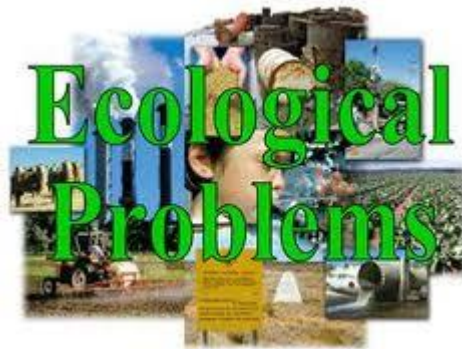


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## Ecological Problems

Uzbekistan is a country of Central Asia, located north of Turkmenistan and Afghanistan. With an area of 447,000 square kilometers (approximately the size of Spain or California), Uzbekistan stretches 1,425 kilometers from west to east and 930 kilometers from north to south.

Bordering Turkmenistan to the southwest, Kazakhstan to the north, and Tajikistan and Kyrgyzstan to the south and east, Uzbekistan is not only one of the larger Central Asian states but also the only Central Asian state to border all of the other four.

Uzbekistan also shares a short border with Afghanistan to the south. As the Caspian Sea is an inland sea with no direct link to the oceans, Uzbekistan is one of only two "doubly landlocked" countries—countries completely surrounded by other landlocked countries. The other is Liechtenstein.

The physical environment of Uzbekistan is diverse, ranging from the flat, desert topography that comprises almost 80% of the country's territory to mountain peaks in the east reaching about 4,500 metres (14,800 ft) above sea level. The southeastern portion of Uzbekistan is characterized by the foothills of the Tian Shan mountains, which rise higher in neighboring Kyrgyzstan and Tajikistan and form a natural border between Central Asia and China. The vast Qizilqum (Turkic for "red sand"—Russian spelling Kyzyl Kum) Desert, shared with southern Kazakhstan, dominates the northern lowland portion of Uzbekistan. The most fertile part of Uzbekistan, the Fergana Valley, is an area of about 21,440 square kilometres (8,280 sq mi) directly east of the Qizilqum and surrounded by mountain ranges to the north, south, and east. The western end of the valley is defined by the course of the Syr Darya, which runs across the northeastern sector of Uzbekistan from southern Kazakhstan into the Qizilqum. Although the Fergana Valley receives just 100 to 300 millimetres (3.9 to 12 in) of rainfall per year, only small patches of desert remain in the center and along ridges on the periphery of the valley.

Water resources, which are unevenly distributed, are in short supply in most of Uzbekistan. The vast plains that occupy two-thirds of Uzbekistan's territory have little water, and there are few lakes. The two largest rivers feeding Uzbekistan are the Amu Darya and the Syr Darya, which originate in the mountains of Tajikistan and Kyrgyzstan, respectively. These rivers form the two main river basins of Central Asia; they are used primarily for irrigation, and several artificial canals have been built to expand the supply of arable land in the Fergana Valley and elsewhere. A shallow lake, Sarygamysh Lake, sits on the border with Turkmenistan.

Another important feature of Uzbekistan's physical environment is the significant seismic activity that dominates much of the country. Indeed, much of Uzbekistan's capital city, Tashkent, was destroyed in a major earthquake in 1966, and other earthquakes have caused significant damage before and since the Tashkent disaster. The mountain areas are especially prone to earthquakes.

Uzbekistan's climate is classified as continental, with hot summers and cool winters. Summer temperatures often surpass 40 °C (104 °F); winter temperatures average about −2 °C (28 °F), but

may fall as low as  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ). Most of the country also is quite arid, with average annual rainfall amounting to between 100 and 200 millimeters (3.9 and 7.9 in) and occurring mostly in winter and spring. Between July and September, little precipitation falls, essentially stopping the growth of vegetation during that period.

Despite Uzbekistan's rich and varied natural environment, decades of environmental neglect in the Soviet Union have combined with skewed economic policies in the Soviet south to make Uzbekistan one of the gravest of the CIS's many environmental crises. The heavy use of agrochemicals, diversion of huge amounts of irrigation water from the two rivers that feed the region, and the chronic lack of water treatment plants are among the factors that have caused health and environmental problems on an enormous scale.

Environmental devastation in Uzbekistan is best exemplified by the catastrophe of the Aral Sea. Because of diversion of the Amu Darya and Syr Darya for cotton cultivation and other purposes, what once was the world's fourth largest inland sea has shrunk in the past thirty years to only about one-third of its 1960 volume and less than half its 1960 geographical size. The desiccation and salinization of the lake have caused extensive storms of salt and dust from the sea's dried bottom, wreaking havoc on the region's agriculture and ecosystems and on the population's health. Desertification has led to the large-scale loss of plant and animal life, loss of arable land, changed climatic conditions, depleted yields on the cultivated land that remains, and destruction of historical and cultural monuments. Every year, many tons of salts reportedly are carried as far as 800 kilometers away. Regional experts assert that salt and dust storms from the Aral Sea have raised the level of particulate matter in the Earth's atmosphere by more than 5%, seriously affecting global climate change.

