

KYRGYZ REPUBLIC: COUNTRY ENVIRONMENTAL ANALYSIS



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PREFACE

The present volume brings to a wider audience some of the analysis behind the country strategies and assistance programs that the Asian Development Bank formulates in consultation with its member countries. The focus of the document is environmental management, one of ADB's priority concerns not diminished by the more forceful and explicit attention given in recent years to poverty alleviation.

Leaving aside China, always special, the ADB member countries under the responsibility of the East and Central Asia Department (ECRD) include "textbook" transition economies, six out of seven of them countries of the former Soviet Union (FSU). This amounts to unique opportunities for ADB to influence for the better the course of economic and social development in these fledgling market economies.

ADB's support for environmental management in FSU member countries is not new. This report, dealing with the Kyrgyz Republic, adds to earlier publications devoted to Central Asia's environment, in particular to *Central Asian Environments in Transition* (1997) and *Environmental Profile of Tajikistan* (2001), and to a considerable body of detailed unpublished material used by ADB staff.

The report is one of the outputs of the regional technical assistance project No. 6095 (Integrating Environmental Concerns in Government Policies, Plans and Programs) and it is based on the work of David McCauley, an ADB consultant, assisted by Gulnara Shalpykova. It incorporates a number of comments made by ADB staff during the document's preparation.

ADB wishes to record its gratitude to the Kyrgyz Ministry of Environment and Emergency Situations for the support given to the process of country environmental analysis on which this document rests. Staff of several other government agencies, too numerous to be listed individually, shared their views and experience. The Bishkek branch of the Regional Environmental Center for Central Asia collaborated closely with ADB consultants and contributed much to making CEA's preparation an activity not limited to government agencies and foreign donors but embracing also Kyrgyz and Kyrgyzstan-based NGOs and the civil society. ADB is encouraged by the degree of their interest in the subject and the positive role they played in the process.

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EXECUTIVE SUMMARY

The report is a summary of the environmental analysis of the Kyrgyz Republic that served as one of the inputs for Asian Development Bank's (ADB's) Country Strategy and Program (CSP) for the period 2004-2006. It identifies the principal environmental issues and reviews the related policy framework in the Kyrgyz Republic. Based on that and ADB's experience in the country so far, it identifies the range of potential responses within the overall structure of ADB's assistance to that country.

The main environment-related concerns faced by Kyrgyzstan are identified as follows:

1. Environmental constraints to farm productivity in a country of fragile mountain topography and legacy of inappropriate land use classification. Growing waterlogging and salinization of irrigated lands, soil erosion on sloping lands.
2. Low forest cover and deforestation pressures.
3. Complexity of environmental management in a high mountain setting.
4. Pressures on biological resources through habitat degradation and land conversion.
5. Problems related to water quality and access to safe water despite underlying abundance of water contrasting with most of the rest of Central Asia.
6. Ineffective collection and disposal of solid wastes, poor enforcement of regulations regarding industrial hazardous and toxic waste disposal, and problems relating to mine tailings.
7. Rapidly expanding numbers of mobile pollution sources well ahead of measures adopted to regulate air emissions.
8. Doubts about the direction of overall energy policy, low energy efficiency overall, and insufficient attention to renewable energy sources.
9. Serious deterioration of disaster monitoring, preparedness and prevention mechanisms.
10. Trans-boundary character of some of the concerns, especially the water-energy interdependence with the country's neighbors, uranium tailings discharges and air pollution in Fergana Valley.

The Ministry of Environment and Emergency Situations (MEES) and its local branches have the central environmental mandate but a number of other government agencies exert an important indirect role. There is growing interest in environment-related matters in the Kyrgyz Republic much evident in the country's legislature (but much less so, the judiciary). The Kyrgyz Republic is probably the most open to civil society participation in decision making—including environmental—within Central Asia.

An impressive array of new or amended environmental laws and regulations is accompanied by their weak enforcement caused by deficient legislative drafting in some cases and by capacity and funding constraints in others. Despite attempts to improve the situation, shortages of accurate, timely and appropriate environmental information handicap decision-making.

Environmental policy is anchored in the 1995 National Environmental Action Plan (NEAP) that helped shape the evolution of the country's environmental laws and regulations during the 1990s. NEAP retains its usefulness but by now, it needs to be

updated, supplemented by concrete program and project proposals and be integrated with new sectoral strategic documents such as National Program of Agricultural Development. Implementation-oriented analysis of poverty-environment linkages is also overdue.

A range of programs are financed as a part of government agencies' routine activities, but the most visible and telling ones are those involving international cooperation, especially those linked to the country's fairly active participation in multilateral environmental agreements.

Three general areas are considered in this CEA to be of the highest national priority for action: (i) land degradation; (ii) cross-cutting issues of environmental management, disaster protection and energy management; and (iii) mainstreaming environmental considerations into broader economic development planning, policymaking and programming. ADB assistance should dovetail these priorities.

Efforts to tackle land degradation should be integrated with broader agricultural and rural development efforts focusing on market-based farm restructuring and commercialization, but should target more forcefully waterlogging and salinization and be linked to calibrated protection activities within the nation's system of parks and protected areas. The Ministry of Agriculture, Water Resources and Processing Industry should serve as the lead agency as a more integrated approach is adopted to achieving sustainable agricultural and rural development.

Within cross-cutting environmental issues, the problem of nuclear wastes management should remain in the forefront of attention even if ADB is not involved in its financing. Air pollution from mobile (transport) sources could soon become a priority. Development of renewable energy sources coupled with efforts to greatly improve energy efficiency should be placed higher on the agenda. The Kyrgyz Republic should remain strongly engaged in regional dialogue with its neighbors on water and energy issues.

The Ministry of Finance as well as key line ministries responsible for such sectors as transport, energy or urban development need to become more active in promoting sustainability. A strategy for "mainstreaming" environmental considerations into all aspects of government and civil policy and programming is needed and ADB could assist the process by strengthening the economic know-how of MEES.

This mainstreaming of environmental considerations should be no less important in ADB's own operations and assistance program. ADB also should actively seek co-financing with grant-based sources to address global or regional environmental concerns as a part of investment projects, while continuing to incorporate environmental safeguards into all project design and implementation.

ADB should use the Millennium Development Goals targets in combination with country-level performance monitoring to assess the validity of the direction advocated in this CEA.

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Appendix 1: Country Environment Indicators

ABBREVIATIONS

ADB	Asian Development Bank
CAMIN	Central Asian Mountain Information Network
CARs	Central Asian Republics
DMC	Developing Member Country of the Asian Development Bank
ESCAP	UN Economic and Social Council of the Asian/Pacific Region
FP	Focal Point
GDP	Gross Domestic Product
GEF	Global Environment Facility
GM UNCCD	Global Mechanism of the UN Convention to Combat Desertification
GKR	Government of the Kyrgyz Republic
GWP	Global Water Partnership
ICSD	Interstate Commission for Sustainable Development
ICWC	Interstate Commission for Water Coordination
IFAS	International Fund for Saving the Aral Sea
MEA	multilateral environmental agreement
MEES	Ministry of Environment and Emergency Situations
NEAP	National Environmental Action Plan
NGO	non-governmental organization
POP	persistent organic pollutant
REAP	Regional Environmental Action Plan
REC CA	Regional Environment Center for Central Asia
RETA	Regional Technical Assistance
SIC	Scientific Information Center
TA	Technical Assistance
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNECE	United Nations Economic Commission for Europe
USAID	United States Agency for International Development
WB	World Bank

CURRENCY EQUIVALENTS

US\$ 1 = 42 Som (December 2003)

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I. INTRODUCTION

A. Environmental Management in the Kyrgyz Republic

1. On achieving independence from the Soviet Union a decade ago, the Kyrgyz Republic inherited the results of nearly categorical environmental neglect and faltering efforts to follow even basic principles of sustainable natural resources management that marked the late Soviet period. The task of establishing environmental management systems that would be more in tune with the precepts of sustainable development became an aspect of urgent post-independence efforts to create an institutional framework serving the new political reality and capable of supporting a market-oriented economy and its economic and social objectives.

