viridis*);
- Finally, the State does not take any responsibility for listed species, other than prohibition of direct use (e.g. hunting, collection).

The 1994 *Law on Specially Protected Natural Areas* 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.

#### **Box 8.2: Main acts of legislation on biodiversity and natural resources management**

1994 Law on Specially Protected Natural Areas  
 1999 Law on Environmental Protection  
 1999 Land Code  
 1999 Forest Code  
 1999 Law on Fauna  
 1999 Law on Biosphere Reserves  
 2001 Law on Protection and Use of Flora  
 2002 Law on Mountain Areas  
 2005 Water Code

Source: SAEPF, UNDP 2007. Kyrgyzstan Environment and Natural Resources for Sustainable Development.

The *Country Development Strategy* for 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.

In order to ensure the optimal conditions for conservation and increasing the fish stock, the moratorium for fishing in the lakes Issyk Kul and Son Kul has been introduced for 2 years (Presidential Decree No. 7/2008). There are few exceptions from the moratorium, namely fishing for a scientific purposes and reproduction and amateur fishing. Also in 2008 the *Law on Banning of Catch, Transportation, Purchase, Trade and Export of Highly Precious and Endemic Fish Species that are inhabited in the Lakes Issyk Kul and Son Kul* was adopted.

The new national forest policy was initiated by the President of Kyrgyzstan of (Decree No. 300/1998). 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

**Table 8.6: Dynamics of size changes in protected areas, ha**

Protected area category	1980	1985	1990	1995	2000	2005	2008*
<b>Total</b>	<b>525,169</b>	<b>564,836</b>	<b>464,989</b>	<b>539,355</b>	<b>511,870</b>	<b>905,034</b>	<b>937,651</b>
% of country area	2.6	2.8	2.3	2.6	2.5	4.5	4.7
Nature reserve	124,554	161,523	164,857	236,937	236,937	354,760	379,505
National park	2,286	2,286	11,172	13,458	238,697	259,197	241,315
Sanctuary	398,269	400,967	288,900	288,900	36,176	291,017	316,771
Nature monument	60	60	60	60	60	60	60

Source: SAEPF, GEF, CBD, UNDP. 2006. Third National Report on Biodiversity Conservation in Kyrgyz Republic.

\*2008 data is provided by the Section of biodiversity, protected areas, ecoeducation and mass media of SAEPF.

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.

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.

The moratorium on logging, processing and trade of the specially valuable wood species growing on the forest lands has been introduced (Presidential Decree No. 331/2006). Moreover the law introduced a five year ban on cutting, transportation, purchase, trade, logging, export and import of the specially valuable wood species (nut and juniper).

### 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 Environmental 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 SAEPP, 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.

### Box 8.3: Forest-related policy and strategy documents

The 2004 *Concept of Forestry Development* 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 2004 *National Forest Programme for 2005–2015* 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 2006 *National Action Plan of Forestry Development for the period 2006–2010* (NAP) 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* 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.



*Wild iris, Issyk Kul Biosphere reserve*

- 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. 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 SAEPP 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 SAEPP, this could be a “Biodiversity Department” and in the event that the status of SAEPP is upgraded to that of a ministry, this might be the “State Agency for Biodiversity Management” within the Ministry of Environment.

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.

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 8.1:*

*SAEPF should elaborate a national strategy and action plan for biodiversity, including protected areas. 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 internal capacity-building;*
- *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. 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 8.2:*

*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 the fields of biodiversity conservation and biological resources management, 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<sup>7</sup>, 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 8.3:*

*SAEPF should elaborate and implement a national biodiversity monitoring scheme with internationally recommended and nationally adopted indicators,*

<sup>7</sup> *Convention on Wetlands of International Importance, especially as Waterfowl Habitat.*

*data gathering and processing systems and participatory tools.*

In recent years, Kyrgyzstan has managed to elaborate 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. In elaborating such a framework and strategy on the sustainable use of natural resources, the criteria and indicators of sustainable forest management<sup>8</sup>, as internationally defined, should be taken into account and applied. The principles of sustainable forest management take account of the environmental, social and economic dimensions. Another key ecosystem with much socio-economic and environmental value for Kyrgyzstan, wetlands, has been neglected during long times. However, currently the Agency is working on a draft national strategy and an action

plan on wetlands conservation. 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 8.4:*

*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. Principles of sustainable forest management should be applied.*

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<sup>8</sup> According to Helsinki Resolution H1 adopted by the Ministerial Conference on the Protection of Forests in Europe (MCPFE), “sustainable management” means the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.





## ***ANNEXES***

***Annex I: Implementation of the recommendations in the  
First Review***

***Annex II: Selected regional and global  
Environmental agreements***

***Annex III: Selected economic and environmental  
indicators***

***Annex IV: List of major environment-related legislation in  
Kyrgyzstan***



## *Annex I*

# ***IMPLEMENTATION OF THE RECOMMENDATIONS IN THE FIRST REVIEW***

## **PART I: THE FRAMEWORK FOR ENVIRONMENTAL POLICY AND MANAGEMENT**

### **Chapter 1 Legal instruments, institutional arrangements and environmental information**

#### *Recommendation 1.1:*

*As most principal environmental and natural resources laws are adopted, activities should concentrate on their implementation, starting with the timely development of all required governmental regulations. See also Recommendations 5.1, 5.2, 7.1 and 9.3.*

Regarding the development of “all required governmental regulations”, although the recommendation has not been fully implemented, progress has been made. On the downside, despite the adoption of most of the principal environmental laws discussed in the first EPR, the legislative process is still in development. Furthermore, according to the list of legislative acts providing for environmental permitting, monitoring and control, regulation reform is moving ahead slowly. There are still some gaps and inconsistencies in the regulations required for implementation of the most important environmental and natural resources laws. Many regulating documents enacted during the Soviet era remain in effect.

On the other hand, more than 15 new laws were adopted in Kyrgyzstan during the reviewed period, including the 2009 *Environmental Code*, the 2005 *Water Code*, the 2007 *Law on Policy and Regulation on Emission and Absorption of Greenhouse Gases*, the 2006 *Law on the Ozone Layer Protection*, the 2001 *Law on Industrial and Domestic Waste* and the 2001 *Law on Protection and Use of Flora*. A number of draft laws – e.g. on protected areas and biosafety, and the *Forest Code* – are currently under consideration by various governmental bodies. According to data on the online legislative database “Toktom”, since 2002 many regulations have been developed by the national government, if rarely by regional authorities, to implement the previously adopted environmental and natural resource laws.

However, the Government does not follow a consistent approach to implementing environmental and natural resource laws. According to the Department of Water Management of the Ministry of Agriculture, Water Management and Processing Industry, the *Water Code* is still not being implemented and the required new regulations and necessary amendments to previous legislation have not yet been developed.

#### *Recommendation 1.2:*

*The legislative and governmental bodies should see to it that priority policies and management measures receive the necessary funding. Capacity-building measures need to be strengthened, both through training staff at all levels of environmental management and through the upgrading of required equipment. Funding of such measures should primarily be sought from national sources (by adapting the structure of the budget to all policy priorities, including environmental priorities). If funding is sought for training, technical assistance and equipment from international sources, Kyrgyzstan needs to be prepared to better respond to the requirements of foreign partners. See also Recommendations 4.1 and 6.4.*

Currently, major priority policies and management measures in environmental protection are being integrated into mid-term country development strategies for 2007–2010 and also promoted through the 2007 *Ecological Security Concept* as well as through the *National Forest Programme for 2005–2015*. These provide the framework for requesting financing for such capacity-building measures from the State budget. Some training activities on environmental enforcement, ecological expertise and environmental impact assessment as well as environmental permitting have been financed from the national and regional environmental protection funds.

The State Agency of Environmental Protection and Forestry (SAEPF) provides one training session every year on forestry for 35 inspectors and specialists. This is a six-day training (35–40 hours) and covers topics such as the calculation of environmental fees, sanctions for non-compliance and environmental examinations. Since 2003, about 200 inspectors and specialists have been involved into these training sessions.

However, progress in implementing the recommendations on capacity-building measures of the first EPR has been very limited. Relevant measures were conducted by SAEPF on an irregular basis, and there is no specialized institution in the country to train professionals in environmental protection.

Funding from domestic public sources remains limited, with the bulk of environmental measures being financed from the system of environmental funds. Resources available to these off-budget funds accrue from various earmarked charges, so the system lacks flexibility. Financing from the regular budget is allocated to the operations of environmental authorities. The *Country Development Strategy for 2007–2010* envisages a number of environmental measures and provides an estimation of potential resources, including those that could be reflected in the medium-term budgetary framework. It identifies a large financial gap that needs to be covered by external sources. The Strategy marks significant step forward in policy planning, providing a framework for attracting external resources. However, envisaged budget resources are low and actual medium-term figures are largely indicative.

*Recommendation 1.3:*

*More attention should be paid to ensuring public participation in all aspects of environmental protection, especially by increasing access to policy-making processes at all levels of the legislative, judiciary and executive powers. The Ministry of Environmental Protection should consider strengthening its capacities for developing public awareness and participation. See also Recommendations 5.3 and 5.4.*

With the 2001 *Law on Accession to the Convention of the United Nations Economic Commission for Europe (UNECE) on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*, Kyrgyzstan acceded to the Aarhus Convention. This Law promotes direct implementation of Convention provisions and some other legal acts adopted thereafter by the Parliament (*Zhogorku Kenesh*), strengthening the implementation of the country's obligations under this Convention. These acts include the 2007 Constitution, the 2006 *Law on Access to Information Available at Public Authorities and Institutions of Local Self-government*, the 2007 *Law on the Procedure for Consideration of Citizens' Appeals*, and the 2006 *Presidential Decree on Measures to Expand, Regulate and Implement in Practice Ways of Interaction of Public Authorities, Institutions of Local Self-government and Civil Society*.

SAEPF established a Consultative Council at the Agency. An NGO representative is a board member of the Agency's Environmental Fund. The Parliament, Government, Ministry of Justice and SAEPF upload draft legal acts and regulations on their websites for public comment, but they do not inform the public about how its comments are taken into account in the final texts.

Since 2006, SAEPF has been publishing an environmental newspaper (*Jer Ene*) two to three times a year. SAEPF also implements the *Strategy on the Dissemination of Information on Forestry*. Since 2005, a website dedicated to environmental matters ([www.nature.kg](http://www.nature.kg)) has been hosted by SAEPF, with support from the UNDP office in Bishkek.

*Recommendation 1.4:*

*An early revision and further specification of the procedures followed in environmental impact assessment should be envisaged. Procedures should be streamlined in order to make them less costly and easier to apply. Procedures for public participation should be regulated in the required detail. The training of environmental managers involved in impact assessment should focus on their role in the screening and scoping phases.*

The *Environmental Code* contains detailed provisions on the environmental impact assessment (EIA) procedure and on environmental expertise. The *Law on Ecological Expertise* (as amended in 2003), the 1997 *Instruction on EIA* and the 1997 *Instruction on State Environmental Expertise* (SEE) still have to be revised in order to be in line with provisions of the *Environmental Code*.

January 2007 saw the start of the OSCE<sup>1</sup>/UNECE project, “EIA in a transboundary context: Pilot implementation project in Central Asia”. As a result of this project, the required changes in procedures for public participation are now included in the above-mentioned draft amended instructions on EIA and SEE. The two draft documents are being discussed by the authorities concerned.

*Recommendation 1.5:*

*The enforcement of satisfactory environmental monitoring in all areas that depend on reliable monitoring data should be seen as a precondition for environmental management and should, consequently, receive appropriate funding. See Recommendations 2.5, 3.1 and 7.3.*

The main Directorate on Hydrometeorology (Kyrgyzhydromet) of the Ministry of Emergencies, the primary environmental monitoring institution in the country, has slightly expanded its monitoring networks. After a long interruption, since November 2007 the laboratory of SAEPF, the body intended to be responsible for environmental monitoring, has been working again, but only to a very limited extent because of financial constraints.

## **Chapter 2 Instruments for environmental protection**

*Recommendation 2.1:*

*The introduction of higher user charge rates for sewerage, sewage treatment and municipal waste management should be considered. The charge scheme should allow service providers to operate on a cost-recovery basis.*

User charges have been increased, but payment discipline is very poor, thus undermining the financial position of service providers. The latter are not able to effectively recover costs from their operations.

