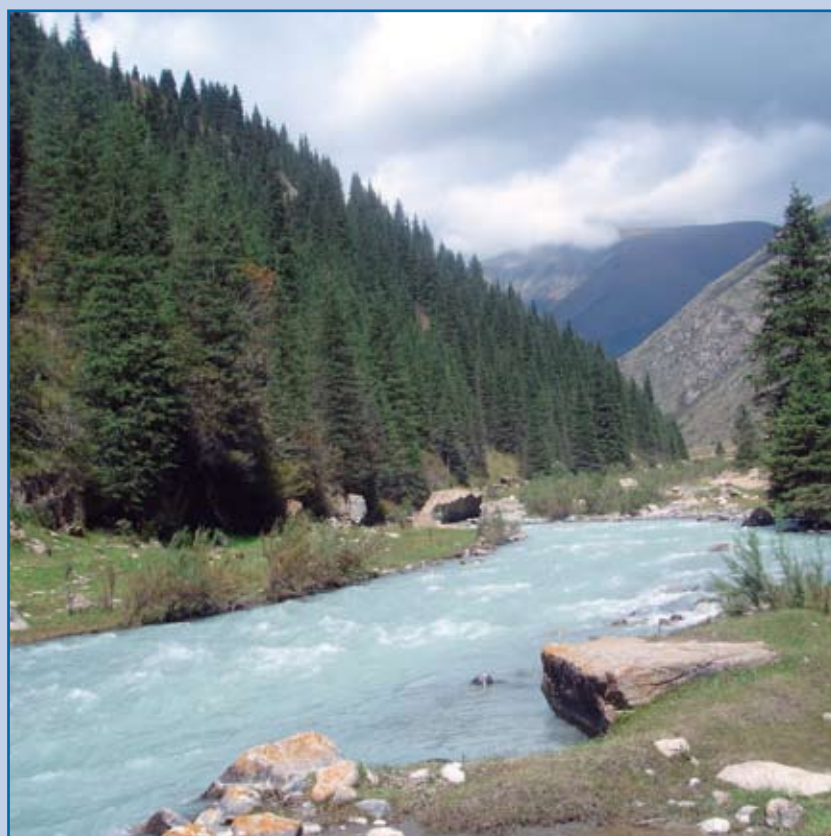




Eurasian Development Bank

THE EURASIAN DEVELOPMENT BANK'S INVESTMENT POLICY AND THE ENVIRONMENT



INDUSTRY REPORT

FEBRUARY 2009

The Eurasian Development Bank is an international financial institution established to promote economic growth and integration processes in Eurasia. The Bank was founded by the intergovernmental agreement signed in January 2006 by the Russian Federation and the Republic of Kazakhstan. Negotiations are currently under way with a number of neighbouring countries. Electric power, water and energy, transportation infrastructure and high-tech and innovative industries are the key areas for Bank's financing activity.

The Bank, as part of its mission, provides quality research and analysis of contemporary development issues and trends in the region with particular focus on Eurasian integration. The Bank conducts regular conferences and round tables addressing various aspects of integration. In 2008, the Bank launched quarterly academic and analytical Journal of Eurasian Economic Integration and an annual almanac EDB Eurasian Integration Yearbook. In addition, every fortnight new issues of information digest are released covering regional integration, development banks' activities and investment projects in the post-Soviet space.

The Bank's Strategy and Research Department also publishes detailed Industry and Country Analytical Reports. It also plans to realise a number of research and technical assistance projects. "System of Indicators of Eurasian Integration" project is the first in the project pipeline.

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Conclusions

Sustainable economic development can only be secured if environmental integrity is preserved. Therefore, environmental policies aimed at protecting the environment and managing natural resources more effectively must be formulated and implemented in a consistent manner.

The environmental policies adopted by international financial institutions aim to address regional environmental problems and ensure the efficient use and protection of natural resources. The minimisation of investment risk is highly dependent upon the environmental protection strategy adopted, and upon investors' ability to comply with the rules of international law governing natural resources management, environmental protection and prevention of natural and manmade disasters.