2. Among other things, the economic dislocation and de-industrialization in the aftermath of the Soviet Union's collapse exposed the new republic's dependence on its natural resources. The country's predominantly rural population is largely dependent upon agricultural crop production and animal husbandry for livelihood and nutrition. Its health is maintained by secure access to clean water. Much of the country's rural energy supply for locations not served by electricity—a widening area due to deteriorating infrastructure—is derived from fuelwood drawn from the nation's forests. The ability to further develop Kyrgyz Republic's nascent tourism industry hinges on the preservation of the rich endowment of flora and fauna as well as the integrity of mountains, lakes and other landscapes. In short, more than in many other newly independent states, sound environmental management should be seen as central to the country's social and economic development.

B. ADB Country Environmental Analysis

3. Within the Asian Development Bank's (ADB's) overall development assistance program to the Kyrgyz Republic, efforts to establish effective systems for environmental and natural resources management occupy an important place. ADB-sponsored environmental activities have been carried out at both the country and regional levels since 1995, with the most recent focusing on capacity building for environmental monitoring.¹

4. ADB's country strategy and program (CSP) for the Kyrgyz Republic for the period 2004-2006 was finalized in 2003² to reflect the changing economic and social conditions there since the middle of the previous decade. An assessment of environmental management issues and needs, summarized in the present Country Environmental Analysis (CEA) document, was an important part of this exercise. It sought to place the major environmental and natural resource management issues in the country more securely within the context of policy, program and institutional responses in support of the country's social and economic development.

¹ TA 3499-KYR: Environmental Management Capacity Building II, approved 11 September 2000. Table 10 contains a further listing of selected ADB and other environmentally-related assistance to the Kyrgyz Republic from ADB and other sources.

² *Kyrgyz Republic: Country Strategy and Program 2004-2006*, Doc. M103-03, approved on 25 Nov. 2003

5. The preparation of the CEA offered an excellent opportunity to conduct a dialogue on environmental issues among ADB, the government and other key stakeholders. Two informal workshops were conducted to review perceptions and findings and to refine the CEA analysis and recommendations presented here. Several prior national environmental assessments served as a point of departure and reference. Of particular note are the National Environmental Action Plan (1995), the Kyrgyz Republic profile included in an ADB review of the Central Asian environment (1997) and an Environmental Performance Review (2000) prepared by the UN Economic Commission for Europe. Further information was drawn from several World Bank publications as well as from reports of ADB-supported environmental technical assistance activities in the country.³

II. KEY ENVIRONMENTAL MANAGEMENT ISSUES

A. Land Resources

6. The review of key environmental issues facing the Kyrgyz Republic begins with the subject of land resources management, as this represents the most fundamental natural resource asset of the country. There have been some notable land administration shifts over the past decade which have far reaching implications for management of the country's natural resource base. As shown in Table 1, Soviet period planners had designated nearly three-quarters of the country's roughly 200 thousand square kilometers (20 million hectares) for cultivated agriculture based on the desire to achieve non-market self-sufficiency goals. Through reclassification and reform, the situation was markedly different by the end of 2002. A much lower (though still unrealistically high for such a mountainous country) 27.7% of the land area (or about 5.5 million ha) is now officially designated for agricultural purposes, with an additional one-half (10.2 million ha) administered as rangeland (as shown in Table 2, the actual area under cultivation—a better indicator of the area for which there are sufficient economic returns—is about 2.5 million ha and those actually used for rangeland total roughly 9.2 million ha). Lands allocated to forestry comprise a further 13.3% of the land area (though actual forested area stands at around 4.2%). The network of protected areas also has grown considerably (discussed in more detail below).

Table 1. Land Administration in the Kyrgyz Republic: 1990-2002 (1000s ha)

Type of Use	1990	%	1995	%	2002	%
Agriculture	16,026.2	73.7	11,647.1	55.0	5,566.3	27.7
Pastoral rangelands	1,440.0	6.6	5,719.9	27.0	10,209.1	50.9

³ ADB. 1995. *Technical Assistance to the Kyrgyz Republic for Strengthening Environmental Institutions and Improving Procedures for Environmental Impact Assessment*. Report No. TAR: KGZ 29018. ADB: Manila; MEES, 1995. *National Environmental Action Plan for Kyrgyzstan*, MEES: Bishkek; ADB. 1997. *Central Asian Environments in Transition*. Manila; ADB. 1997. *Technical Assistance to the Kyrgyz Republic for Environmental Monitoring and Management Capacity Building*. Report No. TAR:KGZ 29155. Manila; ADB. 2000. *Technical Assistance to the Kyrgyz Republic for Environmental Monitoring and Management—Capacity Building II*. Report No. TAR: KGZ 33193. Manila; and UNECE, 2000. *Environmental Performance Review: Kyrgyzstan*, United Nations: New York.

Used by other republics	1,226.2	5.6	850.8	4.0	0.0	0.0
Forest fund	1,072.3	4.9	1,107.1	5.2	2663.1	13.3
Commercial & defense	904.1	4.2	888.8	4.2	222.1	1.1
Outside oblast admin.	870.5	4.0	596.5	2.8	0.0	0.0
Water fund	97.0	0.4	93.7	0.4	767.0	3.8
Human settlements	58.5	0.3	137.4	0.6	241.4	1.2
Parks & protected areas	40.7	0.2	146.4	0.7	401.9	2.0
All land use categories	19,994.5	100.0	19,994.5	100.0	19,995.1	100.0

Source: MEES, 2001 and www.law.gov.kg. Discrepancies exist between amounts and totals.

7.

Agriculture accounts for more than 50% of both GDP and employment, and rural inhabitants comprise the majority of the country's poor. Yet farm productivity is hampered by environmental constraints, and many current agricultural practices are unsustainable—even at their low levels of productivity. World Bank estimates indicate that 11.5% of the country's irrigated area (124,300 ha) is affected by salinization. If the agriculture sector is to progress, concerted attention will be needed to addressing environmental issues associated with: irrigated lands management (waterlogging, salinization and pollution from misuse of agricultural chemicals); dryland agriculture (especially soil erosion on fragile sloping lands); and pastoral lands management (sustainable stocking rates for grazing as well as mixing fodder replenishment with erosion control).⁶

Table 2. Cropland, Irrigated Land and Pasture in Central Asia

Country	Cultivated Cropland	Irrigated Cropland		Pasture
	('000 ha)	('000 ha)	% of Domestic Cropland	('000 ha)
Kyrgyz Republic	1,435	1,077	75	9,216
<i>Other Central Asia:</i>				
Kazakhstan	30,135	2,313	7	18,233
Tajikistan	860	719	84	3,600
Turkmenistan	1,744	1,744	100	3,070
Uzbekistan	4,850	4,309	89	2,280
All Central Asia	38,975	10,212	26	36,399

Source: World Bank, 2003 (1999 data)

8. Legal and institutional arrangements to provide secure land tenure need to be established to create appropriate private inducements for sustainable land husbandry, and implementation of existing irrigation service charges would increase the incentives for sound on-farm water use and raise revenues sorely needed for operation and maintenance of water delivery systems. As indicated in Table 3, there has been a significant recent shift in the manner in which agricultural enterprises are organized. The previous reliance on state enterprises and collectives has given way to a new set of arrangements emphasizing cooperatives, associations and individually managed farms.

⁶ The National Agenda 21 also includes a provision for the ecologically safe development and use of biotechnology to support the agriculture sector.

Progress also has been made in establishing water user associations to better organize on-farm water management and the operation and maintenance of local irrigation canals and control structures, though these efforts are no substitute for broader agrarian and irrigation policy liberalization⁷.