*Recommendation 2.2:*

*The existing pollution charge system should be improved with regard to the efficiency of the applied rates, a possible reduction of the charge scheme and in general a more systematic application of the polluter-pays principle.*

The system of pollution charges has remained practically unchanged, aiming to cover a large number of pollutants that exceeds those that are effectively monitored. Charges are too low to constitute an effective deterrent for polluters. A new methodological instruction for the calculation of payments was issued in 2004 (Government Order No. 823/2004), introducing quarterly inflation indexation of charges. Payment compliance has significantly improved in recent years, driving an increase in revenues from pollution charges.

*Recommendation 2.3:*

*An increased use of products charges for environmental policy should be evaluated. The introduction of tax differentiation to encourage the use of environmentally friendly products should be analysed.*

No product charges exist on environmentally harmful products (e.g. pesticides, batteries or fluorescent light bulbs). Tax differentiation does not reflect environmental concerns. Charges on the use of fuel are levied from oil traders, not added directly to the price of fuel, and cannot be considered as product charges.

*Recommendation 2.4:*

*A coordinated strategy and a national programme encouraging the introduction of less polluting technologies through modern standards and a revised permitting system as well as economic incentives should be formulated with clear objectives and deadlines, with priority given to environmental hot spots. A strategy to promote cleaner, safer and more sustainable technologies should also be developed and adopted. The role of the State Environmental Fund as a source of finance for related expenditures – as well as for environmental investments in general – should be strengthened. See also Recommendations 7.6 and 9.4.*

This recommendation has been implemented through the preparation and approval of two strategic documents: the *Country Development Strategy for 2007–2010*, and the *Ecological Security Concept*.

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<sup>1</sup> Organization for Security and Co-operation in Europe.

The Strategy outlines the directions and priorities in all sectors of the economy of the country, including provisions for environmental safety. It is supported by the *Country Development Strategy Action Plan* for the same period. To reflect the recent changes at both the global and national levels, the Government approved the *Country Development Strategy for 2009–2011* (Resolution No. 601/2008) and submitted it to the Parliament for its consideration.

The *Ecological Safety Concept* identified environmental hot spots as well as the directions and mechanisms used to ensure ecological security. A national plan with measures aiming at the implementation of the Concept is under preparation. Furthermore, the *Concept* identifies the need for the introduction of less polluting technologies and discusses the use of a wide range of economic incentives to promote better use of natural resources and more environmentally friendly technologies (see section 4.3). This has not yet been translated into more concrete strategies or action plans.

The National Environment Protection and Forestry Development Fund was formed in 2006 (Presidential Decree No. 2006/2006), merging the operations of the former National Environmental Protection Fund and the Forestry Development Fund. The National Fund coexists with four local funds, as of 2008. A rationalization effort has reduced the number of local funds to contain management costs. The amounts allocated to the financing of environmental measures, both in absolute terms and as a share of the total expenditures of the National Fund, sharply increased in the biennium 2006–2007 after years of decline. Some diversification of the revenue base can be observed, particularly in 2007. The National Fund largely relies on revenues from pollution charges (indirectly, through transfers from the local funds) and contributions from the Kumtor gold mine. Together, these two sources account for almost three quarters of total revenues.

**Recommendation 2.5:**

*An integrated information system strategy should be developed, including the financial aspects of its implementation. The strategy should be explicit on the data collection responsibilities, the data flow organization and the dissemination of data to the public. See also Recommendation 1.5.*

The “Kyrgyz Republic Environmental Management Capacity Building Project”, which ADB implemented in the country in the early 2000s, has 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 environmental authority. There has been no evidence of follow-up to the project’s achievements since its completion.

### **Chapter 3 Risk management of natural disasters**

**Recommendation 3.1:**

*Monitoring of critical objects and the drawing-up of preventive measures for critical objects (such as waste tailings and water reservoirs located in disaster-prone areas) should become a priority activity in the monitoring system. Certain indicators and their safety limits have to be developed for that purpose. There is an urgent need to rehabilitate or relocate radioactive and other hazardous tailings that are located in areas of high seismic activity, such as Maili-Suu and Ak-Tuz. An inventory of such “critical objects” and “hot spots” should be made. See also Recommendations 1.5 and 5.3.*

About 20 sites of potentially large landslides that could cause major disasters in nearby villages in event of unloading have been identified. These sites are being equipped with real-time monitoring and warning systems. Seismic measurement and forecasting equipment, earthquake detectors and a mobile seismic assessment station are being provided to the Ministry of Emergencies under a Global Environment Facility (GEF) project. A comprehensive monitoring system covering climatic, seismic, hydrological, geo-chemical and environmental parameters in Mailuu-Suu is under development within the same project.

A pollution map was prepared in 2007 within the framework of an international project with the Czech Republic.

Recommendation 3.2:

*The necessary increase in efficiency in the coordination of institutions dealing with natural disasters should start with the swift implementation of the State Indicative Disaster Reduction Plan. Improved coordination is also required in transboundary collaboration on natural and technological disasters in the framework of the relevant transboundary agreements.*

The coordination of governmental institutions dealing with natural disasters is carried out through an interdepartmental commission on emergency prevention and elimination. The Commission has a prominent status – the Prime Minister is the Head of the Commission, the Minister of Emergencies is the Deputy Head.

The Government has signed bilateral and multilateral agreements with neighbouring States regarding mutual warning and cooperation in addressing the consequences of emergencies. A system of reciprocal notification and cooperation of regional departments of the Ministry of Emergencies with the territorial entities of the neighbouring States has been put in place.

The Ministry of Emergencies' *Development Plan for 2007–2010* comprises provisions to develop transboundary cooperation on these issues.

Recommendation 3.3:

*The legal instruments for reinforcing buildings to prepare them better for seismic risks should be revised, as should all technical legislative documents applicable to construction. There is also a need for a specific law regulating the response and rehabilitation activities of the different State and non-State organizations in the field of seismic risk.*

The *Law on Protecting Population and Territories from Natural and Technogenic Emergencies* was adopted in 2002. Construction norms and rules for seismic construction in Kyrgyzstan were revised (Construction Norms and Rules 2004 “Earthquake-proof Construction”).

Currently, a draft Law on seismic safety and a draft long-term seismic risk reduction programme are in the process of approval. A uniform legislative act on seismic construction is currently being developed.

Recommendation 3.4:

*The development of improved rehabilitation practices should concentrate on low-cost measures that can be applied with local skills. Small contractors active in construction and rehabilitation would benefit from training programmes for the development of their skills. The training capacity in the risk management of natural and technological disasters should be strengthened. Training programmes should be developed and implemented for local authorities in disaster-prone communities. Public awareness programmes should be introduced covering both natural and technological hazards. Risk awareness issues should be included in the primary and secondary school curricula.*

Within the limited scope of rehabilitation measures, Kyrgyzstan is attempting to make use of the local expertise available. The Ministry of Emergencies organizes training courses for its own staff as well as for other government bodies and local authorities. Some of these seminars and workshops are also open to NGOs and the public. The Ministry of Emergencies prepares publications and issues TV spots in the Russian and Kyrgyz languages to raise public awareness of natural disaster risks. However, these issues are not yet systematically integrated into school curricula.

A capacity-building programme with funding from GEF is being implemented to help the Ministry of Emergencies, administrations at various levels and local communities to better fulfil their duties and functions related to disaster monitoring and management, to create better awareness, and to be better prepared and more responsive in the event of disasters.

A public awareness campaign (“Life Safety in Mailuu-Suu”) was launched in Mailuu-Suu in partnership with the GeoPribor scientific engineering centre and the Kyrgyz National Academy of Sciences. The city administration, schools and the local medical college received brochures explaining the dangers of radioactive waste and offering advice on preventive actions.

**Recommendation 3.5:**

*An increase in the effectiveness of the activities to reduce losses from earthquakes requires the replacement of all old stations by modern digital automatic seismic stations with radio-telemetric connections, possibly in new institutional arrangements.*

Seismic measurement and forecasting equipment, earthquake detectors and a mobile seismic assessment station are being provided to the Ministry of Emergencies under a GEF project.

**Recommendation 3.6:**

*Risk management should be introduced as an integral part of territorial planning. A procedure for specifying restrictions on the use of land in areas prone to natural hazards should be developed and implemented. A law on State insurance for natural disasters should be finalized and submitted to Parliament. Development in hazardous areas should be discouraged through taxation, pricing and insurance policies.*

This recommendation was partly implemented. The Ministry of Emergencies worked on monitoring, forecasting and preparing the response to potential hazardous events within Kyrgyzstan and its territorial entities (down to the *aiyl okmotu* level). As part of that work, there are restrictions on the development and use of land, although the system for enforcing these restrictions and activities requires adjustment. There are no microseismic zoning maps, even for a number of densely populated areas. Due to the general underdevelopment of rayon territorial planning, the system of restrictions on land use does not work effectively enough. The Government approved the *Law on Voluntary Preferential Insurance of Dwellings against Natural Emergencies* in 2008 and submitted it to the Parliament for its consideration. In principle, construction in risk areas is prohibited. Implementation of this policy, however, is weak and is not ensured everywhere.

**Chapter 4 International cooperation****Recommendation 4.1:**

*The Ministry of Environmental Protection should consider developing and publishing guidelines for international cooperation projects, which include safeguards against the unforeseen discontinuation of the national contribution to the projects. Foreign partners should consider insisting on such project arrangements, which increase the long-term benefit of their involvement. See also Recommendation 1.2.*

This recommendation has not been implemented yet due to many political and structural changes. Furthermore, SAEPF does not have the necessary capacities to develop such guidelines.

Each international organization has its own rules and establishes a memorandum of understanding (MoU) with the country for each specific project. Usually, these MoUs include references and conditions related to counterparts' stability as well as assurance that the project in which they are cooperating will be ongoing even after its contribution has ceased. Environmental, social and economic impacts of the project should also be included.

Discussions between SAEPF and the Ministry of Foreign Affairs show that common guidelines could be very useful to assuring the sustainability and long-term impact of international cooperation projects, as well as to avoid overlapping and inefficient use of financial resources. Such guidelines could also be helpful in terms of attracting international investment.

**Recommendation 4.2:**

*Taking into consideration the special significance of water resources for the region and their predominantly transboundary character, it is important to have a legal framework for joint action by Kyrgyzstan and its neighbours to ensure the protection and rational use of these waters. The water protection component of such cooperation ought not to be neglected. See also Recommendation 6.1.*

Regarding implementation of recommendation 4.2, Kyrgyzstan has made progress: in 2000, the *Agreement on the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas from 2000* with Kazakhstan became operational. In 2003, the GEF project, "Water and Environmental Management in the Aral Sea Basin", which includes all the Central Asia countries, was completed. In 2008, the *Agreement between*



*All Central Asian Countries on Cooperation in Joint Management, Use and Protection of Water Resources of Inter-State Sources* was adopted. With UNDP assistance, 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. Nonetheless, efforts are still needed to implement these agreements to ensure the protection and the rational use of transboundary waters. Furthermore, Kyrgyzstan has not yet ratified the *Convention on the Protection and Use of Transboundary Watercourses and International Lakes* and does not foresee ratification in the near future.

**Recommendation 4.3:**

*The Council on Sustainable Development, and the Sustainable Development Commission should, together with the Ministry of Environmental Protection, determine effective mechanisms for coordination between economic and environmental cooperation projects. The main aim of such coordination should be that foreign direct investments should be environmentally friendly, all necessary precautionary measures being recognized in investment projects.*

There are no special mechanisms of coordination. Projects linked to foreign direct investment need to observe general environmental legislation and are subject to the existing system of permitting, licensing and environmental assessment.

**PART II: MANAGEMENT OF POLLUTION AND OF NATURAL RESOURCES**

**Chapter 5 Management of radioactive and other wastes**

**Recommendation 5.1:**

*Legal, economic and regulatory instruments for the management of industrial and municipal waste including hygienic and technical norms in accordance with international standards should be completed to pave the way for new technologies in waste reduction, recycling and disposal. They should be in line with the polluter-pays principle. Responsibilities for the adequate treatment and disposal of waste need to be clarified. The adoption of the law on industrial and municipal waste should be accelerated. See also Recommendation 1.1.*

The *Law on Industrial and Domestic Waste* and its related by-laws regulating the collection, transport and disposal of different types of waste were supported by the 2005 *State Programme on Use of Industrial and Domestic Waste* to further implement legislation.

