

ASIAN DEVELOPMENT BANK

COUNTRY ENVIRONMENTAL ANALYSIS FOR UZBEKISTAN

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CONTENTS

| | Page |
|---|------|
| Abbreviations | iii |
| List of Tables and Appendices | iv |
| | |
| I. INTRODUCTION | 1 |
| A. Environmental Management in Uzbekistan | |
| B. ADB Country Environmental Analysis | |
| C. Baseline of Analyses on the Environmental Situation and Priorities | |
| | |
| II. ENVIRONMENTAL CONDITIONS AND ISSUES | 8 |
| A. Role of Environmental and Natural Resources in the Economy | |
| B. Poverty-Environment Linkages | |
| C. Land Degradation and Water Mismanagement | |
| D. Urban and Industrial Environmental Concerns | |
| E. Regional Environmental and Natural Resources Management Context | |
| F. Responses to Global Environmental Issues | |
| | |
| III. INSTITUTIONAL AND POLICY FRAMEWORK | 19 |
| A. Institutions for Environmental and Natural Resources Management | |
| B. Environmental and Natural Resources Policy Approaches | |
| C. Environmental Information Management | |
| D. Linking Global and Local Concerns | |
| E. Environmental Financing | |
| F. Government Targets for Improved Environmental Management | |
| | |
| VI. EXPERIENCE AND FUTURE PROSPECTS OF ADB ASSISTANCE | 28 |
| A. Assessing ADB's Environmental Experience in Uzbekistan | |
| B. Implications for Future ADB Assistance | |
| | |
| References | |

ABBREVIATIONS

| | |
|---------------|--|
| ADB | Asian Development Bank |
| ASBP | Aral Sea Basin Program |
| CACs | Central Asian Countries |
| DMC | Developing Member Country of the Asian Development Bank |
| EBRD | European Bank for Reconstruction and Development |
| ESCAP | UN Economic and Social Commission for Asia and the Pacific |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GHG | Greenhouse Gases |
| Uzgidromet | Uzbekistan Hydrometeorological Service |
| Goskompriroda | State Committee for Nature Protection |
| GM UNCCD | Global Mechanism of the UNCCD |
| 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 Ecology and Emergency Situations |
| NAP-CCD | National Action Program for UNCCD Implementation |
| NBSAP | National Biodiversity Strategy and Action Plan |
| NEAP | National Environmental Action Plan |
| NGO | non-governmental organization |
| POP | persistent organic pollutant |
| REAP | Regional Environmental Action Plan |
| CA-REC | Regional Environment Center for Central Asia |
| RETA | Regional Technical Assistance |
| SANIGMI | Hydrometeorological Research Institute |
| SIC | Scientific Information Center |
| TA | Technical Assistance |
| TSP | total suspended particulates |
| UN | United Nations |
| UNCCD | UN Convention on Combating Drought and Desertification |
| UNDP | United Nations Development Program |
| UNECE | UN Economic Commission for Europe |
| UNEP | United Nations Environment Program |
| UNECE | United Nations Economic Commission for Europe |
| USAID | United States Agency for International Development |
| WB | The World Bank |

NOTE

In this report, "\$" refers to US dollars.

LIST OF TABLES AND APPENDICES

Tables:

Table 1. ADB Environmental Technical Assistance to Uzbekistan

Table 2. Population Exposed to High or Very High Pollution by Location

Table 3. Mean Annual Runoff in the Aral Sea Basin and Uzbekistan

Table 4. Water Consumption Patterns in Central Asia and Uzbekistan

Table 5. Cropland, Irrigated Land and Pasture in Uzbekistan and Central Asia

Table 6: Extent of Land Degradation by Type of Erosion in Uzbekistan

Table 7. Parks and Protected Areas of Uzbekistan

Table 8. Central Asian Participation in Multilateral Environmental Agreements

Table 9. ADB Natural Resources Related Loan Assistance to Uzbekistan

Appendices:

Appendix 1. List of Selected Current Environmental Projects in Uzbekistan

Appendix 2. Selected Environmental Indicators for Uzbekistan

Appendix 3. ADB Environmental Assistance Options for Uzbekistan

I. INTRODUCTION

A. Environmental Management in Uzbekistan

1. Upon independence, Uzbekistan was encumbered with a disheartening legacy of environmental neglect centering on the unsustainable management of its natural resource base coupled with high levels of pollution from municipal and industrial sources and return waters from irrigation fields. This was largely due to lack of market orientation and severe structural problems in the agricultural, energy and industrial sectors which continue to serve as the root causes for many of the country's most intractable environmental and natural resources management challenges.

2. While simultaneously coping with the creation of new national laws and institutions and a gradual transition toward a more open society and market-oriented economy, Uzbekistan has struggled to improve upon its inherited environmental management systems and to introduce more effective policy and institutional approaches. These efforts primarily have been carried out through a series of internationally funded initiatives that, though dealing also with national issues, have been mostly tied to addressing global environmental concerns.

3. The State Committee for Nature Protection of the Republic of Uzbekistan (Goskompriroda) has exerted a good deal of effort in recent years to improve coordination amongst the various ministries, departments and organizations involved with environmental management, and this has centered on activities to ensure implementation of the Program of Actions on Environmental Protection of the Republic of Uzbekistan for 1999–2005 (Environmental Program of Actions). Built upon a National Environmental Action Plan prepared in 1998, the main goal of the Environmental Program of Actions is to establish a clear environmental strategy, policy and associated programs to support the initial stage of the country's transition to sustainable development. During this period, the Program of Action indicates that the most important environmental problems should be identified, ways and means for their solution as well as relevant interventions conducted.

4. Aside from the work under the Environmental Program of Actions, heavy attention to global issues in internationally funded projects has somewhat distorted strategic thinking on environmental problems facing the country. Though the situation is improving, the biases introduced by external funds available primarily for globally-oriented projects was reflected in initial approaches to the environmental chapter in the new *Strategy for Improvement of Living Standards of the People of Uzbekistan* (Living Standards Strategy, or LSS). The initial Draft LSS was revised to better reflect the 1998 NEAP's elements and the Environmental Program of Actions and to show the relationships between environmental protection and solution of social welfare in the country.

5. The final version of the LSS includes a relatively robust treatment of relationships between poverty and environment, though this is still hampered by a need for a comprehensive assessment of the economic and social costs associated with environmental and natural resource degradation.¹ Though the data are largely lacking, it

¹ With support from the World Bank, an analysis of "poverty-environment linkages" has recently been carried out and is available in draft form.

seems clear that prospects for both national economic growth and efforts to increase living standards are closely linked to the achievement of sound environmental and natural resources management. The rural population is largely dependent upon agricultural crop production and animal husbandry for their livelihood and nutrition, and the health and productivity of the population is maintained by the availability of clean water supplies and good air quality. This is clearly reflected in the LSS. Environmental management, therefore, should be seen as central to the country's economic and social development.

B. ADB Country Environmental Analysis (CEA)

6. In recognition of this, the Asian Development Bank (ADB) has been an active partner in helping Uzbekistan establish effective systems for environmental and natural resources management as part of ADB's overall assistance program to the country.² ADB-sponsored environmental Technical Assistance (TA) activities have been carried out at both the country and regional levels, with the most recent focusing on capacity building. These are summarized in Table 1, though this selection does not include several agriculture sector TA activities that also would have strong natural resources relevance.

7. As the LSS was still in preparation during 2004, ADB chose to produce a country strategy and program update for 2005 (CSPU) to be followed by a new three-year (2006-2008) country strategy and program (CSP) reflecting the changing economic and social conditions as well as the new strategy for improving living standards in Uzbekistan. An assessment of environmental and natural resources management issues and needs is an important part of this exercise. With this in mind, a Country Environmental Analysis (CEA) was carried out to better understand the relationships between environmental and natural resources management and ADB's efforts to support the country's social and economic development.

8. The specific objectives of the CEA were to: (i) review the current state of environmental and natural resources management issues in the country, especially as they affect economic development and efforts to reduce poverty; (ii) assess the current priorities for environmental management of the government as well as policy and program responses being taken to address environmental problems (at the local, national and regional levels); and (iii) recommend a set of interventions by ADB to contribute to the improvement of environmental and natural resources management in support of the broader social and economic objectives of the CSP.

9. The CEA preparation exercise and document have served as the basis for dialogue on these subjects between ADB, the government and other key stakeholders. A national consultation workshop was held on 9 July 2004 in Tashkent to review preliminary perceptions and findings and to refine the CEA analysis and recommendations. A summary Discussion Paper version of this CEA document was extensively discussed both prior to and during the consultation workshop. The new CSPU is expected to be completed and agreed by September 2004 with the CSP a year later, and the CEA will provide important input to and comprise an integral part of the CSP's contents.

² Uzbekistan became a Developing Member Country of the Asian Development Bank in 1995.

Table 1. ADB Environmental Technical Assistance to Uzbekistan

| TA No. | Project Name | Type | Funding Source(s) | | | TOTAL (US \$) | Date of Approval |
|---|---|------------|-------------------|-----------|-------------------------|---------------|------------------|
| | | | ADB | JSF | Other | | |
| <i>Technical Assistance Activities at the National Level:</i> | | | | | | | |
| 2859 | Strengthening of Institutions Engaged in Environmental Protection | A&O | - | 675,000 | - | 675,000 | 23 August 2001 |
| 3706 | Institutional Support for Sustainable Agricultural Development | A&O | 600,000 | - | - | 600,000 | 23 August 2001 |
| 3729 | Capacity Building for Urban Water Supply | A&O | - | 600,000 | - | 600,000 | 27 Sept 2001 |
| 3828 | Aral Sea Drought Relief | PP | 150,000 | - | - | 150,000 | 3 January 2002 |
| 4173 | Off-Grid Renewable Energy Development | A&O | 350,000 | - | - | 350,000 | 15 Sept 2003 |
| 4302 | Support to Policy and Institutional Reforms in the Water Sector | A&O | 350,000 | - | - | 350,000 | 19 Dec 2004 |
| 4218 | Developing an Integrated Cadastre System for Land Resources Mgt and Property Rights | A&O | 500,000 | - | - | 500,000 | 19 Nov 2003 |
| 4328 | Agriculture Sector Review and Planning | A&O | 150,000 | - | - | 150,000 | 13 April 2004 |
| JFPR | Affordable Services and Water Conservation for the Urban Poor | Grant | - | - | 1,500,000 | 1,500,000 | 24 Aug 2004 |
| <i>Regional Technical Assistance Activities with Uzbekistan's Participation (figures are for entire RETAs):</i> | | | | | | | |
| 5934 | Regional Environmental Action Plan in Central Asia | Training | - | - | 500,000 (Finland) | 500,000 | 19 Sept 2000 |
| 5941 | Combating Desertification in Asia | Training | 250,000 | - | 200,000 (GM of CCD) | 450,000 | 29 Sept 2000 |
| 5972 | Promotion of Renewable Energy, Energy Efficiency, & Greenhouse Gas Abatement Projects (PREGA) | Study | 500,000 | - | 4,500,000 (Netherlands) | 5,000,000 | 4 January 2001 |
| 6001 | Regional Consultations for the Third World Water Forum | Conference | - | 1,000,000 | - | 1,000,000 | 9 October 2001 |

Notes: PP = Project Preparation; A&O = Advisory & Operational; JSF = Japan Special Fund; JFPR = Japan Fund for Poverty Reduction.

C. Baseline of Analyses on Uzbekistan's Environmental Situation and Priorities

10. The purpose of the CEA is not to carry out a comprehensive review of the environmental situation in the country nor to duplicate previous analyses, and there are several key references prepared in recent years which provide reasonably good reviews

of the current environmental trends and conditions in Uzbekistan as well as assessments of policy and program priorities. Most notably these include five documents: (i) the *National Environmental Action Plan* (1998) prepared by the Government in association with the World Bank; (ii) the *National Action Plan for Environmental Health* (1999), prepared by an inter-governmental taskforce; (iii) the *National Strategy and Action Plan for Conservation of Biodiversity* (1999); (iv) the *National Strategy and Action Plan for Sustainable Development* (2000), prepared by Goskompriroda; and (v) the *Uzbekistan Environmental Performance Review* (2001), prepared by the UN Economic Commission for Europe (UNECE) in cooperation with the Government. These documents were compiled by large teams of national and international experts with resources well beyond those available to the ADB CEA. Though slightly out of date, most of their findings remain very relevant today.