9. The National Action Plan outlining the Kyrgyz Republic's participation in the United Nations Convention on Combating Drought and Desertification (UNCCD) provides a useful starting point for the many steps needed to address land degradation, but there are numerous policy and institutional constraints to its full implementation.⁸ The country stands to gain considerable economic benefit from improvements in long-term land productivity as salinization is reduced and better rangeland management practices are introduced. For example, a recent World Bank study has estimated pasture yields could be increased by as much as 62% (Table 4) through improved management—raising the total annual value in the country to Som 23.84 billion. Since the current value of production is Som 14.78 billion, this would amount to an annual increase in the value of rangeland production of Som 9.06 billion (or approximately \$180 million).

Table 3. Number of Farm Units by Type in the Kyrgyz Republic: 1992-1999

Type	1992	%	1995	%	1999	%
Kolkhozes	192	3.8	119	0.5	4	0.0
State enterprises	323	6.4	128	0.6	35	0.1
Agricultural cooperatives	0	0.0	152	0.7	336	0.7
Agricultural associations	0	0.0	116	0.5	261	0.5
Joint stock companies	0	0.0	72	0.3	45	0.1
Individual farmers	4,567	89.9	21,264	97.3	49,277	98.6
All farms	5,082	100.0	21,851	100.0	49,958	100.0

Source: Ministry of Agriculture, 1992-1999 (cited in UNECE, 2000).

Table 4. Potential Gains from Rangeland and Pasture Improvements

Parameter	Area (ha 1000s)	Average Yield (kg/ha)		Annual Value (Som 1000s)	
		Poor (current)	Improved (potential)	Poor (current)	Improved (potential)
Grassland type/season	Poor or Improved	Poor (current)	Improved (potential)	Poor (current)	Improved (potential)
Spring	1,200	400	550	1,350	1,856
Summer	3,800	800	1,200	11,400	19,000
Autumn	1,200	400	550	900	1,238
Winter	2,000	150	250	1,125	1,750
Total	8,200			14,775	23,844

Source: World Bank, 2002.

B. Forest Resources

10. Forming the headwaters for the Syr Darya River, the mountainous watersheds of the Kyrgyz Republic play a vital role for the entire river basin—protecting the quality of freshwater flows and helping to control landslides, erosion and sedimentation. It is therefore crucial that forest cover be maintained to the maximum extent possible

⁷ Helvetas, 2003. Policy Support Project: Yearly Report 2002, Kyrgyz Swiss Agricultural Program: Bishkek.

⁸ Saigal, S., 2003. Combating Desertification in Central Asia: Kyrgyz Republic Issues and Approaches to Combat Desertification, ADB: Manila.

wherever it occurs naturally within the country and especially on steep slopes. Forests also play an important role in maintaining the country's biological diversity.

11. Unfortunately, current forest cover represents only about 4.25% of the land area, having been reduced by roughly one-half (from 8% coverage) over the past 70 years, and it appears to be in further decline. Deforestation pressures arise from uncontrolled logging and fuelwood collection, fires, and the conversion of forested areas for dryland agriculture—often on very steep slopes. While the government has set a target in its national Agenda 21 of increasing forest cover to 6% by 2010, the policy and program framework to achieve this target has received only weak political and financial support.

C. Mountain Ecosystems

12. Lying within the Tien Shan and Pamir Mountain ranges, the Kyrgyz Republic is largely defined by its mountain ecosystems, covering some 90% of the territory (see Appendix 1). Approximately 14% of the population lives in the high mountain regions of the country (above 1500 meters in elevation), and mountains dominate all aspects of life: economic, social, environmental and cultural. The country's mountain ecosystems are diverse and extremely fragile, and those who live in the high mountain regions are among the poorest and least served by public institutions.⁹

13. On the Kyrgyz Republic's initiative, the United Nations declared 2002 as the International Year of the Mountains, and Bishkek hosted the associated Global Mountain Summit in October of the same year. In preparation for this meeting, and with support from ADB¹⁰, a National Strategy and Action Plan for Sustainable Mountain Area Development was prepared as a country model for the entire region. Unfortunately, much needs to be done if it is to be fully implemented. Areas requiring special attention include: forest and soil conservation; sustainable grazing lands management; monitoring and management of protected areas and alpine ecosystems (including glaciers, snowfields and permafrost); appropriate hydropower development; careful planning and management of mining activities in mountainous areas; and the development of sustainable eco-tourism.

D. Biological Diversity

14. The Kyrgyz Republic lies at the center of the Central Asian biodiversity "hotspot", with a high density of endemic species representing Himalayan flora and fauna biotypes. Despite the small size of the country, it hosts nearly 1% of all known species on earth (including 3% of the world's fauna).¹¹ The types and area of natural habitats found in the country is given in Appendix 1. But the country's rich endowment of biological resources is under tremendous current threat from habitat degradation and conversion as well as the introduction of exotic species. This may be seen in the number of species designated as threatened: 71 flora and 122 fauna. The country has ratified the UN Convention on Biological Diversity, and some 10 laws have been passed since independence to support biodiversity conservation. As shown in Table 5, there also has been an impressive

⁹ See the analysis of poverty incidence in the country by oblast given in the main Country Strategy and Program (CSP) document.

¹⁰ RETA 5878: *Regional Cooperation for Sustainable Mountain Development in Central Asia*, approved 16 December 1999.

¹¹ UNECE, 2000; and UNDP, 2002.

expansion in the area of national parks. This now represents some 4.25% of the territory, though staff and other resources for administration of this network are inadequate for their effective management.¹²

E. Water Resources

15. Despite its considerable expanse of arid zones, the Kyrgyz Republic is the best endowed Central Asian state with respect to the availability of water resources. Some 30 rivers find their headwaters on the Republic's territory, and nearly all flow to neighboring countries. Precipitation, combined with glacial and snow melt, provide abundant run-off—especially in the springtime months—the majority of which flows into the Syr Darya, Chui, and Talas River Basins. The large Toktogul Reservoir was built during the late Soviet period on the Naryn River of the upper Syr Darya Basin to capture water for summertime irrigation use—mostly in what are now the independent republics of Uzbekistan and Kazakhstan. Table 6 shows the changes over the past decade in the levels and sources of overall water withdrawals in the Kyrgyz Republic as well as uses and discharges. It should be noted that current withdrawals are estimated to account for only between 6-8% of available water resources.

Table 5. Parks and Reserves in the Kyrgyz Republic: 1990-2003

Category (area in 1000s ha)	1990	1995	2003
National parks	2.30	13.50	258.50
Reserves (<i>zapovedniki</i>)	190.10	236.50	254.90
Special preserves (<i>zakazniki</i>)	390.20	390.20	390.20
Nature memorials	0.06	0.06	0.06
Total area in protected status	582.66	640.26	903.66

Source: State Forestry Service. 2003.

Table 6. Kyrgyz Republic Water Use and Discharge: 1990-1999 (million m³)

Parameter	1990	%	1995	%	1999	%
Total withdrawals	11122	100.0	9308	100.0	9179	100.0
Surface water	10032	90.2	8614	92.5	8750	95.3
Groundwater	1090	9.8	694	7.5	429	4.7
Total consumption	8993	100.0	6942	100.0	5251	100.0
Industrial	623	6.9	254	3.7	61	1.2
Agricultural	8076	89.8	6410	92.3	4960	94.5
Domestic	294	3.3	279	4.0	208	4.0
Surface evaporation losses	1729	19.2	1850	26.6	2035	38.8
Total wastewater discharges	1167	100.0	1177	100.0	933	100.0
Discharges to surface water	977	83.7	925	78.6	209	22.4
Treated water discharges	131	11.2	136	11.6	150	16.1
Untreated water discharges	44	3.8	1	0.1	4	0.4

¹² UNDP, 2002.