Management of industrial waste is one of the most actively developed areas of environmental legislation and implementation. Resolution No. 261/2002 defines specific measures on implementation of the requirements of the *Law on Industrial and Domestic Waste*. The State Programme ensures financing of those measures from the State budget, national and regional environmental protection funds and other sources.

Regarding municipal waste, a model statute for collection companies and regulations for tenders for contractors have been developed. There is a UNDP project addressing compliance of municipal waste management with international standards.

The polluter-pays principle has been taken into account when preparing the legislation and is being implemented for industrial waste. For municipal waste, there are no payments as of yet due to legal uncertainties relating to how to identify the polluter and how to properly assign liability.

A major challenge remains the absence of waste processing facilities and the lack of appropriate and sufficient landfills for industrial waste.

**Recommendation 5.2:**

*Radiological protection principles for the safeguard, use or release of contaminated materials, buildings, areas, dumps and tailings from uranium and heavy-metal mining have to be formulated. The Law on the Subsoil should be amended to include regulations on responsibilities for rehabilitation after the closing of mining and ore-processing operations. The adoption of the law on tailings and dumps should be accelerated and should include provisions for environmental audits of old, high-risk tailing sites. See also Recommendation 1.1.*

Radiological protection principles have been formulated in legislation and rules on radioactive waste have been implemented since 2000. The Government adopted the *Resolution on Measures to Secure Safety of Tailing Dumps and Uplands with Radioactive and Toxic Wastes* in 2008. The *Law on Tailing Dumps and Uplands* was adopted in 2001, but does not contain provisions for environmental audits. The Government approved the *Law on Subsoil* in 2008 and submitted it to the Parliament for its consideration.

**Recommendation 5.3:**

*An appropriate share of the State budget should be allocated to urgent remedial measures for the dumps and tailings of closed-down mines, and complementary international funding possibilities should be analysed and applied. A system of regular monitoring of radon in air and uranium-238, radium-226 and lead-210 in river water and sediment as well as in foodstuffs in the affected areas should be set up urgently. The public should be kept informed about any monitoring and remedial action. See also Recommendations 1.3 and 3.1.*

See comments under Recommendations 3.1 and 3.4.

Domestic resources to address the issue of dangerous wastes have been regularly allocated from the Fund for the Liquidation of Emergency Situations. The Ministry of Emergencies spent 8 million KGS in the period 1999–2007. The estimated cost of rehabilitation measures amounts 1.5 billion KGS. International funding has been attracted to address the situation of uranium tailings and other toxic wastes, including from the Czech Republic, Japan, the World Bank, the Atomic Energy Agency of the Russian Federation and the United States Energy Department.

**Recommendation 5.4:**

*A series of landfills for non-toxic waste and repositories for hazardous waste have to be constructed in various parts of the country. Construction should follow internationally accepted practices. A public information campaign should be envisaged in cooperation with NGOs to increase awareness of the potential for waste recycling and reuse. Charges for waste collection should cover the total cost of handling and disposal, and fines for violations of environmental laws should be adapted to the cost of remediation. See also Recommendation 1.3.*

The number of landfills for non-toxic waste and of repositories for hazardous waste has not been increased and therefore remains insufficient. More than half of existing sites do not satisfy sanitation standards. Uncontrolled dumps are widespread. There is only one landfill site in Bishkek, whose capacity is severely stretched. Only 1 per cent of municipal waste is recycled. There is no waste separation. Charges for waste collection amount to about 30 per cent of costs, in part due to poor payment discipline and little private involvement in waste collection, which is a municipal monopoly. Fines are not directly linked to remediation activities, but go to the general budget.

No information campaign on waste recycling and reuse was launched.

## **Chapter 6      Water management**

**Recommendation 6.1:**

*The development of a consistent national water strategy, in cooperation with all the public administrations and non-governmental sectors concerned, should be seen as an urgent requirement. All concerned ministries and institutions should align their own relevant policies and practices on the national water strategy. The national water strategy should focus on the sustainable use of water resources, and should cover the protection of water quality, water supply, water pollution control and protection against floods, as well as the priority investments in the water sector. The national strategy should integrate the needs of sectoral activities, the needs of the population and the water-sharing arrangements with neighbouring countries. See also Recommendation 4.2.*

Despite various attempts to draft a water strategy, this recommendation has never been implemented.

**Recommendation 6.2:**

*A national council or committee should be created to give direction to the implementation (i.e. not necessarily involving supervisory functions like monitoring) of water policies at national level, harmonize the conditions*

*for water supply (irrigation and public supply) and waste-water treatment, and integrate actions at river basin level.*

A National Council led by the Prime Minister and including all ministers and governors for the oblasts was established in 2006. However, this Council has so far had no meetings, and its function has been temporarily assigned to the Department of Water Management within the Ministry of Agriculture, Water Management and Processing Industry.

*Recommendation 6.3:*

*Oblasts should be encouraged to develop coordinated water management plans in catchment areas by agreeing on concerted priorities and objectives when they share common water resources. See also Recommendation 10.3.*

This recommendation is no longer relevant. The *Water Code* states that the National Water Administration shall establish programmes and schedules for basin management plans for the development, use and protection of water resources within each main basin and shall organize their implementation. So far, the National State Water Administration has not been established, and its functions have been temporarily assigned to the Department of Water Management.

*Recommendation 6.4:*

*The projects included in the upcoming National Environmental Action Plan should be reviewed in order to arrive at a realistic schedule and priority programme. Such a programme for water investments seems to be a precondition for obtaining any foreign financing. See also Recommendation 1.2.*

This recommendation was not implemented.

*Recommendation 6.5:*

*The legal status of water users' associations should be clarified in order to make them fully operational and responsible, as they are key players in any water-saving strategy.*

This recommendation was fulfilled by the adoption of the *Law on Associations of Water Users* in 2002. Thus far, 452 water users' associations have been established and 50 more are expected to be established by the end of 2008. This means that almost all irrigated areas in Kyrgyzstan will be administered by the associations.

*Recommendation 6.6:*

*Actions to involve people at the local level in day-to-day water management, protection and saving should be developed and extended to the whole country along the lines of UNDP/Capacity 21 and the GEF awareness campaign, starting in the Chu and Issyk-kul oblasts. Ways should be found to ensure that more international funds are spent at the grassroots level closer to those concretely involved in the management, operation and maintenance of the water distribution systems.*

A World Bank project on emergency prevention is being implemented by the Ministry of Emergencies. As part of the project, the sanitary epidemiological station in Mailuu-Suu gets the laboratory equipment. Additionally, two automatic water-quality monitoring stations have been installed in Mailuu-Suu. The project includes collection and dissemination of information to ensure better awareness among the local population as well as their involvement in day-to-day water management and protection.

*Recommendation 6.7:*

*Aquifers whose waters are used for human consumption should be monitored regularly and extensively.*

Probably only 40 per cent of the funding needed for the monitoring of aquifers is available; this implies that the frequency of monitoring is not satisfactory. No money is available for the modernization of laboratories, and only microbiological pollution is analysed.

The current network operated by the State Agency of 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. On points where pollution has been earlier detected (“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 including nitrates, PH and heavy metals. In samples taken from ‘specific network’ points, three to four additional parameters are analysed.

## **Chapter 7 Air management**

### Recommendation 7.1:

*Strengthening the legal foundations of air quality management is of prime importance. Special attention should be paid to all matters of enforcement, including managerial and organizational aspects. In particular, communication and coordination between the key partners in air management should be clarified in the interest of an efficient application of the legal instruments. See also Recommendation 1.1.*

On 27 March 2000, the Ministry of Environmental Protection adopted the *Rules of Ambient Air Protection*, which were considered to be a key legal instrument for the implementation of the *Law on Air Protection*. The Rules define the legal, administrative and organizational measures to prevent and control emissions of pollutants from point sources as well as from diffuse sources, namely from transport. Among others, these rules provide guidance for enterprises on how to organize their activities to comply with certain provisions of legislation on protection of ambient air, e.g. the Rules require that enterprises have a specialized division or personnel responsible for planning and conducting measures on ambient air protection.

Nevertheless, the statistical data on enforcement of the legislation on ambient air protection and on air emissions per capita for the period 2000–2006<sup>2</sup> does not show any significant progress made vis-à-vis air quality management in Kyrgyzstan. While the average annual emissions per capita from point sources remained at the same level (e.g. 7.0 kg per capita in 2000 and 2006), during the reviewed period emissions from motor vehicles have been increasing and the prescribed requirements to prevent and control emissions from transport have proved inefficient.

Recent institutional changes in Kyrgyzstan have affected the communication and coordination between institutions involved in air quality management. Kyrgyzhydromet is the key State institution for air-quality monitoring, but it has been a part of the Ministry of Emergencies since 2005, when the latter was split from the national environmental authority (now SAEPF).

Consequently, Recommendation 7.1 of the first EPR has been only partially implemented by the Kyrgyz Government. Certain measures have been taken to implement and enforce the provisions of the *Law on Air Protection*; however, some of them, especially with respect to emissions from motor vehicles, have to be qualified as inefficient.

### Recommendation 7.2:

*The National Environmental Action Plan should concentrate on the implementation of low-cost management measures in the short term, and the development of new routines for air management in the medium term, when the economy will have recovered.*

This recommendation has lost its initial context since the *National Environmental Action Plan*, developed by international organizations, is no longer one of the governmental working documents on environmental protection. Despite the fact that it was adopted in 1996, it is not referenced in the main environmental policy documents (currently the *Country Development Strategy* and the *Ecological Security Concept*).

### Recommendation 7.3:

*Ambient air quality monitoring needs to be reinforced and upgraded in particular with respect to the representativeness of stations, the coverage of the network, data accuracy and reliability. Alternate methods of air pollution monitoring should be assessed and their use envisaged. See also Recommendation 1.5.*

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<sup>2</sup> See tables 3.3 and 3.13 of the statistical report, “Environmental Protection in the Kyrgyz Republic, 2000–2006”.

Kyrgyzhydromet monitors air quality at 14 fixed monitoring stations/posts in four cities located in the north of the country: Bishkek (7 stations/posts), Kara-Balta (2), Tokmok (2) and Cholpon-Ata (2) and in one city in the south: Osh (1).

Recommendation 7.4:

*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. Fuel quality control should also be covered in this audit.*

The functions of environmental control authorities are defined by Government Resolution No. 139/2008, as well as by the management structure of SAEPP, including the interregional environmental protection administrations. According to this document, no organizational structure to promote internal audit of the services involved in inspection and control has been established. There is also no practical experience in implementing such an audit in the period before the approval of this Decree.

Recommendation 7.5:

*Traffic reduction should be sought through a better integration of transport policy and traffic management with territorial planning. Economic instruments such as differentiated taxes and duties should be developed.*

Territorial or spatial planning is largely disconnected from transport policy and traffic management. Pollution from traffic remains a major urban problem. Tax differentiation, when it exists, is generally not consistent with the target of reducing air emissions from the transport sector. More favourable fiscal conditions apply to diesel as compared to gasoline, the less polluting alternative. There is no discrimination against older cars in the Customs tariffs, although there are plans to tackle this issue. In the absence of reliable Customs values, duties are calculated on the basis of engine power and the age of the vehicle, with higher charges for new vehicles. Annual vehicle taxes also penalize newer cars. In large cities such as Bishkek, the breakdown of the public transport system and its de facto replacement by mini-buses running on diesel has contributed to increased air emissions.

Recommendation 7.6:

*The scope of State assistance for the introduction of cleaner technologies should be extended to ambient air quality and air emissions monitoring. Special attention should be given to thermal power units firing coal in the introduction of cleaner technologies. See also Recommendation 2.4.*

No information is available on activities in this area.

Recommendation 7.7:

*The present hydropower policy should be continued. Power generation alternatives such as wind, solar and geothermal energy should be investigated and their viability assessed on both local and larger scales. Population exposure to air emissions from stationary sources – like power stations – should be reduced in particular in Bishkek and other large human settlements.*

The *Law on Renewable Energy Sources* was adopted in 2008. Prospects for the use of renewable energy were assessed in the *2008 National Energy Programme for 2008–2010*. The *Programme of Development of Small and Medium Energy Industry until 2012* has been drafted and awaits approval by the President.