11. The analyses cited outline the major environmental conditions in the country and identify—with some prioritization—the most significant environmental problems to be addressed at the national level, with special reference to the Aral Sea ecological disaster zone. They also cover Uzbekistan's participation in global environmental agreements. A preliminary set of projects has been defined to remedy the key problems identified. As noted, the NEAP agenda for action was subsequently refined by the Government to produce the official Environmental Program of Actions, which has been adopted by the Government as its guiding set of priorities for environmental management and improvement (through Resolution Number 469 of the Cabinet of Ministers of the Republic of Uzbekistan, 20 October 1999). The fourteen major problems identified as of high priority in the NEAP, carried forward into the Environmental Program of Actions and providing the vast majority of environmental policy and program action in the country are:

- (i) ***Environment in regional relations***—taking the environmental status of the country into account in international relationships and integration processes;
- (ii) ***Environmental legislation***—establishment and further development of environmental legislation regulating environmental protection and management;
- (iii) ***Environmental planning and programming***—planning and prediction of environmental management needs, carrying out environmental programs and schemes of environmental protection and sustainable environmental management;
- (iv) ***Economically-driven environmental technology***—development and introduction of resource economics and environmentally sound technologies, improvement and upgrading of current processes of production;
- (v) ***Environmental monitoring***—introduction of an integrated environmental monitoring system for assessment of environmental quality and environmental zoning;
- (vi) ***Environmental regulation***—improvement of environmental control and regulating systems;
- (vii) ***Environmental education***—development and further improvement of environmental education and care systems;
- (viii) ***Science and environmental policy***—creation and introduction of scientifically grounded economic and legal mechanisms for environmental protection and natural resources management;

- (ix) **International cooperation for environmental management**—development of international cooperation programs on environmental protection problems, environmental management and natural disaster protection;
- (x) **Market-based incentives for industrial environmental management**—formation of a system of economic incentives instruments to apply environmental principles to industrial production;
- (xi) **Risk assessment**—taking environmental risk factors into consideration when making economic decisions;
- (xii) **Economic incentives for innovation**—establishment of environmental-economic mechanisms to encourage innovation; and
- (xiii) **Transboundary environmental management**—working out and approving mechanisms for international relationships to deal with transboundary impacts on the environment; and
- (xiv) **Engagement of civil society**—involvement of civil society and non-governmental organizations in assessing environmental status and developing approaches to address environmental problems as part of institutional reforms in this area.

12. The Environmental Program of Actions consists of three sections: (i) creation of favorable conditions to ensure the population's quality of life; (ii) rational use of natural resources with the purpose of ensuring sustainable development; and (iii) deepening international cooperation. To implement the Environmental Program of Actions, territorial and sectoral Action Plans on Environmental Protection were developed.

13. From the Program's inception to the end of 2003, considerable implementation progress was achieved. According to Goskompriroda records, of 165 scheduled interventions, 124 (or more than 75%) were carried out. Implementation of a further 37 actions were underway (14 of which were still within their original implementation schedule). Taken together, this represents more than 97% of scheduled actions, with only 3% not yet undertaken. Overall expenditures supporting program implementation during this four-year period have amounted more than UZS 1.85 billion plus \$9.6 million, of which UZS 346.1 million were derived from the state budget. More than Sum 1 billion came from organizations and enterprises, UZS 350.8 million and \$9.6 million were expended in the form of government and international grants, while a further UZS 156 million were taken from state environmental funds. While this is a strong indication of actions being taken to address identified environmental problems, no assessment has yet been conducted of the degree to which these actions achieved their intended results.

14. Implementation of the Environmental Program of Actions was also supported by the passage of new legislation. In particular, two laws contributed directly to the facilitating policy and financial structure: (i) Law on State Ecological Expertise; and (ii) Law on Wastes. In all, some 30 regulations have been passed by the Cabinet of Ministers of the Republic of Uzbekistan in the field of environmental protection and environmental management since the Environmental Program of Actions was established.

15. A number of other initiatives were undertaken in response to the agenda given in the Environmental Program of Actions. These include the following:

- Together with specialists from the Ministry of Agriculture and Water Resources Management and the State Committee on Geology, Goskompriroda has developed measures to ensure protection of groundwater formation areas, including regulations attaching specially protected area status to important groundwater formation zones, with 11 such designations at the national level and 8 at the oblast level.
- Based on results from an inventory of toxic wastes from enterprises in Tashkent City and Oblast, initial data was collected for developing a Terms of Reference for a toxic wastes disposal site for Tashkent City and Oblast.
- The State Committee on Geology, Uzgidromet and the Ministry of Agriculture and Water Resources Management completed an assessment of natural hazard risks from landslides, snow avalanches and mudflows using resources from their own budgets, though the scope was reduced and completion delayed because a special budgetary allocation of UZS 15 million called for in the Environmental Program of Actions was not allocated.
- Progress was made in introducing economic mechanisms in environmental management through adoption on 1 May 2003 of Regulation Number 199 of the Cabinet of Ministers “On Improvement of System of Payment for Environmental Pollution and Wastes Allocation over the Territory of the Republic of Uzbekistan”.
- Small reservoirs for drinking water supply were designed and their construction started in the Amu Darya delta and the dried out Aral Sea bottom. This was supported by an allocation through the World Bank/GEF-funded Aral Sea Basin Program implemented through the International Fund for Saving the Aral Sea (IFAS), with some \$6.15 million expended.
- The necessary documentation has been prepared for Uzbekistan’s possible accession to the United Nations Aarhus Convention “On Access to Information, General Public Participation in the Process of Decisions Making and Access to Justice on Problems Concerning Environment” (1998).
- A National Report on Climate Change was prepared, and it was adopted by the National Commission on Climate Change.
- The National Program to Combat Desertification in compliance with Uzbekistan’s commitments under the UN Convention on Combating Drought and Desertification was developed and agreed, and Uzbekistan is fully participating in the development of a multi-country Central Asian Countries Initiative for Land Management.
- Environmental and health standards relating to air pollution were established for surface vegetation relating to hydrogen fluoride, sulfur dioxide and nitrogen oxides.
- The “General Scheme of Development and Allocation of Specially Protected Areas” was developed and put into practice. Within this, the project “Establishment of the Nuratau-Kyzylkum Biosphere Reserve” is being implemented, with the boundaries of the biosphere reserve determined and zoning conducted. In Navoi Oblast, the Central-Kyzylkum State Reserve also is being established. At the regional level, the

Transboundary Project on Conservation of Biodiversity in the Western Tien-Shan on the territory of Kazakhstan, Kyrgyz Republic and Uzbekistan is being implemented.

16. There have been a number of other important analyses conducted that are useful inputs to the current study. Of particular import is the Environmental Performance Review (EPR), one in a series of national reports prepared by UNECE for the countries of this region to assess the framework for environmental policy and management, systems for the management of pollution and natural resources, and efforts to achieve economic and sectoral integration of environmental concerns. Following an outline standard to other EPRs, the document for Uzbekistan (prepared in 2001) reviews the geographic and demographic setting in the country, current policies and institutions for environmental management, and the major environmental problems facing the country. Recommendations are offered for improved policy, program and institutional responses to the problems identified within the context of the UNECE region.

17. In addition to such overviews, detailed information also is available in the plans and analyses prepared as part of Uzbekistan's participation in multilateral environmental agreements—most notably, the United Nations Conventions on Biological Diversity Conservation, Climate Change, and Combating Desertification and Drought. The National Biodiversity Strategy and Action Plan (NBSAP) contains the best available review of the nation's natural systems—including its flora and fauna—and the threats they face. Likewise, the National Action Program for Implementation of the UN Convention on Combating Drought and Desertification (NAP-CCD) presents a good summary of the technical processes associated with the country's severe land degradation problems. An associated and more recent assessment of these issues sponsored by ADB adds further policy content to this analysis.³ The initial “communication” prepared by Uzbekistan under the UN Framework Convention on Climate Change also includes a wealth of information on energy-environmental linkages in the country as well as projections of energy production and use and associated greenhouse gas emissions.

18. There also are a host of documents available on regional environmental and natural resources management issues of direct relevance to Uzbekistan's domestic situation. Among those associated with ADB's analysis, two recent ADB regional Technical Assistance (RETA) papers contain considerable relevant information on Uzbekistan's place in regional water and environmental efforts and institutions: (i) Capacity Building in Environmental Information Management Systems⁴; and (ii) Improved Management of Shared Water Resources in Central Asia.⁵ As noted, ADB also has sponsored regional and national reports on the problems Uzbekistan faces with respect to the crucial issue of land degradation under a RETA on Combating Desertification in Asia.⁶

19. This CEA document draws extensively from these available references in highlighting key environmental and natural resources management challenges facing Uzbekistan as well as current and planned policy and program responses. Further

³ Saigal, S. 2003. *Issues and Approaches Issues and Approaches to Combat Desertification: Uzbekistan*, ADB: Manila.

⁴ TA-REG 6155, approved December 2003.

⁵ TA-REG 6163, approved December 2003.

⁶ TA-REG 5941, approved September 2000. Report referenced is: Saigal, S., 2003. *Combating Desertification in Central Asia: An Overview*, ADB: Manila.

detailed information may be found in these and other documents referenced at the end of the paper.

II. ENVIRONMENTAL CONDITIONS AND ISSUES

A. Role of Environmental and Natural Resources in the Economy

20. Of the 15 newly independent states that emerged from the break-up of the Soviet Union in 1991, Uzbekistan is the third largest in terms of its population (24.5 million, and largest in Central Asia) and fourth largest in land area (447,000 square kilometers). The country is rich in mineral resources such as gold, natural gas, oil, coal, copper, silver and uranium. Its agriculture sector benefits from a combination of climatic and geographic factors—the largely arid country is traversed by the two great rivers of the Aral Sea Basin: the Amu Darya and the Syr Darya. Exports of primary commodities account for roughly three-quarters of foreign exchange earnings, with cotton alone accounting for 35-40 percent on average.

21. Uzbekistan is able to support its large population in considerable measure because many of its lands have naturally high productivity, especially given the developed irrigation and drainage systems. However, surface waters are unevenly distributed over the country's territory, with densely populated areas corresponding closely with the availability of surface water. Furthermore, the majority of Uzbekistan's river waters originate in Kyrgyzstan and Tajikistan. As the rivers flow through the country's plains, they are depleted through irrigated crop use, infiltration and evaporation—gradually drying up and very often slowing to a trickle in the lower reaches of the two river basins.

22. Uzbekistan's ability to maintain the economic potential of its land and water management systems is increasingly threatened by severe land degradation—due primarily to mismanagement of irrigated agriculture for cotton, wheat and rice production—coupled with intensifying national and regional competition over shared and scarce surface waters. Many of these problems are directly related to weak environmental and natural resources management. Employing slightly more than three million people—or 31 percent of those working in the formal economy—agriculture is the country's leading economic sector. But agricultural productivity is in decline due to a combination of land and water management problems. Current policies create incentives for inefficient use of scarce natural resources—such as the over-application of irrigation water and the unsustainable use of fragile lands (mostly desert ecosystems) for agricultural purposes (both for cultivation and pasture).

23. To achieve macroeconomic stability and address key structural rigidities inherited from the Soviet planned economy, the Government announced a comprehensive reform program in 1994 that included agricultural sector adjustments. Unfortunately, the momentum for these reforms has weakened in recent years creating an unfavorable atmosphere for private sector investment and sustainable economic growth. Pricing and subsidy policies have cushioned consumers and even rural populations from the sudden curtailment of safety net programs and provision of basic social services even as the quality and reliability of such services has declined, but this is considered to be economically unsustainable. The Government's gradualist and cautious approach to economic policy reform—particularly in the areas of privatization, ownership rights, foreign exchange and trade—has affected the pace of international assistance flows as

well as direct foreign investment. The continued need for improved governance and transparency also is a significant concern.

B. Poverty-Environment Linkages

24. A significant portion of the population is still facing poverty. As cited in the LSS, the World Bank's poverty analysis for the country⁷ indicates that the income levels of 27.5 percent of the population are below the poverty line, while the private Center for Economic Research places the incidence of poverty at 35 percent. These figures attest to the degree of economic and social development challenges facing the country. Worsening public health has resulted from a lowering of living standards and reduction in incomes. Analysis of family budgets has shown that the majority of expenditures—more 70%—go towards the purchase of food. For a significant portion of the population, the level of food consumption does not meet even minimum nutritional norms. Consumption of meat products, butter, eggs and others also have fallen over time. This is resulting in serious and rising health problems, and medical studies have shown increased incidence of anemia, especially for pregnant women, and other diseases.