Other discharges	15	1.3	115	9.8	570	61.1
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Source: MEES. 2001. Note: Some discrepancies in data.

16. The most important water resources management issues facing the country relate to irrigation, rural water supply, sanitation, and water pollution from industry and mining. Poor drainage on irrigated lands and associated problems of salinization and waterlogging were discussed above. In addition there are significant semi-urbanized areas—particularly at the foot of mountain ranges—that are subject to flooding from rising water tables. While water supply service is ample in most urban settlements, many rural areas lack sufficient access to clean water supplies. Innovative approaches are needed to meet these rural demands through cost-effective means. Urban sewage collection and treatment is generally adequate, though the infrastructure is in a deteriorating state due to insufficient funds to cover maintenance costs. Planned tariff reforms need to be implemented to ensure that revenues are available for operation, maintenance and upgrades of wastewater collection and treatment systems. Household wastewater management in rural areas also requires attention to protect water quality and rural health. Though industrial pollution discharges have fallen precipitously as a result of the post-independence collapse of this sector, many of those enterprises that remain in business are not adequately treating their wastewater—including the discharge of hazardous and toxic wastes into surface waters. There also is concern about the pollution control practices of mining operations, which deserve special attention due to the potential scale of damages from waste discharges (several high profile incidents have occurred over the past few years which have increased awareness of these risks).

F. Solid, Hazardous and Toxic Wastes

17. The urban solid waste management system inherited from the Soviet period—never terribly efficient—has been seriously disrupted by the transition to a market economy and other dislocations associated with the post-independence period. Concerted attention is needed to establish effective systems for the collection and disposal of solid wastes, including recycling where appropriate (there currently is very little separation of wastes, and recycling levels, especially of plastics, remain low). Like other environmental services supplied by government, revenue collections are well below operation and maintenance costs. If tariffs for solid waste services are to be increased, however, consumers will rightly demand that these be coupled with improved reliability and convenience.

18. As noted, strong attention is needed to the enforcement of regulations regarding industrial hazardous and toxic wastes disposal—whether to water, air or land. There remain a significant number of industrial facilities producing such byproducts, and their precarious economic state should not be used as an excuse for the discharge of dangerous substances into the environment threatening human health and safety as well as causing potentially irreversible damage to natural systems. Collection and disposal systems for hazardous and toxic wastes remain grossly inadequate. Although the use of pesticides and fertilizers in the agriculture sector has fallen sharply since independence, attention is needed to the upgrading of chemical inventories and disposal plans for such dangerous chemicals (especially persistent organic pollutants). As a former uranium mining country, there also are special concerns about the safety of tailings repositories—

with the downstream risks of contamination from possible breaches of the tailings ponds in Mailii-Suu and several other locations having drawn international attention.¹³

G. Air Quality

19. The decline of the country's industrial sector has resulted in greatly reduced levels of air pollution from these sources, but this appears to have been more than offset in urban areas by an increase in vehicular emissions. Periodic disruptions in energy supplies (electricity, gas and coal deliveries) also have led to increased use of fuelwood—even in periurban areas—with associated increases in emissions, especially particulates. This adds to the problem of indoor air pollution (already a health concern in many rural areas due to the widespread use of coal for cooking and heating), which compounds risks to human health from respiratory ailments. There also are growing concerns about transboundary air pollution—especially in the Ferghana Valley which is shared by Uzbekistan, Tajikistan and the Kyrgyz Republic.¹⁴ Nevertheless, the top priority for air quality management at present seems to be the need to exert controls on the rapidly expanding number of mobile sources through the introduction of economic instruments or regulatory measures, such as vehicular taxes or emissions testing.

H. Energy and Environment

20. Independence for the Central Asian Republics brought with it the need for a restructuring of regional energy markets. As this has not gone smoothly across the region, the Kyrgyz Republic has sometimes suffered disruptions to its energy supplies—especially during peak winter demand periods. This has led the country to consider its installed hydropower capacity—mostly in the Naryn-Syr Darya cascade—as a national asset in contrast with the previous perception of its being a by-product of water releases for irrigation. The development of further large hydropower schemes is viewed as holding tremendous potential for generating foreign exchange earnings, and small hydropower development also is being investigated for rural applications. There also exist less promising though still potentially useful prospects for development of other clean and renewable energy sources such as geothermal, wind, solar and biomass. Investment in these types of technologies would help the country to reliably meet its energy needs as well as its targets for greenhouse gas emissions under the UN Framework Convention on Climate Change and the Kyoto Protocol.¹⁵ This may be essential to offset fossil fuel emissions if plans to further develop limited oil and gas resources move forward. In addition, energy efficiency in the country is extremely low, even by Central Asian standards—attributed to transmission inefficiencies, a lack of incentives for energy conservation by households and enterprises, and outright electricity theft.

I. Natural Disasters Management and Environmental Links

¹³ The Organization for Security and Cooperation in Europe (OSCE) has organized several seminars on this subject in the past year, and the World Bank has placed in its Country Assistance Strategy to begin in 2004 a new grant-financed project to address high priority problems of uranium tailings. This is also receiving technical assistance from the European Union and the United States.

¹⁴ Uzbekistan is the largest contributor to Ferghana pollution, both because of its higher emissions and due to prevailing wind patterns—which also bring some of this pollution into other parts of the Kyrgyz Republic.

¹⁵ Potentially generating foreign currency denominated carbon credits from projects which reduce net carbon dioxide emissions. The Kyrgyz Republic has recently completed its First Communication under the Framework Convention on Climate Change and is preparing targets based on the greenhouse gas inventory.

21. The Kyrgyz Republic is well recognized as being highly susceptible to risks from natural disasters and hazards. Its seismically active mountainous terrain produces a wide range of natural hazards—from earthquakes to floods and debris flows.¹⁶ Disaster monitoring, preparedness and prevention efforts were reasonably well organized during the Soviet period, but they are virtually non-existent today except at the academic level. Yet disaster events continue unabated; the number and range of emergency situations encountered during the period of 1995 to 1999 (given in Table 7) illustrate the extent of the challenge. The data indicates that a significant natural disaster of some kind is occurring somewhere in the country on average about every three days.

Table 7. Emergency Situations Recorded in the Kyrgyz Republic: 1995-1999

Type of Emergency	1995	1996	1997	1998	1999
Total incidents reported	95	183	147	118	126
Landslides	15	32	17	21	25
Floods and debris flows	12	53	67	53	39
Avalanches	51	39	6	3	11
Earthquakes	6	22	15	7	13
Technogenic or biological	11	37	42	34	38
Deaths resulting	26	40	44	8	6
Damages (Som millions)	216.2	3.3	357.0	1,129.0	757.8

Source: MEES. 2001.

22. The key to dealing with such natural risks is to systematically identify the sources and likely locations and to couple this with careful planning and preparation for both mitigation and response. Some preventative measures—such as reforestation—are potentially of benefit to the environment, while others—including most engineering works—require careful attention to ensure that they do not create further adverse environmental impacts during construction or a natural disaster. In particular, disaster prevention and preparedness measures relating to water management must be carefully integrated into broader water management plans, policies and programs in a given catchment area.

J. Transboundary Environmental and Natural Resources Management

23. As a small landlocked country with a limited resource endowment, the Kyrgyz Republic is highly dependent upon trade and good relations with its neighbors. This has been true since the days when the Great Silk Road linked the country with Europe and the rest of Asia. Today its hydrological links as an upstream state are equally as important, inextricably tying the country to Uzbekistan, Kazakhstan, Tajikistan and the People's Republic of China through the flow of approximately 30 rivers that find their headwaters on Kyrgyz territory. With this in mind, a landmark interstate Framework Agreement on Water and Energy Use in the Naryn-Syr Darya Cascade was signed by all four Syr Darya Basin riparian states in 1998 to help rationalize management of Toktogul Reservoir, and the country has been an active participant in programs and institutions associated with the International Fund for Saving the Aral Sea (IFAS) that aim to improve

¹⁶ The country also is particularly susceptible to indoor radon pollution—a risk first brought to public attention by a study carried out during the latest ADB-supported environmental technical assistance (TA-3499-KYR).

regional cooperation in the field of water management. The transboundary risks associated with the unstable uranium tailings in Maylii-Suu and other locations are a further stark reminder of the country's fundamental hydrological relationship with its downstream neighbors. There also is the growing—though still limited—problem of transboundary air pollution in the Ferghana Valley region, which will demand greater attention in the years ahead. At least one transboundary protected area is currently in development, and there are concerns about the poaching of endangered flora and fauna (particularly of the snow leopard) from Kyrgyz territory by those from outside.