The Eurasian Development Bank's (EDB) support for environmental and social protection will help to create more advantageous conditions for investment and international co-operation in environmental protection, thus ensuring:

- transition from an environmental policy focused on mitigating the harmful effects of cross-border pollution to practices which prevent economic losses linked to environmental problems;
- the implementation of programmes aimed at improving the environment, and the development and use of environmentally friendly and resource-saving technology;
- the creation of legal and economic measures to promote innovative eco-technology and the manufacture of environmentally safe products and reduce pollution;
- the development of a system for monitoring, controlling and preventing cross-border contamination of air and water; and
- the enhancement of international co-operation to prevent natural and manmade environmental degradation and the depletion of natural resources.



1. Introduction

The EDB's Strategy for 2008-2010 incorporates environmental responsibility in the Bank's investment policy. In its mandate, the Bank fosters among its member states the development of balanced economies, and supports their sustainable development and regional integration. In considering and implementing investment projects, the Bank takes measures to prevent any deterioration of the environment or the social, working or living conditions of the population.

The measures adopted must be effective in protecting the environmental security of the Bank's member states. In the regional context, these measures must address the problems of cross-border transfer of water- and airborne pollutants, and promote the efficient use of natural resources based on resource-saving and environmentally friendly technology. The structural reorganisation of any economy poses economic and environmental problems which governments and institutions must address in the best possible way, adhering to the highest standards of environmental protection and eliminating natural and manmade disasters.

Any investment project which affects the environment of neighbouring states is subject to thorough environmental impact assessment (EIA) and notification procedures in accordance with international regulations and recommendations governing environmental protection. The Bank conducts the EIA compulsorily, taking into account economic risks which can result from changes in the environment and the management of natural resources which have a potential cross-border effect.

Sustainable development and economic growth are closely linked with environmental protection. The Bank, as an international financial institution, adheres to multilateral and regional agreements on environmental protection and sustainable development. These include the UN Framework Convention on Climate Change, the Kyoto Protocol, the Convention on Biodiversity, the Convention on Environmental Impact Assessment in a Transboundary Context, and the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. Each of these documents provides the Bank and its clients with the main requirements and mechanisms which underpin their approach to the environment in the implementation of their investment projects.

This review provides a brief analysis of environmental problems that exist in the Bank's Central Asian and Caspian member states, including cross-border contingencies that potentially affect the economies of the whole region. The Bank's environmental policy is discussed in detail.

The Bank aims to support states interested in addressing cross-border environmental problems and offers technical assistance in this field. Related information can be found in this review and on the Bank's official website at www.eabr.org.

2. Environmental Problems in the Region

2.1. THE RUSSIAN FEDERATION

The Russian Federation is affected by a number of complex environmental problems. About one seventh of the country's territory, in which the vast majority of its population and production facilities are concentrated, is in an unsatisfactory environmental state. In Russia, specific indices of environmental impact, calculated per capita and by GDP, are among the highest in the world.

Russia is a highly urbanised country, with 79% of its urban settlements and 77% of its 126 large cities concentrated in European Russia.

The environmental situation is critical in all these areas owing to a combination of damaging natural and human activity. Around 25-35% of people in large and medium-sized towns are exposed to excessive noise. Russian cities and urban settlements produce 30 million tonnes of solid waste annually, and this figure is expected to increase to 37 million tonnes by 2010. It is estimated that 746 towns are subject to flooding, 725 face the risk of landslides, 103 are prone to earthquakes, 14 to avalanches and mud flows, 442 to gully erosion, 301 to sinkholes, 958 to subsoil erosion, and 563 to subsidence. Urbanised areas (82% of all Russian cities) are being increasingly exposed to water-logging as a result of human activity.