## **Chapter 8 Biodiversity and forest management**

Recommendation 8.1:

*The existing individual objectives and strategies for biodiversity protection together with protection measures for endangered species should be based on an ecosystem approach and integrated into sectoral policies and plans. The adoption of the existing draft “Strategy and Action Plan on Biodiversity Conservation” should be accelerated.*

The country adopted an ecosystem approach as a priority in biodiversity conservation (the 2006 *Third National Report on Biodiversity*). Additionally, biodiversity protection is incorporated into sectoral policies and plans, e.g. chapter 5.4 of the *Country Development Strategy for 2007–2010*. This document outlines 11 measures

promoting environmental sustainability, including protected areas, biodiversity conservation, restoration of ecosystems and sustainable management of natural resources. The estimated cost of these measures is \$60 million. At the same time, only about \$10 million is envisaged from the State budget and there is a \$50 million financial gap, which is expected to be covered by private investments, donors and additional budget funding. Biodiversity issues are also incorporated into the *National Action Plan for Development of Forestry for 2006–2010*.

The *National Strategy for Biodiversity Conservation* and the related *Action Plan* were adopted by the Government only in 2002.

*Recommendation 8.2:*

*The loss of habitats and endangered species in all main vegetation zones of Kyrgyzstan should be halted through the establishment of a long-term master plan for the development of protected territories. The protected areas would need to be enlarged and integrated as core zones in sustainably managed regions. They should also be connected through corridors. Provision should be envisaged for successful protection in connection with land privatization.*

No long-term master plan has been adopted by the Government for the development of protected territories. At the same time, the GEF-UNEP-WWF project, “Development of the Econet for long-term conservation of biodiversity in the Central Asia Ecoregion”, in consultation with Governments and using GIS technologies, has outlined an ecological network plan for the Central Asian countries. Taking this plan into account, Kyrgyzstan has established five protected areas since 2000 – three State reserves and two national parks – and has enlarged several other protected areas. As a result, the total size of protected areas has increased by about 400,000 ha. Establishment and operation of the Issyk-Kul Biosphere Reserve can be considered a pilot project in terms of integration of protected areas into sustainably managed regions. In addition, a new Law on protected areas is currently being drafted that specifies needs and functions of different categories of protected areas.

There are no clear provisions envisaged by Kyrgyzstan for successful biodiversity protection in relation to land privatization. This is particularly vital for pastures, forests and so-called hunting reserves (State-managed hunting areas). There are national policies to privatize these areas, but biodiversity conservation needs are not clearly considered in this process.

*Recommendation 8.3:*

*The Ministry of Environmental Protection should actively coordinate its work with the State Agency for Forestry as well as with the Ministry of Agriculture and Water Resources to draw up regulations for effective use of pasture land. Despite the heavy pressure from grazing animals, more efforts should be made to afforest sensitive areas outside leskhozoes. To reduce pressure on Kyrgyz forests and wood stands in general, favourable conditions for the introduction of alternative energy resources should be created.*

In 2005, SAEPF was established and since then has coordinated activities of these two sectors. The 2008 *Law on Pastures* and the 2002 *Law on Mountainous Areas* were adopted to draw up regulations for the effective use of pasture land.

Afforestation of sensitive areas has become one of the country’s priorities, receiving State funding as well as foreign donor investment. There are numerous ongoing site-based afforestation projects in the country. Few donor-funded projects are trying to introduce alternative energy resources.

*Recommendation 8.4:*

*The Ministry of Environmental Protection should actively support the development of applied research in the field of biodiversity and forest protection and the sustainable use and management of nature. The participation of the local population and non-governmental organizations in planning and implementing protection measures ought to be improved. The Red Data Books should be updated according to internationally accepted criteria. Funds for a biodiversity inventory and biodiversity monitoring could perhaps be obtained from the income from trophy licences, hunting licences and poaching fines.*

Due to the lack of funds, applied research is inadequately supported by the Government. Academic institutions have very small budgets and almost no funds to carry out field studies.

Participation of NGOs in planning and implementing protection measures has improved since the first EPR, positioning Kyrgyzstan ahead of other Central Asian countries.

In 2005, a governmental resolution was adopted regarding the Red List of threatened animal and plant species. A new *Red Book* was then published in 2007. Although it could be considered as an improvement, because of the following reasons it is still far from international standards: (a) formally, international criteria and categories are used for listing, but not followed strictly for all species; (b) the regulation does not outline de-listing and down-listing criteria; and (c) there is no obligation of the Government to fund conservation actions for listed species (action planning and its implementation).

There is no national scheme for a biodiversity inventory and monitoring, and consequently no funds are allocated to these activities. There are only fragmented inventory and monitoring projects on biodiversity, e.g. a national forest inventory was initiated in 2008 and a few game species are being monitored.

***Recommendation 8.5:***

*Kyrgyzstan should sign and ratify the Convention on International Trade in Endangered Species (CITES). Experience gained with the special protection unit for the control of poaching of the snow leopard should be evaluated with a view to its extension.*

Kyrgyzstan joined the Ramsar Convention in 2002 and ratified CITES in 2007. The unit financed by the Nature and Biodiversity Conservation Union to combat poaching of the endangered snow leopard continues to function, but this example has not been extended for other endangered species.

**PART III:      SECTORAL INTEGRATION**

**Chapter 9      Soil conservation and environmental concerns in agriculture**

***Recommendation 9.1:***

*The Ministry of Agriculture and Water Resources should take urgent measures for the creation of advisory services for farmers, including for training with regard to the reduction of undesirable environmental consequences of farming.*

Within the framework of a joint project of the Kyrgyz Government, the Swiss Agency for Development and Cooperation and the World Bank, supervised by the Ministry of Agriculture, Water Management and Processing Industry, rural advisory services (RAS) have been set up in all regions and districts. RAS provide farmers with training in the key areas of land and animal husbandry, economy and marketing, profit-generating activities and development, taking into account environmental and legal considerations. RAS trainers are trained at the Advisory Training Centre of the Ministry of Agriculture, Water Management and Processing Industry with the help of leading researchers and practitioners. Regional RAS issue monthly newspapers and work closely with media to inform the public about their activity results and advanced farming practices.

***Recommendation 9.2:***

*The Ministry of Environmental Protection should be given more competences in the national soil protection. The necessary cooperation with the Ministry of Agriculture and Water Resources might require the creation of a special administrative unit in the Ministry of Environmental Protection.*

This recommendation has not been implemented. Cooperation between the Ministry of Agriculture, Water Management and Processing Industry, Gosregister and the Ministry of Health is limited. Information exchange on soil monitoring is poor, and coordination of inspection activities requires further improvement. The issue of soil protection is not given proper focus by SAEPP. No special administrative unit has been created. Supervisory functions rest with the Department of State Environmental Control, which finds it difficult to exercise these competencies due to its limited staff and the heavy workload engendered by the variety of other functions it performs.

Recommendation 9.3:

*The approval of all by-laws and regulations necessary for the full enforcement of the Land Code should be seen as a priority. Equally urgent for the reform of agricultural policies and management is the completion of the relevant land and other privatization processes, including the required registrations. See also Recommendation 1.1.*

Over 10 legal acts regulating various aspects of land use and management have been developed and adopted to enforce the *Land Code* (e.g. the 2001 *Law on Administration of Agricultural Land*, the 2001 *Law on Tailing Sites and Slag Heaps*, the 2002 *Law on Mountainous Areas*, the *Regulations on Providing Pastures for Rent and Use* approved by the Government in 2002 and the *Regulations on the Procedure for Selling Agricultural Land Plots* approved by the Government in 2001). However, the task of consolidating legislation regarding land management and protection remains highly relevant.

According to Gosregister data, cropland privatization is complete. Seventy-five per cent of cropland is in private ownership. The Land Cadastre, including the system of registration of rights to real estate, was established and carried out by Gosregister within the framework of the World Bank project, "Restructuring the Land and Real Estate Management System in the Kyrgyz Republic". Registration of real estate property is almost finalized, except for land parcels in rural areas.

Recommendation 9.4:

*The further development of the successful foundations of agricultural policies in Kyrgyzstan should be sought through (a) the implementation of the "State Land Programme", (b) the translation of the "Integrated principles of development of Kyrgyzstan's agriculture in the period 2000–2010" into fully costed projects and programmes, (c) the introduction of sustainability principles into the next updating process of the two programmes, and (d) the full reflection of cleaner agricultural production techniques and schemes for the development of agro-tourism. See also Recommendation 2.4.*

This recommendation was partly implemented. Until 2005, the *State Land Programme* had sought to make best use of and conserve land resources. Financial constraints and poor coordination resulted in the main goals of the programme not being achieved.

Two key documents have been adopted to develop sectoral agrarian policy, the 2004 *Law on New Foundations and Measures of Land and Agrarian Reform* and the *Agrarian Policy Concept until 2010*, define the tasks and solutions for agricultural sustainable development and land conservation. There is very limited evidence of their successful implementation.

Cleaner agricultural production techniques and agro-tourism development are not receiving any attention.

Of great importance is the Government's 2006 adoption of the *National Framework Programme on Land Management for 2006–2016* within the framework of the *Central Asian Countries Initiative for Land Management*. The former is a comprehensive programme containing specific projects that address the serious challenge of rural development and the needs of sustainable management of land, water and natural resources and of combating land degradation in the country. The programme combines, on an integrative basis, economic and environmental development objectives and poverty reduction tasks, and relies on the broad cooperation of national institutions and donor community.

Recommendation 9.5:

*Special measures should be taken to strengthen Kyrgyzstan's capacity to produce bio-organisms for the control of agricultural crop pests and diseases.*

In 2003, the National Centre for the Production of Plant Protection Bio-organisms was created on the premises of the Chu Laboratory. Additionally, the Issyk-Kul, Osh and Jalal-Abad Laboratories produce conventional biological substances for agricultural applications in order to control crop pests and diseases.



**Recommendation 9.6:**

*A programme for the rational use of pastures should be developed, including pasture rotation schemes and the introduction of measures supporting livestock breeding in remote areas.*

There are a number of ongoing pilot projects setting up pasture sustainable development systems (e.g. Community-based Rangeland Management in Temir Village (UNDP/CIDA/GM) and Demonstrating Sustainable Mountain Pasture Management in the Susamyr Valley, Kyrgyzstan (UNDP/GEF)). Their results would be used to develop and finalize the State programme of rational pasture use. The programme will then be submitted to the Parliament for adoption. The main approaches to achieving sustainable pasture management are linked to pasture management decentralization on the one hand, and development of cooperation and community-based pasture management on the other.

**Chapter 10 Human health and the environment****Recommendation 10.1:**

*Programmes to improve hygiene and sanitary conditions in villages should be developed and/or implemented, especially in those villages where there is no piped water supply and that use surface water as a source of drinking water. The contamination of surface water by sewage aggravates the problems and should be addressed in special water protection programmes.*

Since 2000, the World Bank and the United Kingdom Department for International Development have supported the Rural Water Supply and Sanitation project. The project's main goal is to improve hygiene, sanitation and water supply facilities at the village and family levels in three oblasts in the north of Kyrgyzstan. In the remaining four oblasts, ADB is assisting the Government with similar tasks.

**Recommendation 10.2:**

*National water quality standards should be revised according to WHO Guidelines. The modernization of water treatment and distribution systems with the help of adequate investments into both should be governed by the principle of maximum reduction of health risks from microbiological contamination of drinking water.*

National water-quality standards have not been revised according to World Health Organization (WHO) Guidelines. Kyrgyzstan still uses 1,243 quality standards in line with the Russian standards of 1998.

The principle of maximum reduction of health risks from microbiological contamination of drinking water is hardly met with regard to investments in the modernization of water treatment and distribution systems. In addition, the lack of a national water management strategy, fragmented responsibilities in the water sector and insufficient cooperation between different authorities at all levels further affect full application of this principle.

**Recommendation 10.3:**

*A comprehensive programme for the sanitary disposal of sewage, preventing human exposure to pathogens and protecting drinking water sources should be established. It should include the sanitary education of the public and should propose simple, cost-effective measures that can easily be implemented by local communities as they help to mitigate social consequences of rising water prices. Public buildings should be considered as a priority for action and be designated as pilot projects for demonstration. See also Recommendation 6.3.*

This recommendation was not implemented.