III. POLICIES AND INSTITUTIONS

A. Legal Framework¹⁷

24. Ownership and management responsibility for most of the country's natural resources remain vested in the state, with use rights generally granted by means of permits with associated fees and charges. The constitution provides for the protection of environmental quality and management of natural resources to maintain the health and livelihood of the Kyrgyz people—including the right to demand compensation for damages associated with violations of these principles. Project level environmental impacts must be assessed according to the Law on Ecological Expertise of 1999.

25. The basic environmental policies of the country are embodied in the Law on Environmental Protection of 1999, which includes provisions for environmental standards, protected areas status as well as rules regarding the management of natural resources and emergency situations. Interpreting the provisions of the constitution, this law emphasizes individual rights to environmental protection, provides for respecting the sustainable development principle, and establishes the structure of regulatory and economic incentives governing environmental policy and the involvement of civil society in environmental management. Other important environmental laws include those covering wildlife, water resources, air quality, forest management as well as protected areas. A list of key environmental laws is given in Table 8.

Table 8. Major Environmental Legislation of the Kyrgyz Republic

Legislation	Main Subject or Resource Protected	Year Passed (Amended)
Law on Specially Protected Areas	Parks and reserves	1994
Law on Waters	Water and floods	1994 (1995)
Law on Fisheries	Fish habitats	1997 (1998)
Law on the Subsoil	Mining rehabilitation	1997 (1999)
Law on Biosphere Territories	Biosphere reserves	1999
Law on Drinking Water	Water quality	1999 (2003)
Law on Protection of Ambient Air	Air quality	1999 (2003)
Forest Code	Forest management	1999 (2003)
Law on Radioactive Safety of the Population	Radioactive hazards	1999 (2003)
Law on Ecological Expertise	Projects and EIAs	1999 (2003)
Law on Wildlife/Fauna	Endangered species	1999 (2003)
Law on Environmental Protection	Basic protections	1999 (2003)
Land Code	Land management	1999 (2003)

¹⁷ This section and the next draw heavily from UNECE, 2000, Chapter 1.

Law on Chemicalization and Plant Protection	Pesticides/agrochemicals	1999 (2003)
Law on Protection of Historic & Cultural Heritage	Cultural preservation	1999
Law on Protection and Use of Flora	Biodiversity conservation	2001
Law on Tailings Ponds and Dumps	Tailings management	2001
Law on Waste Production and Consumption	Waste management	2001

Source: UNECE, 2000 and www.law.gov.kg.

B. Policy Approaches

26. The National Environmental Action Plan (NEAP) adopted in 1995 still stands as the best overall statement of the country's environmental policies and objectives, though it is obviously dated at present. Taking economic growth and poverty reduction as its starting point, the NEAP lays out a range of environmental management activities meant to contribute to these goals. The NEAP is particularly commendable in its attempt to develop an environmental policy framework grounded on the use of market-based incentives, though this has been only weakly realized. Although seminal in its review of environmental management priorities and pragmatic in tone, the NEAP as served as only a very broad guidance document for environmental policy development in the country. Nevertheless, many of its overall recommendations (if not its specific project concepts) have been implemented or otherwise have helped to shape the evolution of the country's environmental laws and regulations. More recently the added concept of "environmental security" has been promoted in the country as a framework to link domestic, regional and international environmental management concerns and responses.

27. Only limited effort has gone into relating environmental protection to poverty reduction. The Comprehensive Development Framework (CDF) identifies the environment as one among fourteen key development topics facing the country and "a focus of attention by both society and the state," and it includes a short section on "environmental protection" under the development objective of "Safe Development". This concern also carries over into the Poverty Reduction Strategy and Program (PRSP), where environmental protection is identified as an area for investment to help alleviate poverty—but without clear links to broader economic goals. The Government also has prepared a draft National Program of Agricultural Development in the Kyrgyz Republic for 2000-2010 which aims to: (i) ensure food security and meet a minimal level of consumption of agricultural products, (ii) provide the processing industry with agricultural raw materials within the funding provided, and (iii) enhance agricultural export potential. Currently, the Government is drafting a new policy for agricultural development which is expected to be released in late 2003.

C. Institutions

28. The Ministry of Environment and Emergency Situations (MEES) is the lead agency in the executive branch of government for the environment subject, with its minister serving as the principal environmental advocate within the cabinet. MEES is directly responsible for implementing provisions of the Law on Environmental Protection as well as environmental standards and regulations associated with most other environmental legislation that is not specifically tied to a line ministry or delegated to the President's Office. This includes responsibility for environmental monitoring and overseeing environmental impact assessments. Committees on Environmental Protection at the oblast and city levels complement these national institutions, and the country continues to undergo a decentralization process that is encouraging ever greater self-governance at

the rayon and local levels. Several other government agencies and ministries also play crucial roles in environmental and natural resources management—most notably the Ministry of Agriculture, Water Resources and Processing Industry and the State Forestry Service.

29. Both the legislative and judicial branches of government also are awakening to new roles in environmental governance. As demonstrated by the proliferation of new environmental laws, it is clear that these subjects are receiving a high degree of attention from the national parliament. The Parliamentary Commission on Agriculture and Environment serves as the lead body for the legislative branch. The late 1990s were a period of high legislative activity in the environment field, with more than ten new laws passed. Attention to environmental subjects has been less prevalent in the judicial branch, though this too is growing. Thus far there has been only limited development of an environmental/green bench within the judiciary, and this represents a significant institutional development challenge because of more generic shortcomings in the Kyrgyz legal system.

30. Though considerable challenges remain, the Kyrgyz Republic is the most open to civil society participation in decision making—including environmental—within Central Asia. There are many non-governmental organizations (NGOs) with environmental and natural resources management interests, ranging from scientific and educational groups to those exercising advocacy functions. Environmental NGOs have participated in the debate on environmental policy since the 1995 NEAP exercise and have helped to shape the many environmental laws passed since 1998.¹⁸

IV. RESPONSES TO ENVIRONMENTAL CHALLENGES

A. Policy Enforcement and Compliance

31. Although the country has produced an impressive array of environmental laws and regulations, their weak enforcement remains a serious constraint to the protection and sound management of the country’s natural resources and protection of environmental quality. Some existing regulations and incentive structures are inherently difficult to enforce, but capacity constraints among responsible government institutions—coupled with severe funding shortages—lie at the core of this problem. Despite attempts to improve data collection and management,¹⁹ there also continue to be shortages of accurate, timely and appropriate environmental information to assist decision making.

Table 9. Central Asian Participation in Multilateral Environmental Agreements

AGREEMENT:	Climate Change	Montreal Protocol	Basel	Biological Diversity	CITES	Ramsar	Combating Desertification
COUNTRY							
<i>Kyrgyz Republic</i>	X	X	X	X			X
Kazakhstan	X	X		X	X		X

¹⁸ More than ten NGOs actively participated in the consultation process behind preparation of this report.

¹⁹ This includes ADB-supported technical assistance, the most recent being TA 3499-KYG: Kyrgyz Republic Environmental Capacity Building II.