The poor state of the environment affects the population's health and living standards. Poor air quality poses an environmental hazard for human health. Atmospheric pollution is responsible for 17% of the morbidity rate in children and 10% in adults. The maximum permissible concentration (MPC) of harmful substances in the atmosphere has been exceeded in 185 cities and industrial centres in which over 61 million people (44% of Russia's population) reside.

Country	1990	1995	2000	2002	2010 forecast	2020 forecast
Belarus	39.7	23.6	20.9	21.4	26.3	32.0
Kazakhstan	90.1	77.9	72.9	57.8	79.5	96.1
Kyrgyzstan	4.6	1.8	1.5	1.4	2.1	2.7
Russia	708.5	516.9	487.8	470.2	690.2	739.3
Tajikistan	1.8	0.2	0.3	0.1	0.6	0.7

TABLE 1.
Dynamics of gross CO₂ emission by thermal power plants ('000 tonnes)

Source: *The Key Environmental Protection Issues of Unification of the Electric Power Markets of the EU and the CIS. Materials of the CIS Electric Power Council (CIS EPC). Tbilisi, 25 October 2005*

Water pollution levels remain high. Most water bodies in Russia do not meet public health standards, as almost 40% of all wastewater falls into the category of contaminated water. Half of the country's population uses water that does not meet regulatory requirements due to the contamination of water sources and poor state of repair of public water supply systems. In public utilities, over 40% of water supplied is lost because of the severe degradation of water supply networks and damaged stop valves. Considerable water losses are being recorded in industry (owing to poor technology and leakages in water supply systems) and agricultural irrigation. About 22% of all hydraulic engineering works (HEW) require major repairs.

The environmental condition of large areas of farm land remains a concern, because of continuing deterioration of the soil mantle and reduction of humus content. Russia has a total 221.1 million ha of agricultural land (12.9% of the country's land resources). Of the 130 million ha of arable land, 54 million ha are prone to erosion, 4 million ha have high salinity and 1 million ha are contaminated with radionuclides.



The total area of land exposed to, or threatened with desertification, is estimated at 50 to 100 million ha. Soil as the main accumulator of manmade chemicals affects the living conditions and health of the population. Soil contaminated with heavy metals poses a particular threat to humans, as these contaminants are very stable and biologically active. Close to oil production, transportation and distribution sites contamination of soil with oil products can exceed the background level by 10-100 times or more.

The pace of manmade degradation of natural ecosystems has increased as a result of uncontrolled commercial activity, and is manifested by the depletion of plant life, loss of biodiversity, and reduction of the environmental potential of the vegetable life. Waste storage sites, dumps, waste ponds, burial sites, test areas and other facilities currently hold a total of 1,782 million tonnes of toxic industrial and household waste; of this total, 2.7 million tonnes are class I wastes, including 3,200 tonnes of mercury, 4,400 tonnes of electroplating waste, 1,200 tonnes of chlorinated organic substances, 2.7 million tonnes of hexavalent chromium, etc.

Only 32.7% of the industrial waste produced annually is being recycled or detoxified.

Ash removal from Russian thermal power plants is indicative of the overall situation.

	1990	1995	2000	2002	2010 forecast	2020 forecast
Ash production	38600	27700	24500	22700	38600	50500
Ash recycling	4460	2100	6700	3300		

TABLE 2.
Ash removal from Russian thermal power plants ('000 tonnes)

Source: The Key Environmental Protection Issues of Unification of the Electric Power Markets of the EU and the CIS. Materials of the CIS Electric Power Council (CIS EPC). Tbilisi, 25 October 2005.

2.2. THE REPUBLIC OF BELARUS

The most urgent environmental problem in Belarus is the radioactive contamination of a considerable proportion of its land following the Chernobyl Nuclear Power Plant disaster. Varying levels of radioactive contamination have been recorded in about one quarter of the country's territory.

Another serious environmental problem is the poor management of natural resources. Obsolete industrial equipment and neglected industrial buildings pose an acute environmental risk.

Industry, agriculture and the service sector still rely on technologies which have a significant impact on the environment in terms of the emissions and waste generated. The capacity of facilities which process, recycle or bury industrial and household wastes is inadequate, and this further threatens the environment in Belarus.