**Recommendation 10.4:**

*The effective reduction of population exposure to respirable particulate matter must be a leading criterion in actions to reduce air pollution in the cities. The reduction of emissions from large point sources located in urban areas should be considered as the most feasible way first to improve air quality and subsequently to decrease health impacts. National air quality standards should be reviewed according to the revised WHO guidelines. The monitoring of the respirable fraction of particulate matter (PM<sub>10</sub>) should be introduced.*

Measures to solve air pollution-related problems to have been included in environmental plans and programmes. Transport, rather than large-point sources such as thermal power plants, is the major source of air pollution in

urban areas. However, pollution from the thermal power plant in Bishkek is worsening, as the plant uses a combination of heavy oil, coal and natural gas rather than natural gas only. There were plans to begin social-hygienic monitoring, with the pilot phase in Bishkek. The responsible institution for this monitoring programme is the Research and Production Institution on Preventive Medicine. However, due to budget constraints the programme has been postponed. Kyrgyzstan considers it difficult to introduce national quality standards according to the reviewed WHO Guidelines and to comply with them. The Ministry of Health adopted revised MACs in 2003 and 2007 using Russian MACs as reference. Monitoring of PM<sub>10</sub> has not been introduced; only total PM is monitored.

Recommendation 10.5:

*The health impacts of traffic-related air pollution, and the economic benefits related to the reduction of population exposure to this pollution, ought to be included in the transport development strategies. Technical improvements in the vehicle fleet, the use of cleaner fuels, and alternatives to predominant transport by cars must be looked for as the future sustainable solution for transport problems.*

There is no information on a transport strategy in Kyrgyzstan. The current structure of road and vehicle taxes is not conducive to improvement of the vehicle fleet and the use of cleaner fuels. The problems with the health impacts of traffic-related air pollution were reflected in the 2007 *National Profile on the State of Children Health and Environment*.

Recommendation 10.6:

*The implementation of the national and local action plans should start urgently, aiming at the most cost-effective way of achieving health benefits. General action plans should be supplemented with detailed technical project proposals. Investments in the technical infrastructure by national and local authorities, as well as by energy production, transport and other industries, should be combined with public education and health promotion campaigns.*

The *National Environmental Health Action Plan* was developed as an integral part of the *National Environmental Action Plan*. Neither the *Country Development Strategy* nor the *Ecological Security Concept* consider any specific measures on human health in connection with the state of the environment,

Normally, development of the technical infrastructure by national and local authorities – as well as by energy production, transport and other industries – is not combined with public education and health promotion campaigns. Public education is promoted in this aspect through the processes of environmental impact assessment and strategic environmental assessment, and is an integral part of the developers' obligation to provide public access to information so the public can participate effectively in relevant decision-making processes.

Assessing whether this recommendation was really implemented is complicated. First, the *National Environmental Health Action Plan* was implemented only partially and is not currently considered to be a working governmental document. It should also be mentioned that human health issues had lower priority in the agenda of the environmental protection authority while it was a part of the Ministry of Ecology and Emergencies in the period 2001–2005.

Recommendation 10.7:

*The assessment of health risks and benefits should be an integral part of all development projects. This will require substantial strengthening of the technical and scientific basis for risk assessment, including exposure and health assessment. Quality assurance systems should be implemented to ensure the validity of the information. International collaboration and the exchange of information should be facilitated.*

Exchange of information with international counterparts is taking place. There are regular visits by WHO staff, and the country fills out WHO questionnaires. Research is conducted on health risks related to water quality. Health risks related to persistent organic pollutants have been studied and assessed. However, development projects do not necessarily contain assessment of health risks and benefits as integral parts.

Recommendation 10.8:

*The validity and specificity of health data (e.g. the cause of death diagnosis and registration, infant mortality reporting) should be improved, and laboratory capacities should be reviewed to increase the reliability of health status analysis and the assessment of environmental impacts on health.*

The Medical Information Centre of the Ministry of Health collects such data. Several specific projects have been implemented, e.g. on the impact of radon in residential buildings in Mayлуу-Suu and on the correlation between infectious diseases and water quality.

The Ministry of Health operates about 50 laboratories located in every rayon and oblast. Oblast laboratories serve as coordinating centres. Capacity of laboratories has much potential for improvement. Under the *National Programme of Health Reform for 2006–2010*, laboratory modernization and accreditation are under way.



*Annex II***SELECTED REGIONAL AND GLOBAL ENVIRONMENTAL AGREEMENTS**

Year	Worldwide agreements	Kyrgyzstan	
		Date	Status
1958	(GENEVA) Convention on the Continental Shelf		
1958	(GENEVA) Convention on the Territorial Sea and the Contiguous Zone		
1958	(GENEVA) Convention on the High Seas		
1961	(PARIS) International Convention for the Protection of New Varieties of Plants		
1963	(VIENNA) Convention on Civil Liability for Nuclear Damage 1997 (VIENNA) Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage		
1971	(RAMSAR) Convention on Wetlands of International Importance especially as Waterfowl Habitat 1982 (PARIS) Amendment 1987 (REGINA) Amendments	10.04.2002	Ra
1971	(GENEVA) Convention on Protection against Hazards from Benzene (ILO 136)		
1971	(BRUSSELS) Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage		
1971	(LONDON, MOSCOW, WASHINGTON) Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-bed and the Ocean Floor and in the Subsoil thereof		
1972	(PARIS) Convention Concerning the Protection of the World Cultural and Natural Heritage		
1972	(LONDON) Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1978 (TORREMOLINOS) Amendments (incineration) 1980 Amendments (list of substances)		
1972	(LONDON, MOSCOW, WASHINGTON) Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons, and their Destruction		
1972	(LONDON) International Convention on the International Regulations for Preventing Collision at Sea		
1972	(GENEVA) International Convention for Safe Containers		
1973	(WASHINGTON) Convention on International Trade in Endangered Species of Wild Fauna and Flora 1983 (GABORONE) Amendment 1987 (BONN) Amendment	30.11.2006	At
1973	(LONDON) Convention for the Prevention of Pollution from Ships (MARPOL) 1978 (LONDON) Protocol (segregated ballast) 1978 (LONDON) Annex III on Hazardous Substances carried in packaged form 1978 (LONDON) Annex IV on Sewage 1978 (LONDON) Annex V on Garbage		
1977	(GENEVA) Convention on Protection of Workers against Occupational Hazards from Air Pollution, Noise and Vibration (ILO 148)		
1979	(BONN) Convention on the Conservation of Migratory Species of Wild Animals 1991 (LONDON) Agreement Conservation of Bats in Europe 1992 (NEW YORK) Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS) 1995 (THE HAGUE) African/Eurasian Migratory Waterbird Agreement (AEWA) 1996 (MONACO) Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS)		
1980	(NEW YORK, VIENNA) Convention on the Physical Protection of Nuclear Material		
1981	(GENEVA) Convention Concerning Occupational Safety and Health and the Working Environment		

Ac = Accession; At = Acceptance; Ad = Adherence; De = denounced; Si = Signed; Su = Succession; Ra = Ratified.

Worldwide agreements		Kyrgyzstan	
Year		Date	Status
1982	(MONTEGO BAY) Convention on the Law of the Sea 1994 (NEW YORK) Agreement Related to the Implementation of Part XI of the Convention  1994 (NEW YORK) Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks		
1985	(GENEVA) Convention Concerning Occupational Health Services		
1985	(VIENNA) Convention for the Protection of the Ozone Layer 1987 (MONTREAL) Protocol on Substances that Deplete the Ozone Layer 1990 (LONDON) Amendment to Protocol 1992 (COPENHAGEN) Amendment to Protocol 1997 (MONTREAL) Amendment to Protocol 1999 (BEIJING) Amendment to Protocol	15.01.2000 15.01.2001	Ra Ra
1986	(GENEVA) Convention Concerning Safety in the Use of Asbestos		
1986	(VIENNA) Convention on Early Notification of a Nuclear Accident		
1986	(VIENNA) Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency		
1989	(BASEL) Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal 1995 Ban Amendment 1999 (BASEL) Protocol on Liability and Compensation	18.01.1996	At
1990	(LONDON) Convention on Oil Pollution Preparedness, Response and Cooperation		
1992	(RIO) Convention on Biological Diversity 2000 (CARTAGENA) Protocol on Biosafety	26.07.1996 06.08.2005	At At
1992	(NEW YORK) Framework Convention on Climate Change 1997 (KYOTO) Protocol	14.01.2000 15.01.2003	At Ra
1993	(PARIS) Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction		
1994	(VIENNA) Convention on Nuclear Safety		
1994	(PARIS) Convention to Combat Desertification	21.07.1999	At
1997	(VIENNA) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management		
1997	(VIENNA) Convention on Supplementary Compensation for Nuclear Damage		
1998	(ROTTERDAM) Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	15.01.2000	Ra
2001	(STOCKHOLM) Convention on Persistent Organic Pollutants	19.07.2006	Ra

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Regional and subregional agreements		Kyrgyzstan	
Year		Date	Status
1950	(PARIS) International Convention for the Protection of Birds		
1957	(GENEVA) European Agreement - International Carriage of Dangerous Goods by Road (ADR) European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) Annex A Provisions Concerning Dangerous Substances and Articles Annex B Provisions Concerning Transport Equipment and Transport Operations		
1958	(GENEVA) Agreement - Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts.		
1968	(PARIS) European Convention - Protection of Animals during International Transport		
	1979 (STRASBOURG) Additional Protocol		
(1969) 1992	(LONDON) European Convention - Protection of the Archeological Heritage (revised)		
1976	(STRASBOURG) European Convention for the Protection of Animals Kept for Farming Purposes		
1979	(GENEVA) Convention on Long-range Transboundary Air Pollution	14.01.2000	At
	1984 (GENEVA) Protocol - Financing of Co-operative Programme (EMEP)		
	1985 (HELSINKI) Protocol - Reduction of Sulphur Emissions by 30%		
	1988 (SOFIA) Protocol - Control of Emissions of Nitrogen Oxides		
	1991 (GENEVA) Protocol - Volatile Organic Compounds		
	1994 (OSLO) Protocol - Further Reduction of Sulphur Emissions		
	1998 (AARHUS) Protocol on Heavy Metals		
	1998 (AARHUS) Protocol on Persistent Organic Pollutants		
	1999 (GOTHENBURG) Protocol to Abate Acidification, Eutrophication and Ground-level Ozone		
1991	(ESPOO) Convention on Environmental Impact Assessment in a Transboundary Context	12.01.2001	At
	2003 (KIEV) Protocol on Strategic Environmental Assessment		
1992	(HELSINKI) Convention on the Protection and Use of Transboundary Waters and International Lakes		
	1999 (LONDON) Protocol on Water and Health		
	2003 (KIEV) Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters		
1992	(HELSINKI) Convention on the Transboundary Effects of Industrial Accidents		
1993	(OSLO and LUGANO) Convention - Civil Liability for Damage from Activities Dangerous for the Environment		
1994	(LISBON) Energy Charter Treaty		
	1994 (LISBON) Protocol on Energy Efficiency and Related Aspects		
	2005 Amendment to the Trade-Related Provisions of the Energy Charter Treaty		
1998	(AARHUS) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	12.01.2000	At
	2003 (KIEV) Protocol on Pollutant Release and Transfer Register		

Ac = Accession; At = Acceptance; Ad = Adherence; De = denounced; Si = Signed; Su = Succession; Ra = Ratified





**SELECTED ECONOMIC AND ENVIRONMENTAL INDICATORS**

<b>Air pollution</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Emissions of SO <sub>2</sub>									
- Total (thousand tons)	10.90	8.70	10.70	10.10	8.10	8.20	6.50	7.60	7.90
- by sector (thousand tons)									
Mining industry	..	..	..	..	..	..	0.04	0.05	0.05
Processing industry	..	..	..	..	..	..	0.80	0.90	0.90
Production and distribution of electricity, gas and water	..	..	..	..	..	..	5.60	6.60	6.90
Other	..	..	..	..	..	..	0.06	0.05	0.02
- per capita (kg/capita)	2.30	1.80	2.00	2.00	1.60	1.60	1.00	2.00	1.50
- per unit of GDP (kg/1,000 National currency units)	0.319	0.178	0.164	0.137	0.107	0.098	0.069	0.075	0.069
Emissions of NO <sub>x</sub> (converted to NO <sub>2</sub> )									
- Total (thousand tons)	3.50	2.40	3.10	3.40	3.10	3.00	3.30	3.00	3.10
- by sector (thousand tons)									
Mining industry	..	..	..	..	..	..	0.06	0.07	0.06
Processing industry	..	..	..	..	..	..	0.70	0.70	0.70
Production and distribution of electricity, gas and water	..	..	..	..	..	..	2.50	2.20	2.30
Other	..	..	..	..	..	..	0.04	0.03	0.00
- per capita (kg/capita)	0.70	0.50	0.60	0.60	0.60	0.60	0.60	0.60	0.60
- per unit of GDP (kg/1,000 National currency units)	0.10	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.03
Emissions of ammonia NH <sub>3</sub>									
- Total (tons)	..	..	..	..	..	..	..	..	..
- by sector (tons)	..	..	..	..	..	..	..	..	..
Mining industry	..	..	..	..	..	..	..	..	..
Processing industry	..	..	..	..	..	..	..	..	..
Production and distribution of electricity, gas and water	..	..	..	..	..	..	..	..	..
Other	..	..	..	..	..	..	..	..	..