Uzbekistan	X	X	X	X	X	X	X
Tajikistan	X	X		X		X	X
Turkmenistan	X	X	X	X			X

Source: Convention Websites.

Table 10. Selected Recent Environmental Projects in the Kyrgyz Republic

Project	Funding Source(s)	Year Begun
Country-level:		
Rehabilitation of Mailii-Suu Uranium Tailings	EU	2001
Environmental Management Capacity Building II	ADB; Finland	2000
Biodiversity Preservation in Western Tien Shan	GEF/EU	1999
Environmental Awareness Raising	EU	1998
Conservation of Biodiversity in the South Kyrgyzstan Mountains Ecosystem	UNDP/GEF	1998
Environmental Monitoring & Management Capacity Building	ADB; Finland	1997
Capacity 21	UNDP	1997
Issyk-kul Biosphere Reserve	GTZ/NABU	1995
Preparation of the First UNFCCC National Communication	UNDP/GEF	1996
Strengthening Environmental Institutions and EIA Procedures	ADB; Finland	1995
Preparation of the National Environmental Action Plan	World Bank	1995
Regional:		
Promotion of Renewable Energy, Energy Efficiency and Greenhouse Gas Abatement (PREGA)	ADB	2001
Combating Desertification in Asia	ADB	2001
Regional Environmental Action Plan in CARs	ADB	2001
Regional Cooperation for Sustainable Mountain Development in Central Asia	ADB; Swiss	2000
Central Asia Transboundary Biodiversity	WB/GEF/EU	1999
Water & Environment Management in the Aral Sea Basin	WB/GEF	1997

Source: UNECE, 2000; UNDP, 2002; ADB 2002.

B. Government Programs and Projects

32. While a range of programs are financed as a part of government agencies' routine activities, the most visible responses to environmental protection and management needs are those involving international cooperation. Many of these have been linked with the country's fairly active participation (Table 9) in multilateral environmental agreements (MEAs). In particular, there have been several capacity-building activities funded by the Global Environment Facility (mostly through UNDP) meant to strengthen the institutions responsible for overseeing the country's participation in MEAs, such as those covering climate change, land degradation and biodiversity conservation. Significant recent environmental projects with international support (including from ADB) are given in Table 10.²⁰

²⁰ These do not include agricultural, rural development or water-related projects which often have significant environmental dimensions.

V. PRIORITIES FOR ACTION

A. Context for Environmental Priority-setting

33. The 1995 NEAP represents the only comprehensive attempt to assess environmental and natural resources management problems facing the country and to identify associated priorities for action.²¹ While the NEAP exercise was an historical step within the Kyrgyz Republic toward understanding and reacting to environmental threats to the nation's sustainable development, the analysis was limited and did not produce a readily implementable set of policy and program actions. Having been prepared in the mid-1990s, the existing NEAP is, in any case, out of step with current realities.

34. Many of the same constraints that limited the outcomes of the NEAP exercise still exist. Information on the economic costs associated with environmental degradation, for example, is still very weak. Likewise, though some aspects of environmental health information have improved, it remains difficult to assess the relative risks to human health from various pollution sources as well as the degree and extent of exposure.

35. Any assessment of priorities must also, by necessity, take into account the institutional and financial realities underlying proposed policy and/or program responses. Recent ADB technical assistance has attempted to analyze and address institutional shortcomings within the Ministry of Environment and Emergency Situations and its affiliates at the oblast level, though a systematic assessment of institutional capacity for natural resources management has yet to be conducted. For these reasons, and due to the limitations of this current analysis, the conclusions reached herein remain largely subjective in nature.²² Nevertheless, three general areas are identified as of highest national priority for action: (i) land degradation; (ii) cross-cutting issues of environmental management, disaster protection and energy management; and (iii) mainstreaming environmental considerations into broader economic development planning, policymaking and programming.

B. Addressing Land and Mountain Ecosystems Degradation

36. Reversing the deteriorating condition of the country's land resources and achieving sustainable development in mountain areas are clearly natural resources management priorities in the Kyrgyz Republic. As previously noted, there are mounting problems of land degradation in the country that are directly constraining poverty alleviation efforts. The majority of the country's landscapes are dominated by mountain ecosystems, and most of the poorest communities are also located in these environments. Efficient management of the country's water resources must play prominently in these efforts, as it is of critical importance to the agriculture sector and to village livelihoods.

37. Attention to land degradation and sustainable mountain areas development can be usefully integrated with broader agricultural and rural development efforts focusing on market-based farm restructuring and commercialization. For example, the ADB-supported area-based agricultural development efforts that have enjoyed success over

²¹ The chapter on the Kyrgyz Republic in *Central Asian Environments in Transition* (1997), produced by ADB, also played a useful role in problem identification.

²² While the recommendations take into account inputs from a range of environmental experts, officials and advocates (consulted directly and through two workshops), the author retains responsibility for their content.

the past few years can be tied in the future to improving the management of associated forests and rangelands, protection of upstream watersheds, and greater concentration on directly addressing land degradation, including the dual scourges of waterlogging and salinization. In some locations, this might also be combined with efforts to improve the nation's system of parks and protected areas, where this could achieve both development and conservation objectives and tap the latent potential of the country's nature-based tourism industry.

38. A good deal of planning already has gone into identifying the needs of the agriculture sector and of mountain ecosystems. The Ministry of Agriculture, Water Resources and Processing Industry has recently completed a policy and program review, and ADB also has analyzed the agriculture sector's future needs.²³ There are well considered recommendations for mountain areas management in the Kyrgyz National Strategy and Action Plan for Sustainable Mountain Area Development.²⁴ The recently completed report on the Kyrgyz Republic to the Global Mechanism of the UN Convention for Combating Drought and Desertification also provides up-to-date analysis and suggestions for related measures to be undertaken in the country to address land degradation.²⁵ Although the cross-cutting nature of such efforts complicates the institutional response, it would seem appropriate for the Ministry of Agriculture, Water Resources and Processing Industry to serve as the lead agency as a more integrated approach is adopted to achieving sustainable agricultural and rural development.

C. Disasters, Air Pollution and Energy-Related Concerns

39. Beyond this primary objective of promoting sustainable rural development, there are several other secondary environmental and natural resources management priorities. The Government has consistently stressed the need to address the problem of nuclear wastes management, and it is indeed important that the highest risk areas (such as Mailii-Suu) be stabilized. ADB has previously assisted in the analysis of this problem, and it now appears that key remediation actions will find financing from the World Bank. Air pollution from mobile (transport) sources is a growing concern in urban areas, and the positive and negative environmental impacts of new roads should be fully considered. There also are a number of energy-related environmental concerns that deserve strong attention. These include the potential for developing renewable energy sources (such as geothermal, solar, biogas and small-scale hydropower) as environmentally-friendly²⁶ supplements to the current use of fossil fuels and large-scale hydropower, and these should be coupled with efforts to greatly improve the efficiency with which energy resources are used in the country. With respect to large-scale hydropower management and development, the Kyrgyz Republic should remain strongly engaged in regional dialogue with its neighbors on water and energy issues to achieve fair resource allocations and to avoid conflict over this oft contentious set of issues.

²³ See the section on Agriculture and Rural Development in the CSP background paper on Country Sector and Thematic Strategies and Plans as well as the CSP's Agriculture and Rural Development "Roadmap".

²⁴ Kyrgyz CAMIN Working Group. 2001. *National Strategy and Action Plan for Sustainable Mountain Development in the Kyrgyz Republic*, CAMIN: Bishkek.

²⁵ ADB. 2003. *Combating Desertification in Central Asia: Kyrgyz Republic*, produced under RETA 5941: Combating Desertification in Asia.

²⁶ Offering less polluting and locally distributed power generation options, including reductions in greenhouse gas emissions.