2.3. THE REPUBLIC OF KAZAKHSTAN

In Kazakhstan, there is environmental damage in several large regions, including the Caspian region, the Aral region and the Semipalatinsk former nuclear test area.

The Caspian region is subject to severe desertification, with 77% of its pasture affected by human activity. This situation is exacerbated by fluctuations in the Caspian Sea level, which have created a flood plain covering 1.0 million ha, including 0.7 million ha of farm land.

The drying up of the Aral Sea and climatic and hydrological changes have exposed the Aral region to wind erosion. Sand storms have become more severe, and particularly lengthy and intense on the west coast. Space surveys have shown that saline air streams can travel 150-300 km, and in some cases up to 500 km. Dust containing toxic substances from the sea bottom spreads and precipitates over an area of 25 million ha. The population of the Aral region suffers extensively from respiratory and circulatory diseases.

The Semipalatinsk former nuclear test area is now classified as an "environmental disaster zone", which includes the test area itself (1.5 million ha) and "extraordinary" and "maximum radiation risk zones" – a total of 5.2 million ha. The consequences of nuclear tests on human health and the environment are very acute and prolonged.

Environmentally compromised areas include the large bodies of water in which contaminated river run-off accumulates: the Caspian Sea, Lake Balkhash, Lake Tengiz, and others. Contamination of cross-border rivers (the Irtysh and the Ili (China), the Syrdarya (Uzbekistan), the Shu and the Talas (Kyrgyzstan), and the Ural (Russia)) contributes significantly to the deterioration of the environment. Contamination of water sources and the poor maintenance of water supply systems are responsible for the spread of infection and represent the main cause of the worsening sanitary and epidemiological situation in the country and the increase in its morbidity rates.

Atmospheric pollution in Kazakhstan is mainly caused by the failure of power, transport, fuel and metallurgical companies to implement adequate environmental protection measures. Lead and zinc production sites in the Ust-Kamenogorsk region and chrome factories in Aktobe are the main sources of airborne contaminants in Kazakhstan. In urban areas, motor transport has a significant adverse impact on the atmosphere. In recent years, motor transport has been the source of more than 60% of the air pollution in most large cities, and 90% in Almaty.

Owing to poor agricultural and mining practices, desertification now affects vast territories. This process entails the loss of green cover, the erosion of soil by wind and water, increased soil salinity and the contamination of soil by industrial waste and toxic chemicals. Manmade desertification is particularly advanced in areas where industrial production, construction, and transport or engineering infrastructure are highly developed.

It is also important to mention here the high level of mining and uranium processing waste contamination in large industrial centres such as Pavlodar, Ekibastuz, Karaganda-Temirtau, Karatau-Zhambyl, West-Kazakhstan, and East-Kazakhstan. Of the 21 billion tonnes of industrial waste which have built up in Kazakhstan, 5.2 billion tonnes are toxic. Each year, Kazakhstan

produces 92 million tonnes of toxic waste, 60% of which is produced by the metallurgical industry. Mining has produced 4 billion tonnes of waste, containing over 1.1 billion tonnes of minerals.

2.4. THE KYRGYZ REPUBLIC

Much of Kyrgyzstan's territory is a highland ecosystem, which is especially sensitive to anthropogenic impact. Even the sparsely populated Pamir and Tien Shan mountains show the effects of human activity. The country is also prone to natural disasters such as earthquakes, landslides, mud flows, floods, etc.



A major obstacle to the country's sustainable development is the escalating competition for water, involving the hydraulic power industry and agriculture at both national and international levels.

Kyrgyzstan is also faced with the problems of decreasing run-off from and changes in the hydrological cycles of its rivers. These have climatic and anthropogenic causes: erosion, contamination, deforestation, increased soil salinity, etc. Deglaciation is being recorded in mountainous regions, and over 1,080 glaciers have melted in the last fifty years. Kyrgyzstan has a large number of poorly secured metal and radioactive ore storage sites located in cross-border river basins. There is a high risk of toxic materials escaping from such sites, the disastrous consequences of which could also affect Kazakhstan, Uzbekistan and Tajikistan.