Table 2. Population Exposed to High or Very High Pollution by Location ('000s)*

| Region/Republic | High | | Very High | | Total Both Categories | |
|-----------------------|-------------|-------------|-------------|----------|-----------------------|-------------|
| | Water | Air | Water | Air | Water | Air |
| Bukhara | 409 | - | 883 | - | 1292 | - |
| Karakalpakstan | 82 | 537 | 1191 | - | 1273 | 537 |
| Fergana | 831 | 830 | 298 | - | 1129 | 830 |
| Samarkand | 167 | 77 | 589 | - | 756 | 77 |
| Khorezm | 331 | 136 | 113 | - | 444 | 136 |
| Tashkent | 257 | 295 | - | - | 257 | 295 |
| Navoi | 112 | 200 | 97 | - | 209 | 200 |
| Syrdarya | 69 | - | 105 | - | 174 | - |
| Surkandarya | 62 | - | 104 | - | 166 | - |
| Namangan | - | - | 132 | - | 132 | - |
| Kashkardarya | 106 | 235 | - | - | 106 | 235 |
| Andijan | 80 | - | - | - | 80 | - |
| Djizak | 50 | - | - | - | 50 | - |
| All Uzbekistan | 2556 | 2310 | 3512 | - | 6068 | 2310 |

**Note: Water pollution exposure is defined as being above state standards by 51-75% ("high") or 76-100% ("very high"), while air pollution exposure corresponds to an index of five pollutants with scores of between 10-15 considered to be "high" and greater than this (16 or above) to be "very high". Source: NEAP, 1998.*

25. Though available national data on exposure to water and air pollution can only be taken as indicative of the extent and distribution of problems facing the country, the information in Table 2 shows that more than six million people—or roughly one-quarter of the population—face significant water pollution exposures (with locations ranked accordingly). It is notable also that this problem extends to large segments of the population across many parts of the country. Though air pollution exposure is somewhat less troubling in terms of the total numbers affected, it is still a significant problem (and

⁷ Based on household survey data.

the data do not take into account exposures to indoor air pollution in those rural areas using biofuels rather than gas for heating and cooking). Additional air pollution data on total suspended particulates (TSP)—firmly linked to respiratory ailments—shows that at least 4.4 million people live in areas with daily TSP concentrations well in excess of norms.⁸

26. Based only on a rough comparison of those locations exhibiting high exposure to environmental pollutants with those facing economic difficulties, some preliminary poverty-environment linkages begin to emerge. The LSS indicates that the following regions of the country have the highest unemployment: Karakalpakstan, Khorezm, Surkhandarya, Kashkadarya, Samarkand, Bukhara and Namangan. Of these, only Namangan and Kashkadarya have relatively low exposures to water pollution according to the data in Table 2 (and in Kashkadarya, 235,000 people face high air pollution levels—though these are mainly of natural origin, desiccation of the Aral Sea is a strongly contributing factor).

27. This is an indication that in Uzbekistan—as in many other economies in transition—the poor are disproportionately exposed to environmental health risks and vulnerabilities. In addition to water and air pollution, it would be further expected that this would extend to risks from environmental hazards such as natural disasters (e.g., droughts, mudflows, landslides, floods and forest fires) as well as slower processes such as land and ecosystem degradation. Both the urban and rural poor also typically have lower than average access to public (communal) environmental services. Improvements in many non-income aspects of living standards—such as reductions in child mortality—will be directly tied to expanding access to clean drinking water, sanitation, and managed use of biofuels (affecting indoor air pollution).

28. The most extreme combination of environmental problems in the country is encountered in the semi-autonomous Republic of Karakalpakstan, where the Amu Darya River used to meet the Aral Sea. The decline of the Aral Sea as a result of the systematic diversion of its tributaries for desert irrigation—75% of which is in Uzbekistan and Turkmenistan—generated international attention not only because of the ecological impacts but also because of the associated severe human problems in the “Aral Sea Disaster Zone”. The drastically reduced river flows have combined with periodic drought and ongoing desertification processes in Karakalpakstan to create chronic shortages of clean water (even when surface water does reach the region, it is highly saline). The challenges are exacerbated by additional unanticipated and adverse consequences of the Sea’s desiccation—including toxic dust storms derived from the pesticide-contaminated former sea bed—as well as by an economic collapse in the face of retreating shorelines and unstable groundwater tables. The result is a dreadful state of the Republic’s health and economic conditions directly tied to environmental causes.⁹

⁸ As cited in the UNECE EPR, cities with TSP daily concentrations in the range of 300-400 µg/m³ include: Navoi, Nukus, Bukhara, Tashkent, Samarkand, Namangan, Ferghana, Kokand, Chirchik, Karshi, Angren and Alamyk.

⁹ Many of its citizens have become “environmental refugees”, migrating out of the area in search of better living conditions.

C. Land Degradation and Water Mismanagement

29. Water and land resources are of great importance to Uzbekistan's economy, agriculture making the greatest single sectoral contribution to Gross Domestic Product. The bulk of this production is derived from irrigated lands, with their extent limited by surface water availability. Roughly 7% of the total runoff in the Aral Sea Basin falls on Uzbekistan's territory, and mean annual runoff in each of the two main river basins is shown in Table 3.

30. Fortunately for Uzbekistan, the country does not rely solely on precipitation for its water resources. Depending on meteorological conditions, Uzbekistan receives on average between 47 and 52 km³ of surface water through these two rivers each year. Irrigated agriculture is by far the largest water user—accounting for an estimated 90.4% of total water consumption by volume. The remainder is used for drinking water supply (4.1%), non-agricultural industry water supply (2.2%) and agricultural processing (1.6%). For comparison, current water resources consumption patterns in Uzbekistan and all Central Asian countries are presented in Table 4.

31. The lack of natural drainage in some irrigated areas has resulted in the necessity to create drainage systems for irrigation discharge waters and effluents from industrial, communal, agricultural and other enterprises. The mean annual volume of return waters varies between 30–35 km³. From this, approximately 13% is reused on-site, about 50% is discharged into rivers and reused downstream, and 37% flows to closed depressions and/or beyond the borders of Uzbekistan. Return flows from these sources and especially waters from collector-drains—with high concentrations of agricultural chemicals and increased salinity—are the main causes of water pollution in the country. Nevertheless, 67% of drainage water is reused for irrigation purposes.

Table 3. Mean Annual Runoff in the Aral Sea Basin and Uzbekistan

| | Amu Darya River Basin (km ³) | Syr Darya River Basin (km ³) | Total Aral Sea Basin | |
|------------------------|--|--|----------------------|-----|
| | | | Km ³ | % |
| Uzbekistan's Territory | 4.7 | 4.14 | 8.84 | 7.6 |
| Aral Sea Basin Total | 78.46 | 37.14 | 115.6 | 100 |

Table 4. Water Consumption Patterns in Central Asia and Uzbekistan (million m³)

| Location | Total Water Consumed | Break-down of Water Consumed | |
|------------------|----------------------|------------------------------|----------------|
| | | Irrigation | Non-Irrigation |
| Uzbekistan | 58,581 | 53,416 | 4,500 |
| All Central Asia | 110,456 | 101,698 | 5,158 |

Note: There are discrepancies in the data.

32. Water allocation within the Aral Sea Basin is governed by roughly the same rules and institutions that existed during the Soviet era, and these have ensured a degree of stability in control over regional water resources since that time. Current transboundary water agreements are framework regulations, establishing the principles of collaboration

without specific regulation mechanisms, indices or water protection measures. The Interstate Commission for Water Coordination (ICWC) was created in 1992—essentially as a committee of the five Central Asian water ministers—to manage the allocation process. As a result of weak regional institutions and regulations for regional water management, the water relationship between the Central Asian countries—as compared to desirable norms of rational water resources protection and management—cannot be considered very effective. Differences among the countries of the region in their national interests and their understanding and recognition of applicable international water law hamper the creation of binding long-term agreements governing transboundary water and environmental management.

33. Considerable regional and even global attention was given to management of the Aral Sea Basin's waters beginning in the late 1980s, when the extent of the ecological and humanitarian crisis in the immediate Aral Sea region became widely known. The five Central Asian states came together with the international community to form the first Aral Sea Basin Program (ASBP-1) administered by IFAS. Even after nearly \$300 million in expenditures, the Sea continues to shrink and the people surrounding the former sea area to suffer. Other than for the purposes of facilitating international financial flows to the region, it has not been possible to reach binding interstate agreements to adequately deal with the water and environmental management problems of the basin.

34. In recent years, the main regional interest and area of contention over management of transboundary watercourses has shifted from the downstream Aral Sea crisis to the balancing of irrigation and hydropower demands between downstream and upstream states. Now that the Kyrgyz Republic and Tajikistan are independent states, they are eager to take advantage of their existing and potential hydropower production. This represents one of the few natural economic endowments of these countries. With their extensive systems of irrigated agriculture—the expansion of which caused the Aral Sea crisis—Uzbekistan, Turkmenistan and Kazakhstan continue to give top priority to wintertime water storage to ensure adequate water flows during the summer growing season. The Kyrgyz Republic and Tajikistan, on the other hand, are interested in generating hydropower in the winter to help meet heating and other electricity demands. This has reached a critical point in the Syr Darya Basin, with serious downstream damage from flooding having been caused in Uzbekistan and Kazakhstan during the winter of 2003/2004 from the release of waters from Toktogul Reservoir for hydropower production by the Kyrgyz Republic. The situation has driven some in Uzbekistan to advocate a policy of "water security or self-sufficiency" based on the construction of additional irrigation storage capacity on Uzbekistan's territory, and work already has begun to implement this policy. The region is thus facing a serious turning point in its relations over management of the Syr Darya's transboundary water resources, and the need for calm regional dialogue on water and energy management has never been greater. In response, the Central Asian Cooperation Organization and others are seeking to facilitate such discussions, including the possible creation of a regional "Water and Energy Consortium" to oversee such matters under the authority of the riparian states.

35. The LSS document also notes that a disproportionate share of the poor reside in rural areas and acknowledges that land degradation and salinization are serious problems affecting agricultural productivity and the rural poor. Environmental problems such as land degradation are mainly brought about by economic actions, and the lack of

infrastructure and funds to address the side-effects of development activities limits the ability to sustain environmental balance. Natural factors, such as the country's climate, relief, soils and vegetation also contribute to degradation processes. Some basic statistics on human-induced and natural causes and consequences of land degradation illustrate the extent of these problems facing in the country:

- Saline lands amount to 46.8% of total irrigated area, with slightly saline accounting for 25.2%, medium-level saline lands 15.0%, and strongly saline lands 6.6%;
- Total pastures comprise 22.4 million hectares, of which 19.4 million hectares are watered and 16.4 million hectares (73% of the total) are exposed to degradation;
- 15.4 million hectares of the country's territory (34%) are barren (slopes, slide-rocks, sands, dumps and others);
- 8% of the territory is exposed to water erosion (on irrigated lands), with 2% of the territory (25% of the lands exposed to water erosion) experiencing this to either a mid-level or strong degree;
- 15% of the irrigated area is exposed to deflation;
- Cotton and alfalfa areas are declining relative to those lands planted to cereal crops;
- From 20 to 40% of irrigated lands are flooded at some stage of their production; and
- From the total average number of mudflows in Central Asia, 75% occur in Uzbekistan.

36. Roughly half of the country's irrigated land is said to suffer from secondary salinization, largely brought about by the over-use of saline irrigation water. Overstretched land and water systems constrain improvements in living standards through decreases in economic productivity and impacts on other non-income dimensions of poverty. Declining agricultural yields are a direct result of widely unsustainable practices of irrigation, dryland agriculture, pastures and forests. The poor also are least able to compensate for degradation through the application of fertilizers or other inputs. The rural-to-rural differences in the regional incidence of poverty, therefore, are surely due, at least in part, to the fundamental relationships between population and economic pressures, the inherent productive potential of natural resource systems, and currently unsustainable resource use patterns.

Table 5. Cropland, Irrigated Land and Pasture in Uzbekistan and Central Asia

| Country | Cultivated Cropland | Irrigated Cropland | | Pasture | |
|----------------------------|---------------------|--------------------|------------------------------|----------------|------------------------------|
| | Area ('000 ha) | Area ('000 ha) | Percent of National Cropland | Area ('000 ha) | Percent of Pasture in Region |
| Uzbekistan | 4,850 | 4,309 | 89 | 2,280 | 6 |
| Other Central Asia: | | | | | |
| Kazakhstan | 30,135 | 2,313 | 7 | 18,233 | 50 |
| Kyrgyz Republic | 1,435 | 1,077 | 75 | 9,216 | 25 |
| Tajikistan | 860 | 719 | 84 | 3,600 | 10 |
| Turkmenistan | 1,744 | 1,744 | 100 | 3,070 | 8 |
| All Central Asia | 38,975 | 10,212 | 26 | 36,399 | 100 |

Source: World Bank, 2003 (data is from 1999).

37. More than 85 percent of Uzbekistan’s territory comprises desert or semi-desert landforms. This natural relief is traversed by the two large rivers, forming the basis for the country’s intensive irrigated agriculture, which is the mainstay of the country’s economy. As indicated in Table 5, Uzbekistan has the largest irrigated area in the region, though the arid landscape means that its lands devoted to pastures are the region’s smallest in absolute terms. Irrigation is largely developed on deltaic plains. Plain relief also creates conditions for enclosed groundwater and its high mineralization due to restricted groundwater outflow. Therefore, more than one-half of the territory situated on alluvial plains is said to suffer from salinization and waterlogging.

38. Land degradation, therefore, results from a combination of geological, geomorphological and man-made factors. Soil degradation is widespread, with the worst impacts felt in the regions of Bukhara, Navoi, Kashkadarya and even in Fergana (where highly intensive land and water use have produced salinization and waterlogging). Water-borne erosion of soils strongly affects the agricultural lands of Surkhandarya, Tashkent, Namangan and Andijan. Sheep pastures are mainly based upon use of summer mountain pastures, and overgrazing has contributed to their degradation. During the past 15-20 years, there has been an extensive decline in pasture productivity due to the unsustainable cattle raising practices, lack of maintenance of pastures and other human activities such as the cutting of trees and shrubs for firewood.

39. While erosion from water, wind and pasture degradation comprise the major forms of land degradation, secondary salinization also is an important and complicating factor. As noted, salinization problems are widespread, with up to 46 percent of irrigated lands exposed to varying degrees—affecting production costs and yields. The naturally occurring conditions contributing to salinization are greatly exacerbated by intensive and often inappropriate irrigation practices. Likewise, degradation of pasture vegetation through secondary salinization is caused by the discharge of drainage water into desert depressions or by seepage into areas adjacent to irrigation or drainage canals. Table 6 indicates the principal sources and extent of land degradation in the country (note that there are discrepancies between these land use figures and those of Table 5).