D. Mainstreaming the Environment

40. Significant improvements in environmental and natural resources management cannot be achieved by working only through the Ministry of Environment and Emergency Situations or even the Ministry of Agriculture, Water Resources and Processing Industry, though such measures are vital. It is imperative that authorities in the Ministry of Finance as well as in key line ministries—responsible for such sectors as transport, energy or urban development—become much more engaged in efforts to put the country’s development trajectory onto a sustainable path. A strategy for “mainstreaming” environmental considerations into all aspects of government and civil policy and programming is needed, and this should form the core of a much needed updating of the NEAP.

VI. IMPLICATIONS FOR ADB’S STRATEGY AND PROGRAM

A. Environmental Underpinnings of Sustainable Economic Growth

41. The success of efforts to reduce poverty and establish the basis for sustainable economic growth are directly dependent on correlative improvements in environmental and natural resources management—especially given the fragile nature of the country’s resources. It is important that the added income and employment generated by investment in productive sectors of the economy not be undermined by often uncounted costs from pollution or resource degradation. The rural majority is directly reliant upon agricultural production for much of its livelihood and nutrition. Human health is maintained by ready access to clean water supplies and good air quality. The availability of affordable and reliable energy supplies—used in an efficient manner—constitutes an essential underpinning of nearly all economic activity. And the ability to develop a nascent nature-based tourism industry (currently focused on Lake Issyk-kul) hinges on the continued or enhanced attractiveness of the country’s rich endowment of flora, fauna and mountain landscapes.

42. Sound environmental management thus is central to the country’s social and economic development. Nevertheless, the Government has historically been reluctant to borrow for stand-alone environmental interventions—limiting ADB to largely an advisory and analytical role. By paying close attention to relationships between the country’s economic and environmental health, ADB also can actively seek opportunities to incorporate sound environmental and natural resources management into all of its lending programs. This mainstreaming of environmental considerations into ADB’s operations should constitute an important element of assistance programming, and the recommendations of this Country Environmental Analysis should serve as a basic reference in this regard. ADB also should actively seek opportunities to take advantage of available grant-based co-financing opportunities to address global or regional environmental concerns as a part of investment projects, while continuing to incorporate environmental safeguards into all project design and implementation.

B. Combating Land Degradation through Sustainable Rural Development

43. ADB has been a strong partner to the Government in its efforts to reform the agriculture sector and encourage sustainable patterns of rural development. Two

projects have emphasized sector restructuring and an area-focused approach to rural development.²⁷ Good opportunities exist for ADB to build on the success of the Agriculture Area Development Project. This is addressing constraints to farm restructuring and commercialization at the oblast level, improving access to inputs and marketing, rehabilitating rural infrastructure, developing key institutions (especially for area-based or regional planning), and otherwise creating a policy environment conducive to productivity gains and a smoothly functioning market-based agriculture sector.

44. As ADB's rural development assistance continues, however, greater attention should be given to incorporating specific measures to address land degradation. The ADB assessment of agriculture sector opportunities conducted in parallel with this Country Environmental Analysis²⁸ notes that increasing land degradation—derived from waterlogging and salinization and other unsustainable agricultural practices, including the farming of fragile sloping lands and unsustainable stocking rates of grazing lands—constitutes a major threat to rural economic sustainability. Future ADB support to this sector should fully and explicitly include and incorporate measures to address land degradation. As these problems also are tied to regional or global environmental concerns—such as the loss of rangeland biodiversity or the wise management of transboundary waters—strong attention should be given to linking national and international land degradation concerns. This can provide opportunities to access grant-based financial resources through the Global Environment Facility and/or the Global Mechanism of the UN Convention on Drought and Desertification for both project design and implementation. With lending commitments likely to be greatly reduced and grant-financed technical assistance resources similarly limited, the opportunity to generate such co-financing is particularly attractive.

C. Environmental Capacity Building and Mainstreaming

45. ADB has been a strong partner to the Kyrgyz Republic in helping build the capacities of the Ministry of Environment and Emergency Situations (see Table 10). Although the level of available grant-financed technical assistance for environmental capacity building is expected to decline, ADB's emphasis can usefully shift to incorporating environmental considerations into the mainstream of its operations in the country—setting an example for the Kyrgyz Government to follow. ADB should encourage appreciation for the significance of sound environmental and natural resources management as underpinning the country's sustainable economic development through its high-level policy dialogue work with Ministry of Finance as well as interactions with other donors. It also can do this in its work with sectoral agencies involved in implementing ADB projects. If resources are available for further stand-alone technical assistance for environmental capacity building, it is recommended that these be directed to helping the Ministry of Environment and Emergency Situations better understand the economic dimensions of environmental problems facing the country so that it may better define priorities and speak the same language as the Ministry of Finance and other economic agencies in making the case for sound environmental management in the country's development programs. Capacity building on environmental management also should be incorporated into technical assistance activities directed to all sectors receiving ADB support—from transport to agriculture and even finance.

²⁷ Loan 1407-KGZ: Agriculture Sector Program, \$40 million, approved on 23 November 1995; and Loan 1726-KGZ: Agriculture Area Development Project, \$36 million, approved on 20 December 1999.

²⁸ ADB Country Sector and Thematic Strategies and Plans, section on Agriculture and Rural Development.

D. Regional Cooperation

46. As an upstream state, the Kyrgyz Republic has strong incentives to work productively with its downstream neighbors on water and energy management issues, and ADB can play a helpful role in facilitating constructive dialogue. ADB has previously supported several regional activities to promote improved Central Asian cooperation on key environmental and natural resources management subjects—both those of a truly transboundary nature (such as water management) and topics of common interest among Central Asian countries (such as mountain ecosystems management and land degradation).²⁹ There should be resources available for national-level work through further regional technical assistance—in such areas as water resources management, climate change, environmental information management or eco-tourism development—and these can usefully complement lending operations and policy dialogue while contributing to capacity building and institutional reform. Such efforts also would complement other ongoing ADB support for regional cooperation in the wider sub-region centered on removing constraints to Central Asian trade and commerce.³⁰

E. Assessing Performance in Meeting Environmental Goals

47. The ADB is now committed to using achievement of the Millennium Development Goals (MDGs) as a fundamental basis for assessing the results and efficacy of its assistance programs. With respect to environmental goals, the MDGs also are linked to targets and timetables set during the Johannesburg World Summit on Sustainable Development (WSSD).³¹ The Kyrgyz Republic was party to these commitments, and the MDG and WSSD targets represent a commonly agreed framework for assessing progress in achieving sustainable development at both the country and global levels. To the extent possible, all ADB activities in the Kyrgyz Republic—not just those described as “environmentally-related”—should help to accomplish these agreed targets and their associated goals.

48. With specific regard to environmental objectives, these are centered on Goal 7 of the MDGs which is to “Ensure Environmental Sustainability”. This goal has associated with it three targets, each to be achieved by 2005.³²

- Integrate principles of sustainable development into country policies and programs and reverse loss of environmental resources;
- Halve proportion of people without sustainable access to safe drinking water; and
- Have achieved a significant improvement in lives of at least 100 million slum dwellers.

²⁹ RETA 5878: Regional Cooperation for Sustainable Mountain Development in Central Asia, \$380,000, approved December 1999; RETA 5934: Regional Environmental Action Plan for Central Asia, \$500,000, approved September 2000; RETA 5941: Combating Desertification in Asia, \$450,000, approved September 2000; RETA 6001: Regional Consultations for the Third World Water Forum, \$1,000,000, approved October 2001.

³⁰ A new strategy for regional technical assistance to Central Asia is currently in preparation, and approval is pending for several environmentally-related regional technical assistance activities in which the Kyrgyz Republic would participate.

³¹ WSSD (<http://www.unep.org/outreach/wssd/postjoburg/wssdoutcomes.htm>).

³² Targets 9-11 in the overall MDGs framework.