Climate change, the contamination of mountain ecosystems, deglaciation and a reduction in cross-border river run-off have all contributed to water shortages which in turn constitute a serious international relations problem in Central Asia.

2.5. THE REPUBLIC OF TAJIKISTAN

Tajikistan is subject to a high level of seismic activity, which imposes special requirements for the safety of dams, reservoirs and natural lakes. One such lake is Sarezskoye, which was formed following an earthquake in the Murgab valley on 9 February, 1911. This lake is located 3,239 m above sea level and holds 17 km³ of water.

Any dam burst at Lake Sarezskoye would affect an area of 52,000 km² in Tajikistan, Uzbekistan, Turkmenistan and Afghanistan, and around 5 million people. Therefore, this problem must be considered in the context of regional safety and demands concerted action by the Central Asian nations.

The cultivation of steep mountain slopes has accelerated their erosion, a problem which now affects 60-70% of the country's agricultural land.

2.6. THE REPUBLIC OF UZBEKISTAN

Uzbekistan is located in the centre of the region, and 80% of its territory is desert or semi-desert. Since it imports most of its water Uzbekistan is perhaps the most vulnerable country in Central Asia in terms of water security.

Eight percent of the country's territory (in which 0.1% of the population lives) is identified as an "environmental disaster zone", 29% of the territory (12% of the population) is deemed as being an "extraordinary environmental situation zone", 37% of the territory (41% of the population) lies within a "critical environmental situation zone", and 26% of the territory (47% of the population) is in a "permissible environmental situation zone". The worst environmental problems are in the Aral region (the Republic of Karakalpakstan and Khorezm Oblast).

"Environmental disaster zones" and "extraordinary environmental situation zones" are areas which have severely contaminated surface and underground water, a high proportion of irrigable

land which is salinated or waterlogged, poor soil quality, significant fluctuations in the salinity of irrigable land, and drinking water which does not meet the required health standards.

2.7. THE REPUBLIC OF ARMENIA

Armenia's relatively scarce natural resources include small deposits of gold, copper, molybdenum, zinc and alumina. Agricultural land and areas under crops account for 17.55% and 2.3% respectively of the country's territory; the remaining 80.15% is mountainous.

Armenia's most pressing environmental concerns are the contamination of its soil with toxic chemicals, deforestation caused by the energy crisis, contamination of rivers, and a shortage of potable water.

Despite a decline in industrial production, waste management remains an urgent problem for Armenia. The country has accumulated 36.7 million tonnes of industrial waste, of which 20,000 tonnes contain mercury, nickel, chromium, fluorine or their compounds, i.e. are classified as radioactive waste. The problem of waste management is exacerbated by the lack of recycling facilities.

The territory of Armenia is prone to powerful earthquakes and drought. The depletion of Lake Sevan poses a serious risk to the country's water security. Declining river levels and extensive diversion of water for power and irrigation have resulted in a sharp reduction in the lake's volume and level. Desertification threatens 80% of the country's territory and 26% of the land is threatened with extreme desertification. This in turn is likely to lead to a decrease in food production and thus to a reduction in household income. Attempts are being made to slow down the desertification process. To this end, and with the support of various international organisations, measures are being taken to prevent landslides. Programmes have been developed to support farming, preserve forests, and to raise the environmental awareness of the population.



3. Assessing Regional Environmental Problems as a Key Phase of Investment Project Planning in Central Asia

Modern Central Asia is situated at the heart of Eurasia; it encompasses the territories of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan and borders Russia in the northwest, Iran and Afghanistan in the south and Russia and China in the east. The region covers about 4 million km² of the vast Aral-Caspian drainage basin, which extends from the subtropical zone to the southern margin of the mid-latitudes. The region's desert location, its remoteness from seas and oceans and its orographic structure all shape its continental climate and hydrography. Climatic conditions in mountainous areas directly influence cyclical river flows and the utilisation of water. High temperatures during the growing season and a saturation deficit result in a high evaporation capacity. Therefore, irrigation, which is vital to this region, has the greatest influence on water utilisation and international relations in cross-border river basins.