<b>Air pollution (continued)</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Emissions of total suspended particles (TSP)									
- Total (thousand tons)	18.80	13.60	15.10	15.30	14.50	18.50	20.70	17.50	18.10
- by sector (thousand tons)									
Mining industry	..	..	..	..	..	..	0.70	0.70	0.70
Processing industry	..	..	..	..	..	..	4.30	4.20	4.70
Production and distribution of electricity, gas and water	..	..	..	..	..	..	15.70	12.60	12.60
Other	..	..	..	..	..	..	0.000	0.000	0.008
Emissions of non-methane volatile organic compounds (NMVOC)									
- Total (thousand tons)	..	..	..	..	..	..	..	..	..
- by sector (thousand tons)	..	..	..	..	..	..	..	..	..
Mining industry	..	..	..	..	..	..	..	..	..
Processing industry	..	..	..	..	..	..	..	..	..
Production and distribution of electricity, gas and water	..	..	..	..	..	..	..	..	..
Other	..	..	..	..	..	..	..	..	..
Emissions of persistent organic pollutants (PCBs, dioxin/furan and PAH)									
- Total (tons)	..	..	..	..	..	..	..	..	..
- by sector (tons)	..	..	..	..	..	..	..	..	..
Mining industry	..	..	..	..	..	..	..	..	..
Processing industry	..	..	..	..	..	..	..	..	..
Production and distribution of electricity, gas and water	..	..	..	..	..	..	..	..	..
Other	..	..	..	..	..	..	..	..	..
Emissions of heavy metals									
- Total cadmium (tons)	..	..	..	..	..	..	..	..	..
- Total lead (tons)	..	..	..	..	..	..	..	..	..
- Total mercury (tons)	..	..	..	..	..	..	..	..	..
Greenhouse gas emissions (total of CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, CFC, etc.) expressed in CO <sub>2</sub>									
- Total (tons)	..	..	..	..	..	..	..	..	..
- by sector (tons)	..	..	..	..	..	..	..	..	..
Mining industry	..	..	..	..	..	..	..	..	..
Processing industry	..	..	..	..	..	..	..	..	..
Production and distribution of electricity, gas and water	..	..	..	..	..	..	..	..	..
Agriculture	..	..	..	..	..	..	..	..	..
Waste	..	..	..	..	..	..	..	..	..
Other	..	..	..	..	..	..	..	..	..

<b>Air pollution (continued)</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Emissions of CO <sub>2</sub>									
- Total (tons)	..	..	..	..	..	..	..	..	..
- by sector (tons)	..	..	..	..	..	..	..	..	..
Mining industry	..	..	..	..	..	..	..	..	..
Processing industry	..	..	..	..	..	..	..	..	..
Production and distribution of electricity, gas and water	..	..	..	..	..	..	..	..	..
Agriculture	..	..	..	..	..	..	..	..	..
Waste	..	..	..	..	..	..	..	..	..
Other									
- per capita (kg/capita)	..	..	..	..	..	..	..	..	..
- per unit of GDP (kg/1,000 National currency)	..	..	..	..	..	..	..	..	..
Greenhouse gas (GHG) emissions vs. targets (if established) (% of the target)	..	..	..	..	..	..	..	..	..
Urban population exposed to air quality exceedances: e.g. number of cases of exceedances of MAC or air-pollution index (per cent of population exposed)	..	..	..	..	..	..	..	..	..
- Number of exceedances of maximum allowable concentration (MAC) (times/year) as country total	..	..	..	..	..	..	..	..	..
- Dust	1,867.0	1,186.0	..	..	..	..	..	..	..
- Carbon oxide	1,413.0	490.0	..	..	..	..	..	..	..
- Nitrogen dioxide	689.0	412.0	898.0	566.0	967.0	713.0	1,052.0	1,446.0	1,214.0
- Nitrogen oxide	35.0	63.0	34.0	3.0	17.0	51.0	49.0	31.0	35.0
- Formaldehyde	193.0	248.0	124.0	458.0	339.0	206.0	310.0	294.0	106.0
in Bishkek (Number of exceedances of MAC times/year) :									
- Dust	1,768.0	1,186.0	..	..	..	..	..	..	..
- Carbon oxide	1,413.0	490.0	..	..	..	..	..	..	..
- Nitrogen dioxide	635.0	366.0	832.0	518.0	925.0	659.0	974.0	1,244.0	1,120.0
- Nitrogen oxide	35.0	63.0	34.0	..	17.0	51.0	49.0	31.0	35.0
- Formaldehyde	193.0	248.0	124.0	458.0	339.0	206.0	310.0	294.0	106.0
- Number of exceedances of maximum allowable concentration (MAC) (times/year)	..	..	..	..	..	..	..	..	..
Country total	4,197.0	2,399.0	1,056.0	1,027.0	1,323.0	970.0	1,411.0	1,771.0	1,355.0
in Bishkek	4,044.0	2,353.0	990.0	976.0	1,281.0	916.0	1,333.0	1,569.0	1,261.0
- Air pollution index (% of population affected)	..	..	..	..	..	..	..	..	..



<b>Water (continued)</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Wastewater discharges, mln m <sup>3</sup>	..	..	..	..	2,270.4	1,491.3	1,512.5	775.0	700.8
Normative clean, mln m <sup>3</sup>	..	..	..	..	2,148.6	1,389.3	1,342.4	625.0	540.1
Normative treated, mln m <sup>3</sup>	..	..	..	..	108.0	86.0	157.9	138.0	148.1
Polluted (untreated and insufficiently treated), mln m <sup>3</sup>	..	..	..	..	13.8	16.0	12.2	12.2	12.6
Accidental and illegal discharges of oil at sea (tons)	..	..	..	..	..	..	..	..	..
<b>Biodiversity and living resources</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
- Total area (hectares)	777,867.0	777,867.0	777,867.0	820,315.0	838,715.0	854,561.0	889,663.0	968,561.0	937,651.0
- Total area (% of national territory)	3.9	3.9	3.9	4.1	4.2	4.3	4.5	4.5	4.7
- Protected area IUCN categories (% of national territory)	..	..	..	..	..	..	..	..	..
Ia Strict Nature Reserve	1.2	1.2	1.2	1.2	1.3	1.3	1.5	1.9	1.9
Ib Wilderness Area	..	..	..	..	..	..	..	..	..
II National Park	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3
III Natural Monuments (hectares)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
IV Habitat / Species Management Area	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
V Protected Landscape / Seascape	..	..	..	..	..	..	..	..	..
VI Managed Resource Protected Area	..	..	..	..	..	..	..	..	..
Forests <sup>1)</sup>									
- Total area (km <sup>2</sup> )	10,631.0	10,570.0	10,568.0	10,570.0	10,568.0	10,571.0	10,592.0	10,590.0	10,559.0
- Naturalness	..	..	..	..	..	..	..	..	..
Undisturbed by man (1,000 ha)	..	..	..	..	..	..	..	..	..
Semi-natural (1,000 ha)	..	..	..	..	..	..	..	..	..
Plantation (1,000 ha)	..	..	..	..	..	..	..	..	..
- volume of the wood (thousand m <sup>3</sup> )	..	..	..	..	..	..	..	..	..
- harvesting intensity (harvest/growth)	..	..	..	..	..	..	..	..	..
Number of endangered species (IUCN categories) <sup>2)</sup>									
- Critically endangered	..	..	..	..	..	..	..	27	27
- Endangered	139	139	139	139	139	139	139	26	26
- Vulnerable	..	..	..	..	..	..	..	88	88
Industrial fish catch (tons)									
- From fish farming (tons)	..	..	..	..	..	..	..	..	..
- From natural water bodies (tons)	..	..	..	..	..	..	..	..	..

<b>Land resources and soil</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Arable land (thousand ha)	1,366.8	1,367.5	1,367.5	1,344.5	1,344.9	1,343.8	1,334.0	1,284.4	1,283.8
Cultivated land (thousand ha)	1,175.6	1,208.8	1,212.2	1,207.2	1,100.4	1,093.9	1,125.4	1,118.2	1,133.6
Soil erosion									
- % of total land	..	..	..	..	..	..	..	..	..
- % of agricultural land	..	..	..	..	..	..	..	..	..
Fertiliser use per ha of cultivated land <sup>3)</sup>									
- Mineral fertilizers (kg/ha)	27.5	26.7	28.6	28.3	27.6	30.2	25.5	28.2	25.1
- Organic fertilizers (t/ha)	0.2	0.2	0.3	0.3	0.3	1.2	0.9	0.6	0.6
Pesticide use (kg/ha)	..	0.6	0.6	0.5	0.7	1.2	1.2	1.0	0.7
<b>Energy</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Total primary energy supply (TPES) (Mtofe <sup>4)</sup> )	..	..	..	..	..	..	..	..	..
Energy production (Mtofe)	..	9.4	..	9.7	..	..	..	10.4	1.1
Total final energy consumption (TFC) (Mtofe)	..	..	..	..	..	..	..	..	..
Energy consumption (Mtofe)	..	9.4	..	9.2	..	..	..	9.9	8.1
- by fuel	..	..	..	..	..	..	..	..	..
Coal	..	0.7	..	0.7	..	..	..	0.9	0.6
Petroleum products	..	1	..	0.7	..	..	..	0.8	0.9
Natural gas	..	0.7	..	0.8	..	..	..	0.7	0.6
Electricity	..	2.4	..	2.2	..	..	..	2.3	1.2
Heat	..	0.5	..	0.6	..	..	..	0.5	1.1
Other	..	..	..	..	..	..	..	..	..
- by sector	..	..	..	..	..	..	..	..	..
Industry	..	0.6	..	0.7	..	..	..	1.0	1.0
Transport	..	0.5	..	0.4	..	..	..	0.6	0.6
Agriculture	..	0.5	..	2.3	..	..	..	0.3	0.2
Other	..	..	..	..	..	..	..	..	..
Energy intensity TPES/GDP (PPP) (tofe <sup>4)</sup> /thousand US\$ (2000) PPP)	..	..	..	..	..	..	..	..	..
Energy production (Mtofe/GDP) (mln US dollars)	..	0.8	..	0.6	..	..	..	0.4	0.04
Energy production (Mtofe/PPP) (mln US dollars)	..	0.1	..	0.1	..	..	..	0.1	0.01
Energy productivity GDP (PPP)/TPES (thousand US\$ (2000) PPP/tofe)	..	..	..	..	..	..	..	..	..
TPES/Population (tofe per capita)	..	1.9	..	1.9	..	..	..	2.0	0.2