49. ADB should combine the use these targets—particularly the first, relating to environmental mainstreaming—with country-level performance monitoring as the basis for assessing the degree to which the recommendations given herein achieve positive results. With strong attention to addressing land degradation as an integral part of agricultural sector restructuring as well as to the fuller integration of sustainable development principles into all aspects of the country's economic revitalization, significant progress can be achieved during the performance period despite the modest resources specifically devoted to accomplishing these goals.

REFERENCES

Asian Development Bank. 1995. Technical Assistance to the Kyrgyz Republic for Strengthening Environmental Institutions and Improving Procedures for Environmental Impact Assessment. Report No. TAR: KGZ 29018. ADB: Manila.

Asian Development Bank. 1997a. Central Asian Environments in Transition. Manila.

Asian Development Bank. 1997b. Technical Assistance to the Kyrgyz Republic for Environmental Monitoring and Management Capacity Building. Report No. TAR:KGZ 29155. Manila.

Asian Development Bank. 1998a. Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kyrgyz Republic for the Flood Emergency Rehabilitation Project. Report No. KGZ 32415. Manila.

Asian Development Bank. 1998b. Technical Assistance for Regional Economic Cooperation in Central Asia (Phase II). Report No. TAR: STU 32476. Manila.

Asian Development Bank. 1998c. Technical Assistance for Regional Economic Cooperation in Central Asia (Phase II–Year Two). Report No. TAR: OTH 34451. Manila.

Asian Development Bank. 1998d. Regional Economic Cooperation in Central Asia. Manila.

Asian Development Bank. 2000a. Technical Assistance for Promotion of Renewable Energy, Energy Efficiency, and Greenhouse Gas Abatement Projects. Report No. TAR: OTH 34206. Manila.

Asian Development Bank. 2000b. Technical Assistance for the Regional Environmental Action Plan in Central Asia. Report No. TAR: OTH 33547. Manila.

Asian Development Bank. 2000c. Technical Assistance to the Kyrgyz Republic for Environmental Monitoring and Management–Capacity Building II. Report No. TAR: KGZ 33193. Manila.

Asian Development Bank. 2000d. Technical Assistance for Preparing the Regional Power Transmission Modernization Project in the Central Asian Republics. Report No. TAR: STU 34511. Manila.

Asian Development Bank. 2001d. Country Strategy and Program Update (2002-2004), The Kyrgyz Republic. Manila.

Asian Development Bank. 2001e. Technical Assistance for Regional Economic Cooperation in Central Asia (Phase II – Year Three). Report No. TAR: OTH 35017. Manila.

Asian Development Bank. 2002a. Supporting Environmental Cooperation in Central Asia. Manila.

Asian Development Bank. 2002b. Statement of the Ministerial Conference on Central Asia Economic Cooperation, 26 March 2002. Manila.

AFC, 2001. Regional Cooperation for Sustainable Mountain Development in Central Asia: Final Report (TA 5878-REG), ADB: Bishkek.

Chemonics International, 2002. Kyrgyz Republic Environmental Management Capacity Building Project: Draft Final Report (TA 3499-KGZ), ADB: Bishkek.

Central Asia Regional Environment Center. 2001. *Decision Making System in the Field of Environmental Protection in Central Asia*. CA-REC: Almaty.

Kyrgyz CAMIN Working Group. 2001. *National Strategy and Action Plan for Sustainable Mountain Development in the Kyrgyz Republic*, CAMIN: Bishkek.

Ministry of Environment and Emergency Situations (MEES), 1995. *National Environmental Action Plan for Kyrgyzstan*, MEES: Bishkek.

MEES, 2001. *Environment of the Kyrgyz Republic: Statistical Compendium*, National Statistical Committee of MEES: Bishkek.

Saigal, S., 2003. *Combating Desertification in Central Asia: Kyrgyz Republic, Issues and Approaches to Combat Desertification*, ADB: Manila.

Scott Wilson Kirkpatrick, 2000. *Kyrgyz Republic: Environmental Monitoring and Management Capacity Building Technical Assistance: Final Report (TA 2934-KGZ)*, ADB: Bishkek.

Task Force for the Preparation of World Summit on Sustainable Development (WSSD) in Asia and the Pacific. 2001. *Central Asia Subregional Report for the World Summit on Sustainable Development*. ADB, ESCAP, UNDP, UNEP: Bangkok.

Torgoev, I.A., G. Yu, and G. Aleshyn. 2002. "Ecological Risks from Uranium Tailings in the Territory of Kyrgyzstan", in N. Birsen (ed.), *Environmental Protection Against Radioactive Pollution*, TÜDNAEM (Turkish Atomic Energy Authority): Ankara.

United Nations Development Program (UNDP), 2002. *Agenda of the Kyrgyz Republic for the 21st Century: Program of Actions Till 2010*, Reprinted Government Decree of 2 August 2002, No. 411-r.

United Nations Economic Commission for Europe (UNECE), 2000. *Environmental Performance Reviews: Kyrgyzstan*, United Nations: New York.

UNECE, 2003. *Invitation to Partnership on Implementation of the Central Asian Sustainable Development Initiative*, Fifth Ministerial Conference Environment for Europe, Kiev, 21-23 May 2003, UNECE: Geneva.

United Nations Environment Program (UNEP). 2001. *Regional Environmental Action Plan for Central Asia*. UNEP.RRA, UNDP and ADB: Bangkok.

United Nations Disaster Assessment and Coordination. 2003. *Report of the Mission to the Kyrgyz Republic, May 2003*. United Nations: New York.

World Bank, 2002. *Kyrgyz Republic Mountain Rangeland and Forest Sector Note*, ECSSD Working Paper No. 33.

World Bank, 2003. *Irrigation in Central Asia: Social, Economic and Environmental Considerations*, World Bank: Almaty.

APPENDIX 1

Country Environment Indicators

Item	1985	Latest Year	
A. Energy Efficiency of Emissions			
1. GDP/Unit of Energy Use (PPP\$/kgoe)		4.00	(1998)
2. Traditional Fuel Use (% of total energy use)	-	-	
3. Carbon Dioxide Emissions			
Tons	-	4,700,000	(1999)
Tons per capita	-	1.0	(1999)
B. Water Pollution: Water and Sanitation			
1. % Urban Population with Access to Safe Water	-	98.0	(2000)
2. % Rural Population with Access to Safe Water	-	66.0	(2000)
3. % Urban Population with Access to Sanitation	-	59.4	(2002)
C. Land Use and Deforestation			
1. Forest Area (thousand hectares)	1098.6	1056.8	(2002)
2. Average Annual Deforestation			
% change	-	-2.60	(2000)
3. Rural Population Density (people/km ² of arable land)	185	248	(2002)
4. Arable Land (% of total land)	6.9	6.5	(2002)
5. Permanent Cropland (% of total land)	6.6	5.5	(2002)
D. Biodiversity and Protected Area			
1. Nationally Protected Area			
Area (thousand hectares)	-	329.1	(1999)
% of total land	-	1.7	(1999)
2. Mammals (number of threatened species)	-	13.00	(2001)
3. Birds (number of threatened species)	-	31.00	(2001)
4. Higher Plants (number of threatened species)	-	64.00	(2001)
5. Reptiles (number of threatened species)	-	3.00	(2001)
6. Amphibians (number of threatened species)	-	3.00	(2000)
E. Urban Areas			
1. Urban Population			
Million	-	1.73	(2002)
% of total population	-	34.70	(2002)
2. Per Capita Water Use (liters/day)	-	153	(2002)
3. Wastewater treated (%)	-	98.6	(2002)
4. Solid Waste Generated Per Capita (kg/day)	-	195.00	(1997)

- = not available, GDP = Gross Domestic Product, CO₂ = carbone dioxide, kg = kilogram, kgoe = kilograms of oil equivalent, km² = square kilometer, PPP = purchasing power parity

Sources: National Statistics Committee; State Forestry Service; Institute for Strategic and Regional Studies; and World Resources Institute.