Table 6: Extent of Land Degradation by Type of Erosion in Uzbekistan

| Type of Land | Area ('000s ha) | No erosion exposure | Water erosion | Wind erosion | Water and wind erosion |
|------------------|-----------------|---------------------|---------------|--------------|------------------------|
| All agricultural | 26,734 | 1,553 | 2,700 | 20,475 | 2,005 |
| Irrigated | 3,733 | 451 | 339 | 2202 | 741 |
| - arable | 3,308 | 169 | 341 | 2057 | 741 |
| - other | 425 | 212 | - | 213 | - |
| Rangelands | 23,001 | 851 | 2,346 | 18,125 | 1,679 |
| Non-agricultural | 17,676 | - | - | - | - |
| Total | 44,410 | | | | |

Source: Uzbekistan Country Situation Paper for the UNCCD National Action Program. Note that there are discrepancies between totals and sub-totals.

40. Current forest resources are so limited that any further decline or degradation of their area would threaten the total loss of the services that these provide, including watershed protection and biological diversity conservation. Deforestation, especially in riparian zones and mountainous areas, has reduced the local productive potential of natural resources—often for very poor and isolated communities—and has resulted in

negative off-site environmental impacts which also are often disproportionately borne by the poor. As forest ecosystems are increasingly rare in the country, their further loss or degradation represents a significant threat to the biodiversity they house. Most of the remaining forest is located either on very steep slopes or in the country's struggling system of protected areas.

41. Apart from its global dimensions and implications for the country's ability to attract nature-based tourism, biodiversity loss represents a potentially important indicator of the generally deteriorating conditions of land and water systems and overall environmental quality in the country. Unfortunately, the statistics on biodiversity loss are currently rather weak—despite Uzbekistan's boasting one of the strongest scientific communities among the former Soviet republics. Protected areas currently represent 4.6% of the nation's territory, with the government having set a target in the Program of Actions of placing 10% under protected status. The list of protected areas in the country is given in Table 7. Efforts are underway to add the Nuratau-Kyzylkum Biosphere Reserve and the Central-Kyzylkum State Reserve to this system, which would bring the national coverage to approximately 6% of the country's territory. Biodiversity conservation should be a beneficial by-product of broader improvements in environmental management, though its connection to poverty alleviation may not always be obvious (except when ecological services provided by natural systems accrue directly to poor communities or where eco-tourism or globally-justified conservation projects contribute to improved rural incomes and quality of life).

Table 7. Parks and Protected Areas of Uzbekistan

| Reserves | National Parks | Strict Nature Reserves | Center for Propagation of Rare Animal Species | Monuments of Nature |
|---|------------------------------------|--|--|--|
| 1.Baday-Tugayskiy 2.Gissarskiy* 3.Zaaminskiy 4.Zaravshanskiy 5.Kitabskiy 6.Kyzylkumskiy 7.Nuratinskiy 8.Surkhanskiy 9.Chatkalskiy | 1.Zaaminskiy 2.Ugam-Chatkalskiy | 1. Aktau 2. Dengizkul 3. Karakir 4. Karnabchul 5. Koshrabadskiy 6. Mubarekskiy 7. Saygachiy 8. Sechankul 9. Sudachie | 1. Jeyran | 1. Vardanzi 2. Minbulakskiy Rayon 3. Central Fergana 4. Chustskiy Rayon 5. Yaz-Yavan |

*Note: * indicates run by Goskompriroda, while management of the rest is subordinated to local authorities (khokimiat). Source: Goskompriroda.*

42. The economic costs of land degradation in the country have not been adequately assessed, but they are clearly high. Productivity losses translate directly into lower GDP growth and export earnings. There also are costs that accrue at the regional and global levels in terms of negative impacts on carbon sequestration and climate change, loss of unique ecosystems and species, and pollution of transnational water resources. While a reliable estimate of the economic costs of land degradation in Uzbekistan is not available, the deterioration of the agricultural production base due to lack of upkeep of irrigation and drainage systems, huge water losses, severe soil salinization and declining

crop yields has been estimated by the World Bank to cost the country roughly \$1 billion annually.¹⁰

D. Urban and Industrial Environmental Concerns

43. Beyond the constraints on agricultural and rural development imposed by the water management concerns and land degradation, the country also faces several other important environmental problems affecting the health and productivity of its population. These center on industrial and municipal pollution as well as energy-related environmental concerns.

44. Although both water and air pollution from industrial sources have declined since independence (with the fall in heavy industry's output), these forms of pollution exposures are continuing problems. Areas immediately downstream of still operating industries often suffer from poor water quality, with agricultural wastes and mineralized drainage additional contributing factors (and representing the largest single water pollution sources). Likewise, the consequences of industrial air pollution are exacerbated by weakly controlled and gradually expanding vehicular pollution (it is reported that as much as 80 percent of air pollution in larger cities is now derived from mobile sources). Uzbekistan's air pollution problems would be far worse were it not abundantly endowed with natural gas, which serves as the principal fuel source—except for transport—throughout the country.¹¹ However, the energy sector itself is the biggest air polluter, with major sources including high sulfur emissions from oil-fired power plants and the leakage and flaring of natural gas.

45. Though Uzbekistan had perhaps the most developed urban water supply and wastewater collection and treatment systems in Central Asia, maintenance and operational management of this system has suffered in recent years with a corresponding decline in the quality of service. At present, wastewater treatment is provided in 92% of cities and in 30% of sub-district (rayon) towns. Such services are virtually unavailable at the village level (covering only 0.02% of settlements). Weaknesses in the organization of wastewater collection and treatment have led to worsening sanitary and epidemiological conditions. The unregulated discharge of household wastes into septic tanks (for private houses) and growing levels of untreated or poorly treated municipal waste discharges pose increasing threats to public health. This is especially true in rural areas, where less than 40% of the population is served by centralized sewers tied to wastewater treatment facilities.

46. In response to concerns over the quality and quantity of surface water and groundwater, two important policy planning documents covering the period through 2010 were prepared: (i) the Specified Scheme of Water Supply Development in the Republic of Uzbekistan, which established new standards and technologies for application in the country; and (ii) the Scheme of Integrated Use and Protection of Fresh Underground Waters in Uzbekistan.

47. The first scheme on improved provision of drinking water provides for both improved supply and demand, incorporating provisions for a rather significant reduction

¹⁰ World Bank, 1999. *Uzbekistan Drainage Project: Project Concept Document*, World Bank: Tashkent.

¹¹ Rising domestic and export demand for Uzbekistan's natural gas against a fixed or declining supply is expected to alter the status quo over the next decade, requiring both economic and environmental adjustments.

in the norms for urban per capita water consumption (except in Tashkent) from 600 to 180 liters per day and a reduction for rural localities from 160 to 103.5 liters per day. It anticipates a 73% increase in water supply capacity (from 48,600 km of pipes to 84,200 km), with a goal of 100% coverage in urban areas and 89% in rural areas. From 1999 to 2002, a project to expand the installation of domestically produced water meters (3.5 million per year) served as a fundamental underpinning of the government's approach to improved drinking water demand management through the creation of incentives for water savings (including also leakage and water losses elimination, expansion of individual accounts for water use, establishment of norms for water consumption, improvement of water payment systems and others).

48. In the Republic of Karakalpakstan more than 300 small water desalinization plants supporting local systems of water supply have been constructed in recent years for remote rural locations. In pursuance of the Decree of the Cabinet of Ministers No. 278, the agency Uzbekgeology has since 1999 focused its explorations for groundwater-derived drinking water sources on the needs of water-short remote rural settlements mainly in desert, mountain and foothill areas. As a result of these and previous explorations, a majority of settlements are now provided with water supply according to rural norms. New water supply sources have been provided to 7 villages in Karaulbazar rayon of Bukhara Oblast, and a further 108 villages have been supplied through improved local water storage facilities. The project on Clean Water, Sanitation and Health serves as a centerpoint for current efforts, aimed at improving drinking water supply and reducing leakages, strengthening water supply organizations, and the restoration and development of neglected groundwater supply sources.

49. With respect to solid waste management, despite the increase in overall population and the number of small and medium sized enterprises, volumes of industrial solid wastes continue to decline. Nevertheless, these are still an even more important source than municipal solid wastes, with industrial sources amounting to some 27 million tons annually compared to only 1.9 million tons of municipal garbage. Increasing volumes of domestic solid wastes and disposal complications derived from their composition are creating rising threats to public health. The traditional approach to solid waste management has been to establish sanitary landfills and/or to incinerate garbage. However, despite this being widely applied in the country, current methods do not meet the requirements of public health. Smaller towns seem particularly hard pressed to keep up with operation and maintenance costs for all forms of waste management. A national waste management study is currently underway with the goal of carrying out a definitive assessment of the current situation, and it also is reviewing problems of and solutions to hazardous wastes collection, treatment and disposal.

50. While there are global environmental dimensions and consequences of energy production and use (discussed below), domestic attention to these matters is strongly warranted based on environmental health consequences and linkages to living standards improvement. As noted, energy-related industries are reported to be the largest point-sources of air pollution in the country. Improvements in the efficiency of the energy sector would have positive environmental consequences, though some of the largest air pollution reductions will require the installation of stack scrubbers and other costly infrastructure to remove sulfur and other pollutants from emissions. The wider use of renewable and alternative energy sources would reduce the environmental consequences of fossil fuel burning, and even the proposed expansion of community

access to natural gas supplies (properly analyzed for full benefits and costs) might have environmental benefits.

E. Regional Environmental and Natural Resources Context

51. Uzbekistan has been a sometimes reluctant partner to its regional neighbors in addressing shared environmental and natural resources management challenges. A core member of the International Fund for Saving the Aral Sea (IFAS), Uzbekistan has not lent strong support to this organization's efforts since the EC-IFAS secretariat moved from Tashkent in the late 1990s. It became a signatory to the 1998 Framework Agreement on the upper Syr Darya River's management, but it has inconsistently participated in the associated energy-for-water swaps with the Kyrgyz Republic. In 2003, it hosted international discussions on land degradation in the region under the auspices of the Strategic Partnership for UNCCD Implementation in Central Asia, and there is hope that this will lay the groundwork for a tougher domestic policy stance on addressing severe land and water management problems. It has taken part in discussions under the framework of the Regional Environmental Action Plan but has made little commitment to implement projects emanating from this exercise. The recently approved ADB RETA on Capacity Building in Environmental Information Management Systems received active support from all CARs except Uzbekistan—at least in part due to the country's continuing resistance to regional information sharing.¹² It may be taken as a positive sign that the country agreed to host the recent ADB-led 2nd Ministerial Conference on Central Asian Regional Economic Cooperation, though Uzbekistan withheld its support for including the "water and energy nexus" issue on the agenda. Uzbekistan is participating in the CACO-led regional dialogue on the possible creation of a Central Asian Water and Energy Consortium, but these discussions continue even as the country has begun to pursue a unilateral "water self-sufficiency" policy through construction of new irrigation storage facilities on its own territory. More than any of its neighbors (save Turkmenistan), it typically has viewed regional cooperation from a position of national imperatives rather than reaching self-interest through compromise.

F. Response to Global Environmental Issues

52. Uzbekistan's highly scientific and technical (as opposed to policy-based) approach to problem analysis can be seen in the country's responses to its obligations under the key multilateral environmental agreements to which it is party (Table 8 lists these with reference also to the participation of other Central Asian countries). Uzbekistan was quick to produce national plans associated with the key global conventions. A National Strategy and Action Plan for Biodiversity Conservation was produced in 1998. A National Action Plan for implementation of the UN Convention on Combating Drought and Desertification was finalized in 1999, and an Initial National Communication under the Framework Convention on Climate Change was completed in 2001. All three of these documents place a strong emphasis on documenting the environmental problems in technical terms and scientifically identifying the underlying ecological or bio-physical processes. Conversely, they are weak in their analysis of poverty-environment linkages and the root causes of environmental problems lying in past and current government policies. These documents—and the planning exercises

¹² As noted in Table 5, Uzbekistan is the only Central Asian country not a signatory to the Aarhus Convention on environmental information sharing.

that led to them—are technically very good but give much less attention to strategic thinking concerning appropriate policy and institutional responses. A National Capacity Self-Assessment Project is now underway to try to better integrate plans under the three main global conventions—both in addressing the global problems and in better linking such efforts to national development priorities.