The Aral Sea disaster is only the most visible indicator of environmental decay, however. The Soviet approach to environmental management brought decades of poor water management and lack of water or sewage treatment facilities; inordinately heavy use of pesticides, herbicides, defoliants, and fertilizers in the fields; and construction of industrial enterprises without regard to human or environmental impact. Those policies present enormous environmental challenges throughout Uzbekistan.

**Natural hazards:** NA

**Environment - current issues:** shrinkage of the Aral Sea is resulting in growing concentrations of chemical pesticides and natural salts; these substances are then blown from the increasingly exposed lake bed and contribute to desertification; water pollution from industrial wastes and the heavy use of fertilizers and pesticides is the cause of many human health disorders; increasing soil salination; soil contamination from agricultural chemicals, including DDT

### **Water pollution**

Large-scale use of chemicals for cotton cultivation, inefficient irrigation systems, and poor drainage systems are examples of the conditions that led to a high filtration of salinized and contaminated water back into the soil. Post-Soviet policies have become even more dangerous; in the early 1990s, the average application of chemical fertilizers and insecticides throughout the

Central Asian republics was twenty to twenty-five kilograms per hectare, compared with the former average of three kilograms per hectare for the entire Soviet Union. As a result, the supply of fresh water has received further contaminants. Industrial pollutants also have damaged Uzbekistan's water. In the Amu Darya, concentrations of phenol and oil products have been measured at far above acceptable health standards. In 1989 the minister of health of the Turkmen SSR described the Amu Darya as a sewage ditch for industrial and agricultural waste substances. Experts who monitored the river in 1995 reported even further deterioration.

In the early 1990s, about 60% of pollution control funding went to water-related projects, but only about half of cities and about one-quarter of villages have sewers. Communal water systems do not meet health standards; much of the population lacks drinking water systems and must drink water straight from contaminated irrigation ditches, canals, or the Amu Darya itself.

According to one report, virtually all the large underground fresh-water supplies in Uzbekistan are polluted by industrial and chemical wastes. An official in Uzbekistan's Ministry of Environment estimated that about half of the country's population lives in regions where the water is severely polluted. The government estimated in 1995 that only 230 of the country's 8,000 industrial enterprises were following pollution control standards.

### **Air pollution**

Poor water management and heavy use of agricultural chemicals also have polluted the air. Salt and dust storms and the spraying of pesticides and defoliants for the cotton crop have led to severe degradation of air quality in rural areas.

In urban areas, factories and auto emissions are a growing threat to air quality. Fewer than half of factory smokestacks in Uzbekistan are equipped with filtration devices, and none has the capacity to filter gaseous emissions. In addition, a high percentage of existing filters are defective or out of operation. Air pollution data for Tashkent, Farghona, and Olmaliq show all three cities exceeding recommended levels of nitrous dioxide and particulates. High levels of heavy metals such as lead, nickel, zinc, copper, mercury, and manganese have been found in Uzbekistan's atmosphere, mainly from the burning of fossil fuels, waste materials, and ferrous and nonferrous metallurgy. Especially high concentrations of heavy metals have been reported in Tashkent Province and in the southern part of Uzbekistan near the Olmaliq Metallurgy Combine. In the mid-1990s, Uzbekistan's industrial production, about 60% of the total for the Central Asian nations excluding Kazakhstan, also yielded about 60% of the total volume of Central Asia's emissions of harmful substances into the atmosphere. Because automobiles are relatively scarce, automotive exhaust is a problem only in Tashkent and Farghona.

Since ancient times Nature has served Man, being the source of his life. For thousands of years people lived in harmony with environment and it seemed to them that natural riches were unlimited. But with the development of civilization man's interference in nature began to increase.

Large cities with thousands of smoky industrial enterprises appear all over the world today. The by-products of their activity pollute the air we breathe, the water we drink, the land we grow grain and vegetables on.

Every year world industry pollutes the atmosphere with about 1000 million tons of dust and other harmful substances. Many cities suffer from smog. Vast forests are cut and burn in fire. Their disappearance upsets the oxygen balance. As a result some rare species of animals, birds, fish and plants disappear forever, a number of rivers and lakes dry up.

The pollution of air and the world's ocean, destruction of the ozone layer is the result of man's careless interaction with nature, a sign of the ecological crises.

The most horrible ecological disaster befell Ukraine and its people after the Chernobyl tragedy in April 1986. About 18 percent of the territory of Byelarus were also polluted with radioactive substances. A great damage has been done to the agriculture, forests and people's health. The consequences of this explosion at the atomic power-station are tragic for the Ukrainian, Byelorussian and other nations.