<b>Transportation</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Number of transport accidents	2,864	2,666	2,671	3,122	2,966	3,380	3,275	3,717	3,911
In which									
- Died	585	585	611	703	725	897	892	893	1,051
- Injured	3,453	3,304	3,292	3,808	3,561	4,091	3,962	4,568	4,948
Size and composition of motor vehicle fleet	..	..	..	..	..	..	..	..	..
Freight vehicle fleet (1,000) <sup>5)</sup>									
- Trucks	..	..	..	..	..	..	..	..	..
Passenger vehicle fleet (1,000) <sup>5)</sup>									
- Buses (including passenger vans)	..	..	..	..	..	..	..	..	..
- Cars	187.7	187.3	189.8	189.8	188.7	188.9	196.3	201.4	218.7
Passenger transportation (million passenger kilometres)	4,577.1	4,675.1	5,184.3	5,464.6	5,465.8	5,734.0	6,128.1	6,341.5	6,538.5
Freight transportation (million ton kilometres)	1,573.0	1,787.6	1,891.6	1,725.5	1,656.9	1,686.5	2,067.5	1,844.7	1,825.8
<b>Waste</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Generation of waste									
Total waste generation (tons)	..	..	..	..	..	..	..	..	..
- Accumulated hazardous waste (if available, by class of hazard) (thousand tons)	41,809.9	47,879.8	50,172.5	56,402.0	62,914.8	69,330.8	75,741.4	81,946.1	87,774.4
- Industrial waste (tons)	..	..	..	..	..	..	..	..	..
- Municipal waste disposal (thousand m <sup>3</sup> )	1,194.0	1,313.0	1,302.0	1,377.0	1,272.0	1,242.0	1,602.0	1,384.0	1,545.0
- Radioactive (nuclear) waste (tons)	..	..	..	..	..	..	..	..	..
Transboundary movements of hazardous waste (tons)	..	..	..	..	..	..	..	..	..
Waste intensity (total waste generated per unit of GDP) (tons/1,000 National currency units)	..	..	..	..	..	..	..	..	..
Waste recycling and reuse (tons)	..	..	..	..	..	..	..	..	..
<b>Health and Demography</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Drinking water quality									
- Samples failing the standards on sanitary-chemical indicators (%)	3.8	4.3	2.4	3.2	2.7	2.8	2.1	1.5	1.9
- Samples failing the standards on microbiological indicators (%)	15.0	12.4	13.1	11.4	12.8	12.7	15.2	11.0	12.4
Population with access to safe drinking water (%)	81.7	85.9	86.0	84.0	84.2	78.6	81.7	84.4	89.8
Population with access to improved sanitation (%)	27.5	27.8	32.8	31.4	30.3	25.9	27.0	23.9	23.9
Incidence of typhoid, paratyphoid infections (per 100,000 population)	28.4	2.7	2.8	3.5	4.5	5.4	8.4	3.0	3.5

<b>Health and Demography (continued)</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Salmonella infections (per 100,000 population)	8.3	8.0	7.0	6.3	4.2	6.1	6.3	8.2	6.6
Active tuberculosis incidence rate (per 100,000 population)	121.0	131.8	150.9	167.8	147.7	138.2	129.2	125.7	121.9
Viral hepatitis incidence rate, including vaccination cases (per 100,000 population)	314.9	193.4	415.8	231.3	152.8	148.0	292.4	179.9	157.4
Health expenditure (% of GDP)	2.8	2.3	2.0	1.9	2.0	2.0	2.0	2.2	2.6
Birth rate (per 1000)	21.7	21.4	19.7	19.8	20.2	20.9	21.6	21.4	23.3
Total fertility rate	2.7	2.6	2.4	2.4	2.5	2.5	2.6	2.5	2.7
Mortality rate (per 1000)	7.2	6.8	6.9	6.6	7.1	7.1	6.9	7.2	7.4
Infant mortality rate (deaths/1000 live births)	26.2	22.7	22.6	21.7	21.2	20.9	25.7	29.7	29.2
Female life expectancy at birth (years)	71.2	72.6	72.4	72.6	72.1	72.2	72.2	71.9	72.1
Male life expectancy at birth (years)	63.1	64.9	64.9	65.0	64.4	64.5	64.3	64.2	63.5
Life expectancy at birth (years)	67.1	68.7	68.5	68.7	68.1	68.2	68.2	67.9	67.7
Population at age 0-14 years (end of the year, people)	1,722,115	1,711,104	1,688,333	1,661,412	1,636,069	1,618,946	1,603,441	1,588,943	1,585,569
Population aged 0-14 years (%)	35.8	35.2	34.4	33.6	32.8	32.1	31.5	30.9	30.6
Population at age 65 year and older (end of the year, people)	262,301	265,306	267,848	273,210	275,802	279,671	283,672	283,727	281,800
Population aged 65 or over (%)	5.5	5.5	5.5	5.5	5.5	5.6	5.6	5.5	5.4
Ageing index (number of persons 65 years or over per hundred persons under age of 15)	15.2	15.5	15.9	16.4	16.9	17.3	17.7	17.9	17.8
Total population (end of the year, people)	4,806,147	4,867,481	4,907,594	4,946,471	4,984,425	5,037,247	5,092,802	5,138,669	5,189,837
- percentage of change to the previous year	101.6	101.3	100.8	100.8	100.8	101.1	101.1	100.9	101.0
- Permanent population density (inhabitants/km <sup>2</sup> )	24.0	24.3	24.6	24.7	24.9	25.2	25.5	25.7	26.0
<b>Socio economic issues</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
GDP									
- change (1990=100)	60.9	63.2	66.6	70.2	70.2	75.1	80.3	80.2	82.7
- change over previous year (%)	102.1	103.7	105.4	105.3	100.0	107.0	107.0	99.8	103.1
- in current prices (million National currency)	34,181.4	48,744.0	65,357.9	73,883.3	75,366.7	83,871.6	94,350.7	100,899.2	113,800.1
- in current prices (million US\$)	1,633.8	1,225.6	1,367.2	1,530.3	1,614.8	1,933.0	2,218.5	2,460.8	2,849.6
- per capita (US\$)	340.6	251.9	278.1	308.8	323.4	383.6	435.6	478.4	548.9
- per capita (US\$ 2000 PPP per capita)	1,392.0	1,461.0	1,560.0	1,637.0	1,622.0	1,714.0	1,928.0	1,936.0	2,024.0
Industrial output (annual 1990=100)	41.1	39.3	41.7	43.9	39.2	45.8	47.9	42.1	37.8
Industrial output (% change over previous year)	105.3	95.7	106.0	105.4	89.1	117.0	104.6	87.9	89.8
Agricultural output (% change over previous year)	102.9	108.2	102.6	107.3	103.1	103.2	104.1	95.8	101.7
Share of agriculture in GDP (%)	35.9	34.8	34.2	34.5	34.4	33.6	29.9	28.5	28.7
Labour productivity in industry (% change over previous year)	117.6	98.3	81.4	107.2	89.7	102.7	46.9	104.7	66.7



<b>Socio economic issues (continued)</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Consumer price index (CPI) (% change over the preceding year, annual average)	110.5	135.9	118.7	106.9	102.0	103.1	104.1	104.3	105.6
Producer price index (PPI) (% change over the preceding year, annual average)	109.0	151.3	129.6	109.6	105.5	107.4	109.0	102.8	115.3
Registered unemployment (% of labour force, end of period)	3.3	3.0	3.2	3.3	3.0	2.8	2.8	3.1	3.3
Employment rate (% of able-bodied population (women) 16-54 (57), men 16-60 (63)) <sup>6)</sup>	67.7	66.2	64.6	63.5	62.7	64.7	65.8	66.8	67.6
Employment in agriculture (% of the total work force)	48.8	53.4	53.1	52.3	49.0	43.2	38.9	38.5	36.3
Current account balance									
- Total (million US\$)	-363.9	-184.0	-77.5	-19.0	-30.4	-42.5	28.9	-29.2	-380.0
- (as % of GDP)	-22.3	-15.0	-5.7	-1.2	-1.9	-2.2	1.3	-1.2	-13.3
Balance of trade in goods and services (million US\$)	-333.5	-178.0	-82.9	-10.9	-79.2	-134.5	-184.3	-454.4	-1,068.0
Foreign direct investment (FDI) without taking into account flight of capital (million US\$)	136.3	108.6	89.6	90.1	115.7	147.0	175.6	210.3	335.6
Foreign direct investment (FDI) without taking into account flight of capital (as % of GDP)	8.3	8.9	6.6	5.9	7.2	7.6	7.9	8.5	11.8
Cumulative FDI (million US\$)	393.4	502.8	539.8	438.4	464.0	523.4	516.1	548.4	640.9
Foreign exchange reserves									
- Total reserves (million US\$)	..	..	..	..	..	..	..	..	..
- Total reserves as months of imports	..	..	..	..	..	..	..	..	..
Exports of goods (million US\$) <sup>7)</sup>	513.6	453.8	504.5	476.2	485.5	581.7	718.8	672.0	794.1
Imports of goods (million US\$) <sup>7)</sup>	841.5	599.7	554.1	467.2	586.8	717.0	941.0	1,101.3	1,718.2
Net external debt (million US\$)	1,079.4	1,287.5	1,386.1	1,423.3	1,516.6	1,754.2	1,949.8	1,882.2	1,980.4
Ratio of net debt to exports (%)	210.2	283.7	274.7	298.9	312.4	301.6	271.3	280.1	249.4
Ratio of net debt to GDP (%)	92.8	103.1	101.2	93.3	96.7	92.4	86.0	77.0	66.3
Exchange rate, annual averages (National currency unit/US\$)	20.8	39.0	47.7	48.5	46.9	43.7	42.7	41.0	41.2

<b>Income and poverty</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
GDP per capita (1,000 US\$/capita)	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5
Poverty (%)	54.9	55.3	62.6	56.4	54.8	49.9	45.9	43.1	39.9
- Population living below 50% of median income (%)	..	..	..	..	..	..	..	..	..
Income inequality (Gini coefficient)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Minimum to median wages (minimum wage as a percentage of median wage)	11.9	9.5	8.1	6.9	5.9	5.2	4.5	3.8	3.1

<b>Communications</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Telephone lines per 100 population	8.0	7.8	7.9	7.9	8.0	8.0	8.2	8.6	8.9
Cellular subscribers per 100 population	..	..	..	0.6	1.5	2.7	5.2	10.5	23.0
Personal computer in use per 100 population	..	..	..	..	..	..	..	..	..
Internet users per 100 population	..	..	..	..	..	..	..	..	..

<b>Education</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Literacy rate (%)	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5
Education expenditure (% of the GDP)	4.9	4.1	3.5	3.9	4.4	4.5	4.4	4.7	5.2

Source: State Agency of Environmental Protection and Forestry. 2008.

Notes:

- 1) According to data from the State Agency of Registration of Immovable Property Rights under the Government of Kyrgyz Republic.
- 2) According to data from the State Agency of Environmental Protection and Forestry under the Government of Kyrgyz Republic.
- 3) According to data from the Department of Use of Chemicals to Protect Plants and Phyto-Sanitary Control of the Ministry of Agriculture, Water Management and Processing Industry.
- 4) Tofe = Ton of fuel equivalent and Mtofe = Mt of fuel equivalent. Tofe= 0.7toe and Mtofe = 0.7Mtoe.
- 5) Confidential data.
- 6) 1999-2001 calculated data of labour resources balance; 2002-2006 data from the module "Employment and unemployment" from integrated survey of households.
- 7) Individuals "chelnoki" (shuttle traders) are not taken into account.