53. The strategic, policy and institutional weaknesses identified pervade the environmental governance atmosphere and need to be directly addressed if Uzbekistan is to incorporate environmental considerations into its planning for economic development improvement of living standards. It can draw upon and take full advantage of its scientific skills and relatively strong information base more effectively by including policy and institutional reforms and approaches in its efforts to address the wide range of environmental and natural resources management problems it faces.¹³

III. INSTITUTIONAL AND POLICY FRAMEWORK

A. Institutions for Environmental and Natural Resources Management¹⁴

54. The State Committee for Nature Protection (Goskompriroda) is a non-departmental coordinating body that serves as the lead national government agency supervising implementation of environmental laws and regulations and administering environmental protection activities in the country. Though an executive body, Goskompriroda is supervised by the legislature (*Oliy Medjlis*), which is meant to give it greater independence and to elevate the significance of environmental protection in national policy. The body is represented through branch offices in each region (*oblast*) as well as in the Republic of Karakalpakstan and the Tashkent City Government. It is responsible for environmental and natural systems protection, and roughly two-thirds of its field staff are inspectors. Goskompriroda oversees the national system of protected areas, can initiate liability/damage actions, and administers an Environmental Fund that receives pollution fees and penalties and supports pollution mitigation and other environmental improvement measures. There also are several scientific institutes attached to the State Committee that conduct analysis on environmental and natural resources problems and evaluate measures to address them in support of Goskompriroda's work.

55. In August 2004 the country is expected to adopt a new bicameral legislative system, and Goskompriroda's specific relations with the new national assemblies as well as executive branch agencies are still under discussion. In addition, and as part of the ongoing reform of state bodies, the roles and responsibilities of Goskompriroda—relative to other agencies—are presently under review. According to current legislation, Goskompriroda is responsible for coordinating the environmental and natural resources actions of five national government bodies: Ministry of Agriculture and Water; Ministry of Health; Ministry of Internal Affairs; State Committee on Land Resources; and the Agency for Urban Technical Supervision. In practice, Goskompriroda is relatively weak compared to the powerful ministries governing agriculture/water, industry, and energy—

¹³ ABD's "SPPR" Project is assisting efforts to broaden public participation in decision making.

¹⁴ The UNECE EPR give a reasonably current and thorough review of the legal instruments and institutional arrangements for environmental management in the country, and only highlights are presented here.

Table 8. Central Asian Participation in Multilateral Environmental Agreements¹⁵

| Global Environmental Agreement: | Climate Change (GCC) | Biological Diversity (CBD) | Land Degradation (CCD) | Ozone Depletion (Montreal) | Persistent Organic Pollutants (Stockholm) | Environmental Information (Aarhus) | Endangered Species (CITES) | Hazardous Wastes (Basel) | Wetlands (Ramsar) | Transboundary Watercourses (Geneva) |
|---------------------------------|----------------------|----------------------------|------------------------|----------------------------|---|------------------------------------|----------------------------|--------------------------|-------------------|-------------------------------------|
| Kazakhstan | X | X | X | X | X | X | X | | | X |
| Kyrgyzstan | X | X | X | X | X | X | | X | | |
| Uzbekistan | X | X | X | X | | | X | X | X | |
| Tajikistan | X | X | X | X | X | X | | | X | |
| Turkmenistan | X | X | X | X | | X | | X | | |

Source: Convention Websites.

¹⁵ X denotes ratification and/or signature.

inhibiting its ability to fulfill its oversight responsibilities. There also are a number of governmental bodies involved in environmental monitoring (see Section C below), and the Government recently decided to establish an integrated environmental monitoring system primarily based on the network of observation stations maintained and managed by Goskompriroda (Gossiak).

56. As in many countries, the task of inter-agency coordination for environmental management is difficult. The distribution of “focal point” responsibilities for Uzbekistan’s participation in key multilateral environmental agreements gives an indication of the challenges facing Goskompriroda as national environmental coordinator. Goskompriroda serves as the focal point for the Conventions on Biological Diversity, Endangered Species, Hazardous Wastes, Persistent Organic Pollutants and Wetlands. Uzgidromet serves as focal point for the Conventions on Climate Change and on Combating Drought and Desertification, and it also is the national technical focal point institution for the Global Environment Fund (with Goskompriroda serving as political focal point). Though several inter-agency committees have been established in an effort to improve coordination, it remains a significant challenge.

B. Environmental and Natural Resource Policy Approaches

57. The “environmental security” (or “ecological safety”) of Uzbekistan’s young and growing population is guaranteed by the Constitution, and environmental legislation since independence has emphasized this notion along with generally accepted principles of environmental protection and rational natural resources use. Uzbekistan has adopted a number of new laws to protect the environment since its independence, having passed approximately 250 legislative and regulatory acts directly or indirectly related to environmental protection and/or the management or use of natural resources. The 1992 Law on Nature Protection (amended in 1995, 1997, 1999 and again presently under review) provides the fundamental legal framework for environmental management in the country. Other important legislative measures include the: Law on Water and Water Use (1993); Law on Specially Protected Areas (1993); Law on the Protection of Ambient Air (1996); Law on Rational Use of Energy (1997); Law on the Protection of Plant Life (1997); Law on Protection of Fauna (1998); Land Code (1998); Law of Forests (1999); Law on State Cadastre (2000); Law on Radioactive Safety (2000); Law on the protection of Agricultural Plants against Pests and Diseases (2000); and the Law on Ecological Expertise (2000).

58. Though the wide-ranging environmental legislation reform and efforts under the NEAP and the Environmental Program of Actions indicate a considerable degree of attention is being given to addressing environmental problems at the national level, such legislative, regulatory and program effort appears to have had only limited real impact. The principal constraints hampering progress include: significant and confusing inconsistencies among the various legal provisions and policy approaches advocated; weak administrative capacity for implementation; and wide scope for bureaucratic discretion in the application of laws and regulations. Enforcement of environmental regulations and norms also depends heavily on the staff in regional branches of Goskompriroda and on the relationship of these branches with regional and local authorities. Both their capacities and ability to function according to national mandates need strengthening. An ethic of sustainability also needs to be instilled in key line ministries, such as those governing the agriculture/water, industry and energy sectors.

59. As noted, the strong scientific base in the country has led to perhaps the most rigorous analysis of environmental problems and processes in the region. However, most studies on environmental problems and potential solutions in Uzbekistan pay scant attention to the underlying policy incentives that are the root causes of many current challenges. Despite the ongoing attempts of Goskompriroda to elevate attention to environmental issues in national policy dialogue, environmental policy-making remains fragmented and outside of the mainstream of economic and financial planning structures. Further, the high degree of state control has limited the participation of non-governmental organizations and other elements of civil society, including the media, in both environmental planning and decision-making.

60. The Environmental Program of Actions is only weakly connected to the new base of laws and regulations and lacks a strong policy underpinning beyond the efforts of Goskompriroda to use the program as a platform for domestic and international fundraising. As the current NEAP runs only until 2005, there are plans to update it and to prepare a second NEAP and/or revised Environmental Program of Actions beginning in late 2004 that would be valid to 2010. This provides a useful opportunity for a reassessment of both the country's priorities as well as the government's approach to addressing environmental problems.

61. Particular attention clearly is needed to reforms in the agriculture sector if progress is to be made in improving land and water management. The sector remains dominated by the dual policy objectives of: (i) maximizing cotton production (as a crucial earner of foreign exchange); and (ii) production of wheat and other food crops to ensure national food security. The country's approach to farm sector reform has been characterized by tentative and partial sectoral adjustments and associated administrative measures, with a strong bias towards the latter. The former agricultural collectives (*sovkhoses* and *kolkhozes*) have been transformed into similar cooperative-like agricultural production units (*shirkats*), and in some areas have been converted into separate farming entities—*dekhan* household farms and private farms. On-farm infrastructure remains largely operated by the *shirkat*, often through informal agreements with other farmers in the hydrological unit. The Government recently passed a new regulation on the introduction of water user associations (WUAs) and is undertaking some useful and important experiments with this hydrologically-based approach to local water management. The widespread devolution of authority to WUAs could greatly assist with the improvement over time of on-farm water management if the transfer of local irrigation management were actually realized, but this policy also seems tentative at best.

62. The "Decree on Agricultural Reform", signed by the President in March 2003, also represents a potentially positive policy development.¹⁶ It was billed as an effort to introduce market-based management structures in the agriculture sector. In practice, however, sectoral reforms have been limited and mostly are taking place in pilot areas rather than on a national basis. While this has included reductions in national control over cropping choice, input and output prices, and other fundamentals of the agricultural economy, the old national patterns have largely been replaced by similar restrictions imposed at the local level.¹⁷

¹⁶ This has been followed by more recent resolutions regarding agricultural sector liberalization, at least at the pilot level in selected regions.

¹⁷ As part of the CSP process, ADB is preparing a background paper on the macroeconomic policy setting which will deal with these reforms.

63. The depressed state of the agricultural economy in recent years has contributed to declining yields and shortfalls in funding for the sector that have translated into further neglect of routine operation and maintenance of water management infrastructure—exacerbating problems such as waterlogging and salinization and further depressing productivity.¹⁸

64. Farmers have limited experience with independent decision-making regarding their operations and will need time and support to develop the confidence to take over effective control of irrigation and drainage systems. In most locations all crucial production decisions and the economic parameters affecting their net returns—such as crop choices and both input and output prices—are still dictated by the state (increasingly at the regional and local levels). The implicit tax on the farm sector imposed through the requirement that most production be sold to state-controlled bodies at less than market prices further constrains farm incomes and the ability to invest in local infrastructure improvement. There also is inadequate policy attention to dryland agriculture management issues, which seem to gain prominence only in times of severe drought (such as occurred during the 2000-2001 period).

65. Though areas of pasture lands are relatively limited in Uzbekistan's largely arid environment, continuing problems with overgrazing remain a significant concern because of the low income levels of pastoralists. As noted, pastoralists are disproportionately among the poor. Overgrazing due to the deterioration of land use controls previously imposed during the Soviet period is contributing to land degradation and a further deterioration of long-term productive potential of grazing lands for animal production. This will require specific institutional innovations—backed by good science—to deal with the sustainable management of pastoral resources and overcome the current “tragedy of the commons” problems associated with open access resource use patterns.

66. With respect to energy-related environmental concerns, the recent creation of a national program to promote energy efficiency marks an important milestone. This falls under a previously established national energy strategy covering the period of 2000-2010. The need for an energy efficiency and conservation strategy is an acknowledgement of both the high levels of waste in current systems of energy distribution and consumption and the need to place the sector on a more market-based footing now that Uzbekistan is a net fuel exporter (the country has been energy self-sufficient since 1996). Because natural gas supplies more than 80 percent of total energy demand, the energy efficiency program focuses on reducing losses in gas transmission and use as well as on electricity distribution and consumption. As noted, energy production facilities are the largest point sources of air pollution, and efficiency improvements to reduce production costs also should help to reduce these emissions. There would appear to be opportunities to use the Clean Development Mechanism under the Kyoto Protocol to assist with the funding of some energy efficiency investments, and this can be further explored as a pragmatic approach to achieving domestic objectives while reducing net greenhouse gas emissions contributing to global climate change.¹⁹

¹⁸ The costs of irrigation system management are meant to be financed, in part, through revenues generated by the Unified Land Tax, but this does not come close to recovering current operation and maintenance costs.

¹⁹ ADB is assisting with this effort through a TA on Off-Grid Renewable Electricity Supply.

67. As noted, a new national program to address the management of wastes also is just getting underway. Managed by Goskompriroda, this government-wide effort (funded by UNDP, New Zealand, and the EU) is preparing a National Waste Management Strategy. An 18-month analysis to be completed by the end of 2005 will produce a strategy and associated action plan to be adopted as government policy. It will cover all forms of waste—from municipal to industrial, including hazardous substances—and will include options for source reduction/minimization, collection, storage, treatment and disposal. The action plan will emphasize not only technical solutions but also a range of policy measures focused on identifying least-cost approaches to waste management, including the use of economic incentives.

68. A large measure of *de facto* policy action is carried out through the approval and implementation of environmental improvement projects—many of which, though not all, are managed by Goskompriroda. A summary of the major current environmental projects in the country, organized by donor sponsor, is given in Appendix 1. It may be seen from this listing that a number of the externally financed projects are focused primarily on addressing issues of global concern rather than domestic priorities, though many also seek to strike a balance between these objectives.

69. In sum, “environmental” authorities, including ministries, departments, organizations as well as supervisory and administrative bodies in the field of environmental protection, such as Goskompriroda, the Ministry of Health, Goskomzem, and the Ministry of Agriculture and Water Management can play much stronger roles in the country’s sustainable economic development and poverty alleviation efforts. They can proactively contribute by working in partnership with others to help reduce environmental and natural resource stresses facing the poor and join in efforts to achieve sustainable rural development, expansion of access to environmental services (such as wastewater and solid waste collection and disposal systems), social protection from pollution as well as the monitoring and evaluation of related programs and indicators. As with other institutions carrying out policies and programs to promote economic development and improvement of living standards, the capacity constraints of environmental authorities will need to be considered and associated needs for their strengthening and restructuring addressed.

C. Environmental Information Management

70. Any well managed set of policies and programs for environmental protection and sustainable natural resources use must depend on the availability and analysis of information. Uzbekistan inherited a fairly well developed environmental monitoring system from the Soviet system, though it has struggled to maintain much of the associated infrastructure since independence. In any case, many of the parameters monitored during the Soviet period and even now are only of marginal use for decision-making on environmental health risks or the viability of natural systems.