Environmental protection is of a universal concern. That is why serious measures to create a system of ecological security should be taken.

Some progress has been already made in this direction. As many as 159 countries — members of the UNO — have set up environmental protection agencies. Numerous conferences have been held by these agencies to discuss problems facing ecologically poor regions including the Aral Sea, the South Urals, Kuzbass, Donbass, Semipalatinsk and Chernobyl.

An international environmental research centre has been set up on Lake Baikal. The international organisation Greenpeace is also doing much to preserve the environment.

But these are only the initial steps and they must be carried onward to protect nature, to save life on the planet not only for the sake of the present but also for the future generations.

### **Conclusion**

I realise that I have only discussed a small portion of the vast catalogue of environmental problems that currently affect the five independent Republics of Central Asia. However, I am certainly aware of the array of other pertinent issues such as atmospheric, land and water pollution caused by the improper disposal of industrial wastes and oil exploration, the disastrous consequences of climate change, deforestation, desertification and glacier degradation.

Additionally, I understand the ecological and environmental problems which are concentrated in specific areas such as the Ferghana Valley, the Ili-Balkhash Basin, the River Irtysh basin, Lake Issyk-Kul, Lake Sarez and the \$2 billion project to construct the 1,900-MW Karambata 1 hydroelectric project in Kyrgyzstan. Disputes over water management infrastructure and river regulation mechanisms such as the Toktogul and Nurek reservoirs, the Rogun and Sangtuda hydro electric power complexes and the 'Golden Century' or 'Turkmen' Lake in Turkmenistan, are equally important to address and these issues must not be overshadowed by the more renowned cases of the Aral Sea and the Polygon.

### **What can be done?**

Initiatives to address the security aspects of environmental challenges in Central Asia are relatively recent but various organisations such as the World Bank, UNECE, CAREC, UNDP and the ADB have implemented environmental projects or supported them with financial assistance. These projects are often effective but have been obstructed by the fact that they are not initiated or implemented by Central Asian leaders. Whilst international support is crucial, local ownership of environmental protection programmes is equally vital, as grassroots actors' possess a greater knowledge and first-hand experience of the local conditions and are usually the first to be aware of changing circumstances. In particular we need to work closely with the World Bank. Some people have said to me that the World Bank is not impartial. I reject this

assertion entirely. We must defend the World Bank. Results of assessments by the World Bank must be honoured by every side and supported by the OSCE.

In addition, let me make special mention of the International Fund for the Aral Sea (IFAS) which is doing excellent work. There have been enormous efforts during the Kazakh OSCE presidency to breathe new life into what had become a moribund organisation. Professor Ibatullin must be congratulated for injecting new dynamism into IFAS.

The one message that came across loud and clear to me throughout my recent series of meetings with Ministers and experts in Central Asia is the need and desire for a regional solution to all of these environmental and ecological problems, particularly the problems surrounding water management. There is no use trying to impose solutions from outside. There are good reasons for optimism in this respect. For example Kazakhstan and Kyrgyzstan are already cooperating closely on water issues such as the successful Chu-Talas Commission.

But a word of caution! The entire region is suffering from consultant fatigue. They don't want more consultants' reports telling them what to do. They don't need more paper. They want action. For example, I was appalled to hear that an estimated \$44 million has already been spent on consultants' reports on how to resolve the problem of uranium tailings. If even a quarter of this money had been spent on maintaining the uranium dumps, there wouldn't be a problem!

The fact that previous environmental aid has often been more symbolic than substantial is sad, but the donor community must now refocus its attention and adopt future-oriented approaches that will effectively promote rehabilitation, restoration and recovery in the Aral Sea Basin, the Polygon and the numerous other areas devastated by environmental degradation. The current situation is intolerable and cooperation between global, regional, national and local actors must be fostered in order to address the environmental disasters and alleviate the suffering of the Central Asian population. Only by working together will we be able effectively to address the acute environmental problems that plague the region.

There are several things that can be done to address the range of ecological and environmental problems that continue to damage the region and threaten regional stability. For example, in the Aral Sea Basin, improving outdated irrigation systems will reduce water losses, as will updating water application methods, water allocation and water conservation mechanisms. Additionally, diversifying agriculture to include less water-intensive crops will help to alleviate the merciless erosion caused by cotton monoculture. It is equally apparent that all of these approaches carry a substantial price tag, so I am currently contacting potential donors who may be able to help pay for some of these new ideas.

Against this background, there is no doubt that 2010 is a crucial year for Central Asia. However, by acknowledging the interdependent nature of the ecological and environmental problems and cooperating to tackle them, the states of the region have the opportunity not only to halt the devastating effects of environmental degradation but to work towards rehabilitating their fragile ecosystems and further improve the standard of living for their populations.