The Central Asian region is a new geopolitical structure within the modern global political system and consists of five independent states. The term “Central Asia” traditionally denotes a geographical area which extends far beyond the borders of these states. However, in a political context, this region is understood as being confined to the territories of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. Its natural and geographic unity has been forged in the basins of its cross-border rivers. This in turn has determined the historic and cultural homogeneity of Central Asian nations, and is a key factor in strengthening their economic integration. Given their economic and social interdependence, resolving the region's environmental problems, which are generally cross-border in nature, and ensuring the sustainable development of Central Asian countries, will depend upon accelerated integration based on the joint management of water resources in cross-border river basins. Whilst the geographic location of Central Asia bestows certain advantages, the region is nevertheless disadvantaged by its remoteness from major transport routes and sea ports, the scarcity of its water resources and irrigable land, and its sparse population density in certain parts of the region.

3.1. COMMON ENVIRONMENTAL PROBLEMS IN CENTRAL ASIA

Central Asia's fragile ecosystem, its water shortages and arid climate act as serious impediments to the socioeconomic development of the region's countries.

Cross-border atmospheric pollution in industrial and urban areas is one of the most acute environmental problems in Central Asia. The main causes of air pollution are the metallurgical, chemical, building, energy and transport industries. Wastewater from farms and industrial facilities contaminates cross-border rivers. Runoff water contains pesticides, nitrogen and phosphates, which threaten river ecology and water safety. Neither an efficient recycling infrastructure nor an adequate waste management strategy is in place. There is also a potential threat from radioactive and toxic metallic waste burial sites. Eventually, a considerable percentage of waste disposed of within the drainage basin reaches the rivers.

Another serious problem for the region is desertification. For example, more than 66% of Kazakhstan's land is desertified. About 40% of pasture land in Kyrgyzstan is depleted. In Tajikistan,

the cultivation of steep slopes and deforestation of the mountains has destabilised the natural mountain habitat. About 80% of Uzbekistan's territory is desert or semi-desert. Mountainous ecosystems are especially sensitive to external influences. Anthropogenic effects are felt even in the scarcely populated Pamir and Tien Shan mountains, resulting in deterioration of ecosystems, loss of biodiversity and soil erosion. The cumulative effect of anthropogenic load on mountainous ecosystems accelerates desertification and the loss of biodiversity. Other negative consequences of this process are changes in the hydrological cycles of renewable water resources and an increased risk of natural disasters.

The region is widely exposed to natural disasters, including earthquakes, floods, mudslides and landslides. These pose a huge threat to the safety of dams, water reservoirs, villages and towns along the rivers. Any major dam burst threatens the population of all countries in the region. This threat is especially pronounced in the mountainous areas of Kyrgyzstan, Tajikistan and Uzbekistan, where most of the region's runoff is generated, and where the risk of destructive flood tides is highest.

In addition to the problems mentioned above, there are several large-scale environmental crises which threaten all the Central Asian countries: the drying up of the Aral Sea, the unstable rock-dammed Lake Sarezskoye, etc.

According to statistics, about 36.1 million people (64% of the region's population) have access to centralised water supply. In Kazakhstan, Tajikistan and Turkmenistan, water supply systems in cities are better than in rural areas. Access to sewage systems is restricted to 22% of the population (11.4 million people), mainly in cities.

The absence, inefficiency or poor state of repair of water supply and sewage systems are the main obstacles to improving public health and raising living standards, especially in rural areas. All these problems in turn impede the sustainable development of the region. Most oblast centres have no sewage treatment systems, and untreated wastewater is being discharged directly to filtration fields or storage ponds. The existing treatment facilities are overloaded, and there is a permanent threat of dam breakage.