71. Responsibility for environmental monitoring is distributed among a number of state agencies, under the general coordination of Goskompriroda. The Government approved Decree Number 111 of 3 April 2002 “On Approval of the Regulation on State Environmental Monitoring in the Republic of Uzbekistan” and has decided to establish a united environmental monitoring system. The new national integrated system for environmental monitoring is to be overseen by an inter-agency committee with six members chaired by Goskompriroda, and this group is responsible for implementing a

program to improve the accuracy, timeliness and usefulness of information collected according to a plan covering the period 2003-2005. As noted, Goskompriroda's network of observation stations (Gossiak) is meant to serve as the backbone of the new system. Though commendable in its objectives and spirit, the early stages of implementation have suffered from coordination and funding difficulties.

72. The various current environmental information management functions, distributed by agency, can be summarized as follows:

- *Goskompriroda*: pollution sources and surface eco-systems monitoring plus coordination of environmental information collection, management and dissemination;
- *Uzglavgidromet*: atmospheric pollution, surface waters (natural watercourses), soils and background monitoring;
- *Ministry of Agriculture and Water Resources Management*: monitoring of collector-drainage waters quality (mineralization) of main water courses;
- *State Committee on Land*: land pollution monitoring;
- *State Committee on Geology*: underground water monitoring;
- *Ministry of Health*: sanitary-epidemiological environmental monitoring; and
- *Ministries, departments and economic agencies*: conduct departmental environmental monitoring.

73. The need for further development and improvement of the United Service of State Cadastres, recently established under the Cabinet of Ministers on the base of "Uzgeocadastre", deserves special mention. Uzgeocadastre not only coordinates all cadastres in Uzbekistan, but the information it collections is needed as the basis for fees assessed to support the nature protection system as well as land taxation.²⁰

74. In addition to the new environmental information networking effort, the government is seeking to create a central clearinghouse for environmental information through the recent establishment of the Environmental Information Management Center based at Goskompriroda's main offices. With financial support from UNDP and OSCE, this new Center is responsible for:

- Organization of information exchange between departmental information systems;
- Integration and analysis of generalized data on environmental pollution level and natural resources use;
- Supervising implementation of the state program of environmental monitoring, and carrying out and summarizing proposals on its correction;
- Prediction of changes in environmental conditions within Uzbekistan and assessment of environmental damage caused by human activity;
- Providing information for environment management, natural resources protection and environmental monitoring; and
- Communication of environmental information to the general public.

75. Another important issue affecting the information available for environmental quality control is the low technical quality and reliability of environmental monitoring performed by enterprises of their own pollutants. This extends also to the state bodies

²⁰ Such issues are being explored under TA 4231-UZB: Developing an Integrated Cadastre System for Land Resources Management and Property Rights, approved 19 September 2003.

responsible for monitoring the discharge of agricultural wastes and irrigation waters to collector drains. It has been suggested that this should improve with time as enterprises either go bankrupt or restructure to successfully operate in competitive markets, but the slow pace of market-based reforms is interfering with such progress. In any case, a strong regulatory framework is necessary and would best be combined with an improved system of market-based incentives for pollution control.

76. ADB offered to assist Uzbekistan with improving its environmental information management system through a new regional TA on this subject, but the country initially chose not to join this program. There also was an alternative available, as the government is receiving assistance from UNDP and OSCE to establish the Uzbekistan Environmental Information Management Center at Goskompriroda. Discussions about Uzbekistan's joining this RETA are ongoing.

77. There continue to be disconnects between the information needed by decision makers on the state of the environment and those generated either on a routine or occasional basis by environmental monitoring and research authorities. For example, UNDP is currently assisting the government with an assessment of the requirements for monitoring Uzbekistan's progress in achieving the Millennium Development Goals (MDGs), but this study is encountering difficulties in getting state information organized in ways that would be useful for this purpose. With respect to monitoring and evaluating social and environmental progress in the country, the MDGs clearly offer the best accepted framework. Goal 1 (eradicate extreme poverty and hunger), Goal 4 (reduce child mortality), Goal 5 (improve maternal health) and Goal 7 (ensure environmental sustainability) all have environmental determinants that can usefully be incorporated into the monitoring and evaluation scheme adopted for national planning frameworks, such as the new LSS.

D. Linking Global and Local Concerns

78. Uzbekistan also could make far better domestic use of funds received to help it meet requirements under the global conventions to which it is party (primarily those dealing with biodiversity, land degradation, POPs, and climate change). The experience of efforts to ensure implementation of the UNCCD in the country is instructive as an example of patterns currently followed and how the situation might be improved. The CCD National Action Program (NAP) largely comprises a technical analysis of the scope and causes of land degradation in the country without clear links to policy and program change. To be more effective, the following additional measures are needed:²¹

- (i) **Integrating NAP with the national budgetary and planning processes.** The CCD NAP is treated more as a stand-alone government report than an actionable instrument. Necessary administrative action is needed to raise the NAP to the status of a development program, with activities or projects identified as eligible for budgetary support. Such activities or projects could be organized as an "Action Plan to implement the National Action Program to Combat Desertification". This should be a rolling plan to be updated annually and overseen by the CCD Inter-Departmental Commission or Working Group. Projects should be crosscutting and not just confined to the Focal Institution's (Uzgidromet's) area of responsibility. Other government agencies, such as the

²¹ Adapted from Saigal, 2003a.

Ministry of Agriculture and Water Resources and Goskompriroda, should be approached to provide projects to address land degradation for inclusion in the rolling Action Plan to make the CCD NAP an inclusive mechanism for a more holistic approach to combating desertification/land degradation across the country.

- (ii) **Synergies between the CCD NAP and other multilateral environmental agreements and the National Environmental Action Plan (NEAP).** Strengthening the synergies between the key international environmental conventions to which Uzbekistan is party, including the CCD NAP, would catalyze collaborative activities around concrete action areas. A Working Group of the UNCCD, Biodiversity Convention and Climate Change focal points—as well as representatives from Goskompriroda responsible for implementation of the NEAP-based national program for environmental protection and other relevant global environmental agreements—could improve coordination and the mainstreaming of work under these conventions into national priorities.²²
- (iii) **Strengthening the capacity of the National Focal Point (NFP) for UNCCD implementation.** Since Uzgidromet’s core functions relate only weakly to the problems of land degradation, and because of the special needs of managing a program as broad as the CCD NAP, capacity building is needed for the institution of the NFP. This should be done in such a way, however, that it takes account of the skills of partner agencies so as not to duplicate capacity. Capacity building, therefore, is needed for key staff of all key agencies involved in NAP-related activities, and areas for strengthening include: program development; communication skills; translation and interpretation; understanding of international assistance and environmental agency procedures; and sensitization in cross-cutting concerns, such as participatory approaches and gender issues.

E. Environmental Financing

79. Financing for environmental and natural resources management and monitoring is derived from: (i) central government budgetary resources; (ii) pollution fees and fines (administered through state-run environmental funds); and (iii) international assistance projects. Government financing for environmental management is centered on the budget for Goskompriroda and its regional branches, but it also includes environmental monitoring and other expenditures by a variety of agencies. A list of the major current international assistance projects relating to environmental or natural resources management is given in Appendix 1.

F. Government Targets for Environmental Improvement

80. The principal government program expressing goals and targets for environmental improvement is the Program of Action. A preliminary assessment of the extent to which the goals have been achieved thus far has already been presented, but no comprehensive analysis of results or lessons learned has yet been conducted. This

²² In fact, a new UNDP/GEF-sponsored activity is underway preparing a “national capacity self-assessment” on means for better integrating work under these three conventions into national economic plans and programs.

is an area that should be addressed as part of a planned updating of national environmental policy and program priorities.

81. There also is a need to review the targets used—especially in light of global acceptance of the Millennium Development Goals (MDGs) as the crucial benchmarks and indicators of progress. For example, the NEAP calls for improvement of the water regime for irrigated lands and restoration of soil fertility based on optimization of water supply to fields and improved drainage. The area of irrigated land for which “hydromeliorative systems” should be “comprehensively rehabilitated” is estimated at 1.94 million hectares. Within this, 960 thousand hectares are targeted for “radical field leveling”, while 600,000 hectares “should have their collector and drainage networks either constructed or modified”. The continued bias toward intensive irrigation and agricultural water use is obvious in that these measures are justified primarily on the grounds of their serving to “release” water resources to *expand* irrigated area by some 600,000 hectares.

IV. PAST EXPERIENCE AND FUTURE ROLES OF ADB

A. ADB’s Experience with Environmental and Natural Resources Assistance

82. As indicated in Table 1, ADB has provided a considerable amount of TA support for capacity building efforts in the area of environmental and natural resources management. Apart from early support to Goskompriroda for strengthening of environmental assessment systems, much of this has centered on institutional and policy reform in the agriculture sector. This is natural, as sound water and land management have been shown to be central to both the national economy and poverty reduction efforts. Some environment-related energy sector technical assistance for capacity building also has been provided.

83. Uzbekistan became a member of ADB in 1995, but loan financed assistance relating to environmental or natural resources management—tied to land and water management—did not become an important part of the program until 2000. As indicated in Table 9, six projects have been approved since that time with a total value exceeding \$200 million. A further \$5 million or so has been provided on related subjects in the form of technical assistance grants. The six projects primarily have focused on agricultural and rural development, with a strong emphasis on improving productivity through better land and water management practices. On-the-ground investments to improve infrastructure have been coupled with policy and institutional reforms meant to introduce market efficiencies in the sector. Rural and urban water supply projects complete this picture—justified mostly through their contributions to improved health and welfare of target populations by improving water quality and availability. These too have been accompanied by reforms to move water supply institutions towards greater cost recovery and other efficiency measures.

84. While ADB has clearly played a significant role in the financing of improved land and water management, these projects have given only general attention to the broader national issues of land degradation and the inefficiencies of irrigated agriculture identified earlier in this paper. They have been geared to helping target rural populations dependent upon deteriorating irrigation infrastructure stabilize the source of their livelihoods while demonstrating new land and water management practices and

adjustments to the norms of heavy state control over the agriculture sector in favor of market-based input and output pricing and marketing.

Table 9. ADB Natural Resources Related Loan Assistance to Uzbekistan

| Loan No. | Project | Amount (US\$ millions) | Date of Approval |
|----------|---------------------------------------|------------------------|-------------------|
| 1183 | Ak Altin Agricultural Development | 36.0 | 23 August 2001 |
| 1842 | Urban Water Supply | 36.0 | 27 September 2001 |
| 1903 | Western Uzbekistan Rural Water Supply | 38.0 | 2 May 2002 |
| 2017 | Grain Productivity Improvement | 22.0 | 14 November 2003 |
| 2069 | Amu Zhang Irrigation Rehabilitation | 73.2 | 19 December 2003 |
| | Total: | 209.2 | |

Note: All loans from Ordinary Capital Resources.

85. More recently, this has begun to be complemented by regional analysis and dialogue on these issues. Uzbekistan has been actively engaged in region-wide efforts to better understand and address desertification and land degradation problems through participation in RETA 5941 on Combating Desertification in Asia, and the country hosted a Central Asian forum on this subject in 2003. It continues to participate in follow-up efforts associated with design of the Central Asian Countries Initiative for Land Management (CACILM) and is expected to benefit substantially from this ADB-led multi-donor effort. Uzbekistan also took part in RETA 6001 that supported Central Asian consultations prior to and during the Third World Water Forum in Kyoto, Japan. Unfortunately, the country has not yet agreed to participate in RETA 6163 on Improved Management of Shared Water Resources in Central Asia, nor has it supported inclusion of regional water and energy issues on the agenda of the ADB-led Central Asian Regional Economic Cooperation (CAREC) forum (though it agreed to allow item on the list of topics to be discussed at the November 2004 Ministerial Meeting).²³

86. Uzbekistan's engagement with other environmentally-oriented regional efforts also has been mixed, though this has not always been the result of state reluctance. The State Committee for Nature Protection has tried to stay involved with and to promote the Central Asia Regional Environmental Action Plan (REAP), as previously supported by UNEP, UNDP and ADB.²⁴ But the lack of tangible REAP progress in articulating and addressing transboundary environmental concerns has caused fatigue for all involved. Likewise, though Uzbekistan is participating in RETA 5972 on Promotion of Renewable Energy, Energy Efficiency and Greenhouse Gas Abatement Projects (PREGA), ADB has provided only scant support to the country under this effort. Finally, the country has thus far largely opted out of RETA 6155, a new regional effort on Capacity Building for Environmental Information Management Systems, though dialogue continues on Uzbekistan's participation either partially or fully.

87. This latter RETA is being used as a vehicle for helping to resolve a key transboundary environmental issue between Uzbekistan and Tajikistan—complicating negotiations on a Regional Power Trade Agreement—that serves as a pre-condition for

²³ As noted in the first section of this report, Uzbekistan has been following a two-track policy on this subject of late (i) engaging in discussions about creation of a Water and Energy Consortium through the Central Asian Cooperation Organization and (ii) unilaterally expanding irrigation storage capacity on its own territory in the Syr Darya basin.

²⁴ Through TA-REG 5934, approved 19 September 2000.

ADB energy sector assistance to both countries.²⁵ Uzbekistan has raised questions about the adverse impacts of cross-border air pollution derived from aluminium smelting in Tajikistan, and ADB has offered to support further study on this issue by both countries and the investigation of potential solutions through RETA 6155. Participation in the RETA could be used to conduct the transboundary air pollution study and possibly also to more fully engage Uzbekistan in regional dialogue on development of a national environmental information management strategy harmonized with Uzbekistan's neighbors.