*Annex IV*

***LIST OF MAJOR ENVIRONMENT-RELATED  
LEGISLATION IN KYRGYZSTAN***

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Constitution of the Kyrgyz Republic, 23 October 2007, No. 157

**Codes, laws, Government resolutions and ministerial orders**

**1991**

- Law on Foundations of the Town-planning Legislation of the Republic of Kyrgyzstan, No. 687-XII of 21 December 1991
- Resolution of the Cabinet of Ministers on Approval of the Regulation on Use of Agricultural Lands of the Forest Fund, No. 449 of 12 September 1991
- Resolution of the Cabinet of Ministers on Designation of Water Reservoirs to Various Categories of Water Use, No. 472 of 23 September 1991

**1992**

- Decree of the President on Local and National Funds of Environmental Protection and Development of the Forestry in the Kyrgyz Republic, No. 239 of 21 July 1992
- Resolution of the Government on Approval of the Regulation on the Procedure of Use of Lands of the Water Fund, No. 252 of 26 May 1992
- Resolution of the Government on Approval of the Regulation on Procedure of Use of Lands for Environmental, Recreational and Historical and Cultural Goals in the Republic of Kyrgyzstan, No. 502 of 12 October 1992

**1993**

- Resolution of the Government on Approval of the Regulation on Land Reclamation and Subsequent Procedure of Approval of their Use, No. 304 of 12 July 1993
- Order of Chair of the State Committee of Nature Protection Rules of Protection of Surface Waters of the Kyrgyz Republic (model provisions) (approved by the Kyrgyz Republic on 9 August 1993)

**1994**

- Law on Water, No. 1422-XII of 14 January 1994
- Law on Specially Protected Natural Areas, No. 1561-XII of 28 May 1994
- Resolution of the Government on Approval of the Regulation on Procedure of Water Allocation and Exploitation of the Water-Distributing System by Water Users, No. 284 of 4 May 1994
- Order of the State Committee of Nature Protection on Approval of the Instruction on State Control of Biological Pollution of Soil, 31 May 1994
- Order of the State Committee of Nature Protection on Approval of the Regulation on Protection and Use of Fish Resources and Water Organisms in the Kyrgyz Republic, 4 August 1994
- Order of the State Committee of Nature Protection on Approval of the Rules on Wastewater, 5 September 1994
- Order of the State Committee of Nature Protection on Approval of the Regulation of Groundwaters, 4 November 1994

**1995**

- Resolution of the Government on Approval of the Regulation on the Procedure and Amounts of Compensation for Losses Inflicted by Violations of the Water Legislation, No. 18 of 20 January 1995
- Resolution of the Government on Approval of Legislative Acts, developed according to the Resolution of the Jogorku Kenesh of the Kyrgyz Republic from 14 January, No. 1423-XII “On Procedure of Enacting the Law on Water”, No. 19 of 25 January 1995
- Resolution of the Government on Approval of the Regulation on Water Protection Zones and Belts of Water Bodies in the Kyrgyz Republic, No. 271 of 7 July 1995

**1996**

- Tax Code, No. 25 of 26 June 1996
- Law on Energy, No. 56 of 30 October 1996
- Resolution of the Government on Approval of the Regulation on the State Registry of Potentially Toxic Chemicals, No. 225 of 16 May 1996
- Resolution of the Government on Approval of the Regulation on State Control of Use and Protection of Lands in the Kyrgyz Republic, No. 612 of 20 December 1996
- Order of the State Committee of Nature Protection on Approval of the Instruction on the Procedure of Enforcement of the Rules on Use and Protection of Fauna and Flora, No. 76 of 6 November 1996
- Order of the State Agency of Forestry on Approval of the Basic Provisions on Cutting Trees in Forests of the Kyrgyz Republic, 26 July 1996

**1997**

- Criminal Code, No. 68 of 1 October 1997
- Law on Fishery, No. 39 of 25 June 1997
- Law on Subsoil, No. 42 of 2 July 1997, last amended 29 December 2006
- Law on Licensing No. 12 of 3 March 1997
- Law on Electricity, No. 8 of 28 January 1997
- Decree of the President on the Framework Foreign Water Policy of Kyrgyzstan, No. 279 of 6 October 1997
- Resolution of the Government on Implementation of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes, No. 276 of 14 May 1997
- Resolution of the Government on Approval of the Regulation on the State Forest Protection Service of the Kyrgyz Republic, No. 371 of 24 June 1997
- Resolution of the Government on Progress with the Land and Agricultural Reform, No. 475 of 14 August 1997
- Order of the Ministry of Environmental Protection on Approval of the Methodical Guidelines on Environmental Protection for Transportation, Storage and Use of Pesticides and Fertilizers, 1 March 1997
- Order of the Ministry of Environmental Protection on Approval of the Rules on Use of Dust and Gas-Purifying Installations, 16 June 1997
- Order of the Ministry of Environmental Protection on Approval of the Instruction on Environmental Impact Assessment in the Kyrgyz Republic, No. 386 of 27 September 1997
- Order of the Ministry of Environmental Protection on Approval of the Instruction on the Procedure of State Environmental Review of Projects in the Kyrgyz Republic, 3 September 1997
- Order of the State Agency of Forestry on Approval of the Regulation on State Registration of Potentially Toxic Chemicals, No. 72 of 7 October 1997

**1998**

- Code on Administrative Responsibility, No. 114 of 4 August 1998
- Law on Energy Saving, No. 88 of 7 July 1998

- Law on Oil and Gas, No. 77 of 08 June 1998
- Decree of the President on the New National Forest Policy, No 300 of 6 October 1998
- Order of the State Agency of Forestry on Approval of the Rules of Regeneration Felling in Forests of the Kyrgyz Republic, No. 10 of 16 February 1998

## 1999

- Land Code, No. 45 of 2 June 1999
- Forest Code, No. 66 of 08 July 1999, last amended 2 July 2007
- Law on Environmental Protection (framework law on environmental protection), No. 53 of 16 June 1999, last amended 6 June 2005
- Law on Fauna, No. 59 of 17 June 1999
- Law on Biosphere Territories, No. 48 of 9 June 1999
- Law on Environmental Expertise, No. 54 of 16 June 1999 with changes as of 11 June 2003
- Law on Air Protection, No. 51 of 12 June 1999
- Law on Drinking Water, No. 33 of 25 March 1999
- Law on Chemicalization and Plant Protection, No. 12 of 25 January 1999
- Law on Radiation Safety of the Population, No. 58 of 17 June 1999
- Law on Non-Commercial Organizations, No. 111 of 15 October 1999
- Law on International Agreements, No. 89 of 21 July 1999
- Law on Coal, No. 18 of 3 February 1999
- Resolution of the Government on the Control of Transboundary Movements of Hazardous and Other Waste, No. 193
- Resolution of the Government on Approval of the Regulations on Monitoring of Agricultural Land, No. 115 of 1 March 1999
- Resolution of the Government on Organization of Nurseries for Falcons and Centres of Falconry, No. 297 of 31 May 1999
- Resolution of the Government on Approval of the Regulation on Keeping Records of the Land Cadastre in the Kyrgyz Republic, No. 659 of 2 December 1999
- Instruction on Carrying State Control on Stationary Sources Polluting the Atmospheric Air, Ministerial Order No. 114 of 28 December 1999
- Order of the Ministry of Environmental Protection on Approval of the Instruction on Standards of Waste Treatment in the Kyrgyz Republic, No. 3 of 17 September 1999
- Order of the Ministry of Environmental Protection on Approval of the Instruction on Calculation of Fees for Emissions of Pollutants by Transport, No. 4 of 17 September 1999
- Order of the State Agency of Registration of Immovable Property Rights on Approval of the Instruction on Procedure of State Control for Use and Protection of Lands, No. 81 of 5 October 1999
- Order of the Ministry of Environmental Protection on Approval of the Instruction on Conducting State Control for Protection of Ambient Air from Emissions of Pollutants by Vehicles in the Kyrgyz Republic, 19 November 1999
- Order of the Ministry of Environmental Protection on Approval of the Instruction on State Control over Stationary Sources of Pollution of Ambient Air in the Kyrgyz Republic, 23 December 1999

## 2000

- Law on Accession of the Kyrgyz Republic to the United Nations Framework Convention on Climate Change and the UNECE Convention on Long-range Transboundary Air Pollution, No. 11 of 14 January 2000
- Law on Ratification of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, No. 15 of 15 January 2000
- Law on Ratification of the Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer, No. 16 of 15 January 2000

- Resolution of the Government on Approval of the Regulation on State Control of Environmental Protection, Rational Use of Natural Resources and Securing Ecological Safety of the Kyrgyz Republic, No. 295 of 25 May 2000
- Resolution of the Government on Approval of the Regulation on State Control of Import/Export of Ozone-Depleting Substances, No. 552 of 6 September 2000
- Order of the Ministry of Environmental Protection on Approval of the Rules on Fishery in the Water Reservoirs and of Regulation on Protection of Fish Resources and Fishery in Water Reservoirs, No. 2 of 5 January 2000
- Order of the Chief Sanitary Doctor on Approval of the Sanitary Rules and Standards on Treatment of Radioactive Waste SPORO-2000, No. 8 of 12 February 2000
- Order of the Ministry of Environmental Protection on Approval of the Procedure of Environmental Audit of Economic Entities, No. 19 of 15 February 2000
- Order of the Ministry of Environmental Protection on Approval of the Rules of Ambient Air Protection, No. 43 of 27 March 2000

## 2001

- Law on Industrial and Domestic Waste of 2001, No. 89 of 19 November 2001
- Law of Protection and Use of Flora, No. 47 of 20 June 2001
- Law on Tailing Sites and Slag Heaps, No. 57 of 26 June 2001
- Law on Industrial Safety, No. 93 of 2001
- Law on Accession of the Kyrgyz Republic to the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice on Environmental Issues, No. 5 of 12 January 2001
- Law on Accession of the Kyrgyz Republic to the UNECE Convention on Environmental Impact in Transboundary Context, No. 6 of 12 January 2001
- Law on Intergovernmental Use of Water Objects, Water Resources and Water Economy Facilities, No. 76 of 23 July 2001
- Law on the Management of Agricultural Lands, No. 4 of 11 January 2001 with amendments as of 26 January 2009
- Law on the Sanitary and Epidemiological Well-being of the Population, No. 60 of 26 June 2001
- Resolution of the Government on Measures on Implementation of United Nations Framework Convention on Climate Change, No. 369 of 23 July 2001
- Resolution of the Government on Approval of the Regulation on Community-based Management of Forestry, No. 377 of 27 July 2001
- Resolution of the Government on Approval of the List of Wild Animals and Birds for Hunting and Catching, No. 618 of 10 October 2001
- Order of the Ministry of Ecology and Emergencies on Approval of the Regulation on State Nature Reserves of the Kyrgyz Republic, No. 217 of 18 June 2001
- Order of the Ministry of Agriculture, Water Management and Processing Industry on Approval of the Instruction on Safe Use and Storage of Pesticides in Agricultural Production, No. 309 of 26 November 2001

## 2002

- Law on Mountainous Areas, No. 151 of 01 November 2002
- Law on the Rate of Fees for Environmental Pollution (Emissions, Discharges and Waste Disposal), No. 32 of 10 March 2002
- Regulations on the Procedure of Renting and Using Pastureland
- Law on Local Self-governance and Local State Administration, No. 5 of 12 January 2002
- Law on Associations of Water Users, No. 38 of 15 March 2002
- Law on Accession to the Ramsar Convention on Wetlands of International Importance, No. 54 of 10 April 2002

- Resolution of the Government on Approval of the Regulation on Providing Pastures for Rent and Use, No. 360 of 4 June 2002
- Resolution of the Government on Measures of Implementation of the Law of the Kyrgyz Republic “On associations of water users”, No. 358 of 3 June 2002
- Resolution of the Government on Approval of the Regulation on Registration, Protection, Restoration and Use of Historical Cultural Heritage, No. 568 of 20 August 2002

## 2003

- Law on Education, No. 92 of 30 April 2003
- Law on Ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change, No. 9 of 15 January 2003
- Resolution of the Government on Approval of the Rules of Hunting on Wild Animals for Foreign Hunters, No. 458 of 23 July 2003
- Resolution of the Government on Approval of the Regulation on Land Surveying and its Procedure in the Kyrgyz Republic, No. 45 of 29 October 2003
- Resolution of the Government on Establishment of the Coordination Commission on Sustainable Environmental Development, No. 369-r of 24 June 2003
- Order of the State Forest Service on Approval of the Rules on Hunting on the Territory of the Kyrgyz Republic, No. 26 of 17 February 2003
- Order of the Ministry of Agriculture, Water Management and Processing Industry on Approval of the Rules of Testing and Registration of Pesticides and Agricultural Chemicals, No. 62 of 5 March 2003
- Order of the State Forest Service on Approval of the Sanitary Rules in Forests, No. 89 of 20 June 2003
- Order of the Chief Sanitary Doctor on Approval of the Hygienic Requirements to Disposal Domestic and Industrial Waste SanPiN 2.1.7.010-03, No. 45 of 29 October 2003

## 2004

- Law on Sustainable Development of the Environmental and Economic System, Issyk-Kul, No. 115 of 13 August 2004
- Resolution of the Government on the Programme to Study, Conserve and Rationally Use Populations of Mountain Argali in 2004–2008, of 7 April 2004
- Resolution of the Government on Approval of the Regulation on Granting Water Installations into Ownership of Water Users’ Associations, No. 234 of 6 April 2004
- Resolution of the Government on Approval of the Guidelines on Estimation of Fees for Environmental Protection in the Kyrgyz Republic, No. 823 of 10 November 2004
- Order of the Ministry of Agriculture, Water Management and Processing Industry on Approval of the Instruction on Organization and Implementation of Inspections on the Use and Protection of Waters by Water Users, No. C 806 of 14 December 2004
- Order of the Chief Sanitary Doctor on Approval of the Hygienic Standards of Content of Pesticides in the Environment, GN 1.2.1323-03, No. 20 of 28 May 2004
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