88. In sum, regional activities have played a very positive role in helping to identify key issues relating to land degradation and to prepare the way for action under the CACILM framework (covered in greater detail below). In other areas, the experience has been mixed. ADB's engagement with senior officials at the regional level—whether in the context of addressing problems of a transboundary nature or dealing with issues common to many Central Asian countries—also has very often contributed to improved working relations on related domestic topics.

B. Implications for Future ADB Assistance

1. Environmental Mainstreaming: Status and Opportunities

89. **Environmental Management Authorities.** The recent LSS planning exercise afforded a good opportunity for the country to consider how it might better mainstream environmental considerations into its national development and poverty alleviation plans, policies and programs. While treatment of this subject was included from the first draft of the LSS, it continues to be dealt with only partially in the final LSS and has not yet been integrated into the core poverty reduction effort. The main impacts of human activities on ecosystems—such as land degradation—are now acknowledged in the LSS along with an identification of direct links between environmental management patterns and living standards. Although a growing appreciation of the importance played by poverty-environment linkages was reflected in successive versions of the LSS, there is still considerable room for refinement in both conceptual and practical terms. This was the impetus for the World Bank's sponsorship of a specific study on this subject in cooperation with Goskompriroda and other agencies.²⁶ The LSS is being used as the basis for a more complete Poverty Reduction Strategy Paper to be prepared in 2005, and this CEA analysis as well as that of the World Bank-sponsored study should be serve as the basis for improving the mainstreaming of environmental linkages into the country's poverty reduction plans and policies as well as ADB's strategic and programmatic responses.²⁷

90. Goskompriroda continues to serve as the apex governmental body for environmental protection, but its capacities and reach remain limited. At the national level, its line responsibility to the legislative rather than executive branch of government provides for greater independence and objectivity but also limits its influence for lack of a strong seat in the Cabinet of Ministers. Reform of the legislature to create a bicameral

²⁵ The Regional Power Supply Strengthening and the Regional Power Transmission Modernization Projects.

²⁶ A draft for comment has been released as: Dale, Nick. 2004. *Poverty-Environment Linkages in Uzbekistan: Input to the Poverty Reduction and Strategy Paper*, World Bank: Washington (draft).

²⁷ While conceptual inputs to the PRSP development process are important, the country also would benefit from pilot activities to refine understanding of poverty-environment linkages and to further define appropriate responses. ADB's Poverty and Environment Program is a potential source of funding for such activities.

system adds further uncertainties and possibly complications. While Goskompriroda is actively administering and monitoring the Program of Action described in Section 2 of this report, this is constrained by funding and staff limitations. That means that the availability of resources from externally financed projects—most of which are listed in Appendix 1—is very influential in terms of both priority setting and the allocation of scarce government budgetary resources. The State Committee also is meant to lead national environmental information management efforts. In this too it faces a number of challenges. Finally, and of particular interest to ADB as it implements its safeguard practices, Goskompriroda also provides oversight of country systems for environmental assessment (“expertise”), which are generally considered to be technically strong but much weaker in their practices relating to the review of project alternatives, consultation, transparency, public participation and disclosure.

91. As for cooperation with ADB, there has been only one technical assistance project with Goskompriroda—for capacity building with an emphasis on environmental assessment procedures.²⁸ Experience from this TA showed the need for closer work with the key line ministries in addition to Goskompriroda. Further support could be considered relating to the strengthening of environmental policies and programs as well as information management and safeguards, especially in the aftermath of institutional reforms affecting Goskompriroda’s relationships with the executive, legislative and judicial branches of government. Any such technical assistance would need to be placed in the broader context of both the poverty alleviation strategy and other aspects of environmental mainstreaming.

92. The current National Environmental Action Plan and its associated Program of Actions are valid only through 2005, and early discussions are underway to prepare for an update/revision. ADB could contribute technical assistance to this effort if it were carefully coordinated with inputs from other donors (especially UNDP and World Bank) and focused on furthering the process of environmental mainstreaming, including incorporation of environmental considerations into a Poverty Reduction Strategy Paper (PRSP) to be formulated in this same timeframe. Such assistance could build on the analysis presented herein as well as the parallel study on poverty and environment supported by the World Bank. Though Goskompriroda would appear to be the logical executing agency for such an effort, some mechanism for the meaningful engagement of other key agencies (including Uzgidromet and others involved in environmental information collection and management) would be necessary if meaningful results are to be achieved. Likewise, specific provision will need to be made for civil society participation in the planning—and, hopefully, implementation—of a new set of national environmental policies and programs. Care also must be taken to include all relevant sectors, lest this process of developing “environmental” priorities perpetuate the practice of treating this subject as a sideline exercise divorced from mainstream economic development plans, policies and programs.

93. As long as Uzbekistan remains largely outside of RETA 6155 on national and regional environmental information networking, it is difficult to envision specific national support in this field—even though there continues to be a strong need. It could perhaps be folded into a TA effort associated with a new NEAP and Environmental Program of Action covering the period 2006-2010. The national environmental information collection

²⁸ TA UZB-2859: Strengthening of Institutions Engaged in Environmental Protection, approved 23 August 2001.

and management system needs revamping to tie together the parameters measured to the analysis of high priority decisions and also to engage the public in this process.

94. With respect to safeguards, ADB is moving toward greater reliance on country systems for the enforcement of environmental and social safeguards, where these can be shown to meet appropriate standards. This could be tied to improved information management—since it serves as the basis for such assessments—and it could provide the basis for a movement to use of Uzbekistan’s own systems for much of the safeguards work, especially in sectors important to future ADB lending.²⁹ The most significant shortcoming in the current system of national safeguards relates to transparency and public participation, and this would need to be specifically addressed in any such assistance.

95. **Sectoral Mainstreaming.** Several sectors central to the country’s efforts to achieve sustained economic growth are still lagging behind in the incorporation of environmental and natural resources management considerations. These include the agriculture, water supply and sanitation, and energy sectors. As these sectors have played a prominent role in ADB’s assistance to Uzbekistan, the environmental dimensions deserve careful attention during CSP preparation.

96. Given the glaring problems of land degradation and irrigation management, the most obvious need for further environmental mainstreaming lies in the agriculture sector. From ADB’s standpoint, this is made all the more significant because of upcoming programming associated with the Central Asian Countries Initiative for Land Management (CACILM)—an ADB-led multi-country and multi-donor effort promoting sustainable land management. As a result of preliminary CACILM work, the National Working Group for Combating Drought and Desertification has been established (chaired by Uzgidromet, because they serve as national UNCCD technical focal point). The Working Group is gearing up to build a National Program Framework for policy and program action to address land degradation under the CACILM umbrella. Capacity building needs for environmental analysis and management in the agricultural sector—setting an agenda for technical assistance to strengthen institutions—also should be identified for action during the first phase of CACILM’s implementation.³⁰ This also should be fully incorporated into the current agriculture sector assessment being supported by ADB.

97. Providing access to safe water supplies and sanitation services has been shown to be perhaps the most powerful link between environmental improvement and poverty reduction—with an especially strong impact on improved maternal and child health, a key Millennium Development Goal. ADB has gained valuable experience from urban and rural water supply projects in Uzbekistan, and it potentially could do more. Such investments could be better placed within an integrated water resources management framework—a policy Uzbekistan has embraced but has yet to implement.³¹ Government analysis shows non-point agricultural run-off (from fertilizers, pesticides and salts) is the largest single source of water pollution, with little being done to address this. A more

²⁹ Several bilateral channel funds currently administered by ADB could possibly be tapped as funding sources for such technical assistance.

³⁰ The CACILM design process is expected to take 8-9 months, beginning in January or February 2005, and the full program of assistance should begin in late 2005 or early 2006.

³¹ In Central Asia, only Kazakhstan is seriously moving toward the UN target of achieving a national integrated water resources management strategy by the end of 2005 (with support from UNDP and Norway).

integrated approach to water resources management would tie together planning for water supply and sanitation infrastructure with broader water quality improvement and poverty reduction efforts. Much more also can be done to encourage water conservation through both public education and economic incentives, especially in urban areas, where metering is mixed and water prices remain well below cost recovery levels.

98. The energy sector is the other obvious target for improved environmental mainstreaming, and there is again considerable unmet demand for technical assistance. This sector is the country's leading air polluter, and both energy production and consumption remain grossly inefficient by world standards. The development of renewable energy sources—notably solar, wind and small hydropower—deserves stronger attention, to take advantage of the country's geographic features in cost-effectively meeting both urban and rural energy needs. Links between such efforts and the reduction of greenhouse gas emissions can be used to help generate investment financing for energy efficiency improvement and expanded use of renewable sources (through the Clean Development Mechanism and other offset programs). As with the agriculture sector, these areas are in need not only of technical assistance but also significant project investment (treated below).

99. Finally, the need for greater environmental awareness and education was repeatedly raised during the consultations associated with preparation of this report. This is typically the realm of environmental NGOs and the media, but such civil society institutions are less than vibrant in the country. Another important element of environmental education involves development and application of appropriate curricula in all levels of the education system. If ADB continues to serve as a significant financier in the education sector, it could use this influence to be more proactive on this subject.

2. Priorities for ADB Project Assistance

100. In addition to the mainstreaming priorities identified above, a high priority for further investment can be seen in two areas building strongly on past assistance and lessons learned: (i) improved land and water management; and (ii) improved efficiency of energy production and consumption combined with development of renewable energy sources and reduction of air pollution from vehicular emissions. Appendix 3 provides a preliminary look at assistance programming options relating to improved environmental and natural resources management.

101. **Land and water management.** As evidenced by the three significant projects approved in the past three years, ADB has established a strong and productive relationship with those responsible for managing the transition and development of Uzbekistan's agriculture sector. Technical assistance is being provided—both in direct association with these projects and at the sectoral level—to assist with the reform process.³² While primary emphasis must be placed on achieving strong performance in these existing projects, plans are already underway for at least two additional projects in the coming years to focus more closely on addressing land degradation problems. Project Preparation Technical Assistance is in process for the Land Improvement Project, which is expected to demonstrate new low-cost measures for achieving sustained increases in the productivity of agricultural land through a mix of infrastructure improvements and management reforms. Some portion of this project is expected to be

³² Most notably, TA-UZB 4328: Agriculture Sector Review and Planning, approved 13 April 2004.

grant financed through resources provided by the Global Environment Facility (GEF) in recognition of the broader impacts for Uzbekistan and the region of demonstration activities to combat land degradation and desertification and to reduce the risks associated with droughts.

102. The design of the Land Improvement Project—and related technical assistance and project investments—will be directly influenced by development of the National Programming Framework (NFP) for implementation of the UN Convention on Combating Drought and Desertification (CCD) to be prepared under the planned CACILM RETA.³³ ADB is serving as the lead GEF executing agency, and GEF has tentatively committed \$20 million for the first two years of grant co-financing for the five Central Asian countries.³⁴ With the CACILM design (Uzbekistan's NFP) to be prepared during the period of January 2004 to August 2005,³⁵ this also can directly contribute to development of the CSP's treatment of the agriculture sector and ADB's future assistance programs. With UNDP/GEF support, the government is carrying out in this same timeframe a review to improve integration of efforts to address land degradation with biodiversity conservation and climate change mitigation, and this too may lead to strategic and programming insights of use to the CSP process.³⁶

103. Water-related investment opportunities also include provision of improved access to water supply services and infrastructure investments tied to service reforms. This should be developed in the context of broader integrated water resources management efforts, especially water quality improvements. Opportunities also exist for much closer integration of investments in rural water supply with broader land and water management efforts previously described.

104. **Clean Energy and Transport.** As noted, the reform and development of the energy sector also has strong environmental implications and potential benefits. Furthermore, ADB has established a comparative advantage in providing assistance to this sector. The ongoing advisory technical assistance examining the prospects for use of renewable energy for provision of off-grid electricity services—together with a parallel analysis of renewable energy opportunities sponsored by UNDP—has begun the process of determining the firm potential for renewables. High levels of inefficiency in energy production and consumption also provide opportunities for significant economic returns from efficiency improvements with strong environmental benefits. Some of this can be tied to GHG reductions and possibly generate CDM credits or GEF co-financing, and PREGA should get more active on this (also with Uzgidro). Though somewhat controversial, expanding access to natural gas also can relieve pressures on biofuels

³³ ADB is cooperating not only with the GEF but also with a group of donors organized under the Strategic Partnership (SPA) for the Implementation of the UNCCD in the Central Asian countries. The SPA group comprises ADB, UNCCD's Global Mechanism (GM), the Canadian International Development Agency (CIDA), the German Agency for Technical Co-operation (GTZ), the Swiss Agency for Development Cooperation (SDC), the International Fund for Agricultural Development (IFAD), the International Center for Agricultural Research in Dryland Areas (ICARDA), the UN Environment Program (UNEP) and the UN Development Program (UNDP).

³⁴ Uzbekistan can expect to receive at least one-fifth of these grant resources—a commitment of \$4-6 million in GEF grants over the next 1-2 years, with equivalent or greater financing expected over the next decade.

³⁵ Pre-RETA assistance is being provided, including support to the Working Groups for data collection, through TA-REG 5941: Combating Desertification in Asia.

³⁶ "National Capacity Self-Assessment" for integration of policies and programs to implement Uzbekistan's commitments under the UN conventions covering land degradation (CCD), biodiversity (Convention on Biological Diversity Conservation) and climate change (Framework Convention on Climate Change).

and deforestation. The availability of domestic natural gas supplies leaves open opportunities for their use in vehicles, which has not really been explored. Concern about the sustainability of gas supplies, and the high opportunity costs in terms of state foreign exchange earnings from gas exports is constraining thinking about domestic use alternatives.

105. An energy sector development project incorporating elements on renewable energy sources and energy efficiency improvements has been discussed as part of the current assistance program. The environmental benefits from expanded use of renewables and greater attention to energy efficiency are clear, but there are considerable capacity building needs in this area. There also are important energy-related issues tied to the rapidly expanding use of transport vehicles and improved roads—the fastest growing source of air pollution in urban areas. The organization of a project in this regard—still to be discussed with the government based on the initial work done under two energy sector TAs and other interactions—could lead in any of several directions. A broad-based energy sector restructuring program could be envisioned that would incorporate all of these elements. A narrower energy sector program focusing on renewable sources and, perhaps, energy efficiency would be another possibility. A separate project on clean transport development could be used to address the growing problem of mobile air pollution sources. And finally, work on renewable energy resources development could be folded into project assistance for rural development, perhaps with an initial emphasis on small hydropower development.

3. Regional Cooperation and Environmental Management

106. As evidenced by the new Central Asia Regional Cooperation Strategy and Program³⁷, ADB remains committed to furthering regional cooperation amongst the Central Asian countries. The planned multi-country work to develop the CACILM umbrella program for addressing land degradation has been described and is expected to accelerate in 2005. It also is important that ADB play its role as a facilitating partner in helping to keep the dialogue moving forward on regional water and energy cooperation.³⁸ Much of this currently centers on the proposed formation of a regional Water and Energy Consortium, the discussion of which has been brokered by the Central Asian Cooperation Organization in coordination with the CAREC secretariat maintained by ADB. Uzbekistan plays a crucial role in these discussions, and it will be important to see how this moves forward. Though there are currently sufficient resources available through the existing regional TA on this subject, ADB should be prepared to offer additional RETA support for follow-up efforts in the years to come, as necessary.

107. Other initiatives, such as the Regional Environmental Action Plan and further work on regional environmental information sharing and management deserve monitoring, but they are unlikely to produce rapid progress.

108. As ADB is rapidly becoming the lead external financier of roads in Central Asia, it also should strongly consider providing regional technical assistance to track the environmental repercussions and to recommend appropriate policy and other measures to mitigate any adverse impacts. This might also be combined with RETA resources to

³⁷ ADB. 2004. *Regional Cooperation Strategy and Program for Central Asia Regional Economic Cooperation (CAREC) Member Countries (Azerbaijan, Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan, Turkmenistan and Uzbekistan) 2005-2007*. Manila.

³⁸ The World Bank serves as the lead international assistance agency in the region for the energy sector.

deal with transboundary air pollution—from dust and sandstorms as well as industrial sources—as this is an area of growing concern in the region, with Uzbekistan having expressed its specific interests.

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SELECTED ENVIRONMENTALLY-RELATED PROJECTS IN UZBEKISTAN³⁹

(Note: Data is still incomplete and being sought for a number of projects.)

Amu Zhang Irrigation Rehabilitation Project

ADB/Government of Uzbekistan
Ministry of Agriculture and Water Resources
Approval Date -19 December 2003
Closing Date – March 2009
Budget - \$73,200,000

Western Uzbekistan Rural Water Supply Project

ADB/Government of Uzbekistan
Ministry of Macroeconomics and Statistics ROU,
Location - rural communities in Karakalpakstan and Khorezm
Approval Date - 2 May 2002
Completion Date - September 2005
Budget - \$65,000,000

Urban Water Supply

ADB/Government of Uzbekistan
Uzbekistan Communal Services Agency
Approval Date - 27 September 2001
Completion Date -June 2007
Budget - \$65,500,000

Drainage, Irrigation and Wetlands Improvement Project

WB/Government of Uzbekistan
Ministry of Agriculture and Water Resources
Approval Date -19-JUN-2003
Closing Date - 30-JUN-2010
Budget - \$74,550,000

Bukhara and Samarkand Water Supply Project

WB/Government of Uzbekistan
Bukhara and Samarkand Water Utilities
Approval Date - 19-MAR-2002
Closing Date -30-JUN-2007
Budget - \$62,330,000

³⁹ This list does not include a number of projects in the agriculture sector addressing land and water management. These include significant efforts funded by USAID and SDC on irrigation management improvements at the local level.

Urban Transport Project

WB/Government of Uzbekistan
UZAVTOTRANS
Approval Date -11-MAY-2000
Closing Date - 31-DEC-2004
Budget - \$31,450,000

Health Project

WB/Government of Uzbekistan
Ministry of Health & Social Protection
Approval Date - 22-SEP-1998
Closing Date - 30-JUN-2004
Budget – \$76,000,000

Tashkent Solid Waste Management Project

WB/Government of Uzbekistan
Tashkent Municipality
Approval Date - 21-MAY-1998
Closing Date - 31-DEC-2005
Budget – \$56,000,000

Water Supply, Sanitation, and Health Project

WB/Government of Uzbekistan
GOSKOMPROGNOSTAT
Approval Date - 21-AUG-1997
Closing Date - 31-DEC-2005
Budget - \$117,000,000

Western Tien Shan Transboundary Biodiversity Project

WB/GEF/EU
State Committee for Nature Protection
Approval Date - 2000
Closing Date - 2004
Budget - \$10,150,000

Environmental Institutions Improvement in Uzbekistan

WB/GEF
State Committee for Nature Protection
Approval Date - 2002
Closing Date – 2004
Budget – \$390,000

Technologies for Creating Reclamation Forest in the Dried-out Aral Sea Bed

GTZ (Germany)
National Academy of Sciences
Approval Date -
Closing Date -
Budget -

German-Usbek Khorezm Project

German Academic Exchange Service (DAAD) and
Ministry for Schools, Science and Research of Northrhine
<executing agency>

Approval Date -

Closing Date -

Budget -

Selecting and Planting Arboreal Plants for Protection against Desertification in the Aral Sea Littoral Area

GTZ (Germany)

<executing agency>

Approval Date -

Closing Date -

Budget -

Bukhara Drought Early Warning System

GTZ (Germany)

Glavidromet

Approval Date - 2002

Closing Date - <?>

Budget - \$100,000

Atrof-Muhit Environment Programme

UNDP/GEF

State Committee for Nature Protection

Approval Date – January 2001

Closing Date – December 2004

Budget - \$628,000

National Capacity Self-Assessment for Global Environmental Management

UNDP/GEF

Glavidromet (in cooperation with Goskompriroda)

Approval Date - January 2003

Closing Date – July 2004

Budget - \$200,000

Conservation of Tugai Gallery forests in the Southern Aral Sea Region

UNDP/GEF

Approval Date - <?>

Closing Date - <?>

Budget – \$55,000

Conservation of Kugitang Mountains Biodiversity

UNDP/GEF

Approval Date - <?>

Closing Date - <?>

Budget – \$49,000

Clean Energy for Rural Communities in Karakalpakstan

UNDP/TTF

Approval Date - <?>

Closing Date - <?>

Budget – \$100,000

State of the Environment Monitoring System: Environmental Indicators

UNDP

Approval Date - 2004

Closing Date - 2005

Budget – \$100,000

Establishment of the Uzbekistan Environmental Information Management Center

UNDP/OSCE

State Committee for Nature Protection

Approval Date - <?>

Closing Date - <?>

Total Project Cost – \$35,000

Establishment of the Nuratau-Kyzylkum Biosphere Reserve

UNDP/GEF

Approval Date - 2001

Closing Date - 2005

Total Project Cost – \$895,000

Ozone-Depleting Chemicals Detection

UNEP/GEF

State Committee for Nature Protection

Approval Date - 2002

Closing Date – 2004

Budget -

Development of a National Waste Management Strategy

NZAID/EU/UNDP

Approval Date - 2003

Closing Date - 2005

Budget – \$431,389

Transfer of Technology for Local Production of Solar Panels for Water Heating

DANIDA

Approval Date - <?>

Closing Date - <?>

Budget – \$295,000

Integrated Management for Sustainable Use of Salt Affected and Gypsiferous Soils

FAO/TCP

Ministry of Agriculture and Water Resources

Approval Date - 2003

Closing Date – 2005

Budget - <?>

Caspian Basin Greenhouse Gas Emission Reduction Training Programme (CTP)

CIDA (Canada)

Glavgidromet

Approval Date - 2003

Closing Date – 2005

Budget - \$4,280,000

Industrial Cleaner Production Center

UNIDO

State Committee for Nature Protection

Approval Date - 2002

Closing Date – 2005

Budget – \$769,530

Sustainable Agriculture Management in the Drought Affected Karakalpakstan Region

FAO/TCP

Ministry of Agriculture and Water Resources

Approval Date - 2003

Closing Date – 2005

Budget -

Environmental Problems of Developing Irrigated Farming in Samarkand Province

NATO

<executing agency>

Approval Date -

Closing Date -

Budget -

Solving Problems of the Environment, Sustainable Nature Management and Ecological Safety

Government of Uzbekistan Scientific and Technical Program on Ecology, GSTP-13

Science and Technology Centre of the Coordinating Committee on Scientific and

Technical Development of the Cabinet of Ministers

Approval Date - 2003

Closing Date – 2005

Budget -

ENVIRONMENTAL INDICATORS

| Indicator | Latest Year |
|---|------------------|
| A. Energy Efficiency of Emissions | 1.2 [2000] |
| 1. GDP/Unit of Energy Use (PPP\$/kgoe) | 2,027 [2000] |
| 2. Commercial Energy Use per Capita (kgoe) | 109.5 [2000] |
| 3. Carbon Dioxide Emissions per Capita (mt) | |
| B. Water Pollution: Water and Sanitation | 82.2 [2003] |
| 1. % Urban Population with Access to Safe Water | 79 [2000] |
| 2. % Rural Population with Access to Safe Water | 39.0 [2002] |
| 3. % Urban Population with Access to Sanitation | 85 [2000] |
| 4. % Rural Population with Access to Sanitation | |
| C. Land Use and Deforestation | 81.1 [2003] |
| 1. Forest Area (1,000 km ²) | -0.2 [1999-2000] |
| 2. Average Annual Deforestation (% change) | 350 [2001] |
| 3. Rural Population Density (people/km ² of arable land) | 9.8 [2000] |
| 4. Arable Land (% of total land) | 88.3 [2000] |
| 5. Irrigated Land (% of crop land) | |
| D. Biodiversity and Protected Areas | 4.6 [2002] |
| 1. Nationally Protected Area (% of land area) | 24 [2001] |
| 2. Mammals (number of threatened species) | 47 [2001] |
| 3. Birds (number of threatened species) | 41 [2000] |
| 4. Higher Plants (number of threatened species) | 16 [2002] |
| 5. Reptiles (number of threatened species) | - |
| 6. Amphibians (number of threatened species) | |
| E. Urban Areas | 35.6 [2002] |
| 1. Urban Population (% total) | 50.8 [2000] |
| 2. Freshwater Withdrawal (% of total water resources) | 1078 [2002] |
| 3. Wastewater Treated (mm ³) | 2 [2003] |
| 4. Solid Waste Generated Per Capita (kg/day) | |

- = not available, GDP = gross domestic product, kg = kilogram, kgoe = kilograms of oil equivalent, km² = square kilometer, mt = metric ton, mm³ = million cubic meters, PPP = purchasing power parity.

Source: Goskompiroda data.

ADB ENVIRONMENTAL ASSISTANCE OPTIONS FOR UZBEKISTAN

| Assistance Product | Amount (\$ millions) | Target Year |
|--|-------------------------|-------------|
| A. Country Technical Assistance | | |
| 1. Advisory* | | |
| (i) National Environmental Policy and Programming | 0.50 | 2005 |
| (ii) Renewable and Efficient Energy Development | 0.75 | 2005 |
| (iii) Sustainable Land Management | 0.50 | 2006 |
| 2. Project Preparatory | | |
| (i) Sustainable Energy | 0.75 | 2006 |
| (ii) Second Land Improvement | 0.75 | 2006 |
| (iii) Clean Transport Development | 0.75 | 2007 |
| B. Participation in Regional Technical Assistance | | |
| (i) Central Asian Countries Initiative for Land Management | - | 2005 |
| (ii) Regional Water and Energy Cooperation | - | 2006 |
| (iii) Central Asian Air Pollution Management | - | 2007 |
| C. Lending | | |
| (i) Land Improvement** | 50 | 2005 |
| (ii) Sustainable Energy | 50 | 2007 |
| (iii) Second Land Improvement | 50 | 2007 |

* There also is the possibility of a small project (up to \$0.25 million) on poverty-environment linkages in the rural sector or to support development of a new Program of Action, to be funded under the Poverty and Environment Program.

** Project preparatory assistance begun in 2004.