The construction of many hydraulic environmental protection facilities has been discontinued or is never planned due to a lack of funds. The generally accepted "polluter pays" rule is barely applied, and no fee is charged for the use of freshwater resources, which is required to encourage efficient natural resources management. Common pollutants are oil products, phenols, heavy metal salts, fertiliser, and pesticides. As a result, cities and other areas are unable to supply drinking water that complies fully with public health requirements.

The existing water supply systems in Central Asian countries do not meet requirements for reliability and drinking water quality, nor do they have all the required treatment facilities; protective sanitary zones are not in place at many water collection sites. Up to 70% of water distribution networks are obsolete, and this figure is increasing, which results in frequent accidents and contamination of water. Over 20-30% of water is lost due to leakages in household water supply systems and pipe corrosion or obsolescence. Existing pipeline capacity is not sufficient to provide an uninterrupted water supply because of its poor state of repair and the obsolete water treatment technology in use. The situation is exacerbated by the fact that a large proportion of wastewater from industrial facilities is being directed to municipal treatment works which are not designed for such wastewater. Most cities have no storm drainage able to treat excess water; as a result, large quantities of contaminated water end up in water bodies. Contamination of drinking water sources and the inefficiency of treatment facilities lead to the deterioration of the quality of drinking water consumed by the public.

In rural areas, people sometimes have no choice but to drink water which does not meet health standards, and the majority of the population uses decentralised water sources which do not always meet public health requirements for salt content, hardness and chemical composition; surface water sources are not protected against bacterial and chemical contamination. The water companies themselves are financially weak, for a number of reasons: overstated individual water consumption makes extensive capacity development essential; there is a lack of actual

According to established data, the volume of surface water in the Aral Sea basin totals 116 km³. It should be stressed that estimates of these water resources vary from 125 km³ (83 km³ in the Amudarya and 42 km³ in the Syrdarya) to 107 km³ (69.5 km³ in the Amudarya and 37.5 km³ in the Syrdarya) and 105.3 km³ (68.1 km³ in the Amudarya and 37.2 km³ in the Syrdarya).

In recent years, average annual runoff to the Aral Sea has been around 12 km³. The total volume of water used in the basin, including evaporation loss, groundwater outflow and water diversion to desert lowlands was 102 km³ per annum. Taking into account water reuse and return flow to the main river systems, the total water intake was about 120 km³. Since 1975, there has been a small increase in average annual runoff. At the same time, there has been a trend towards higher air temperatures in summer and winter, and glaciers in the upper part of the drainage basins have continued to shrink significantly.

The region has extensive water supply and irrigation systems, which include channel and off-channel multi-purpose reservoirs, over 90 hydroelectric installations (Kyzylordinsky, Kazalinsky, Takhiatashsky, Karshinsky, and others), over 100 long-distance canals (Bolshoy Fergansky, Bolshoy Andizhansky, Yuzhnogolodnostepsky, Tashsakinsky, Vakhshsky, Kzyl-Ordinsky, Karakumsky, Amu-Bukharsky, Karshinsky, Sherabadsky and other canals with pump irrigation), and tens of thousands of hydraulic works built on irrigation networks. Between 1940 and 1975, the control and storage of water in the Syrdarya basin increased significantly. Reservoirs with a capacity of 28 km³ were created, making it possible to control cyclical runoff and make use of 95% of the basin's water resources. In the Amudarya basin, only 30% of river runoff is controlled.

The extensive development of irrigated farming has overwhelmed the ecosystem and undermined its stability, exposing the region to high risk of environmental crises. These crises in turn undermine the region's economic foundations, create social problems and threaten regional stability by provoking conflicts between these countries.

Year	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan	Total
1990	782	410	706	1339	4222	7499
1995	786	416	719	1736	4298	7955
2000–2007	786	415	719	1714	4259	8101

TABLE 3.
Irrigable land
in the Aral Sea basin
('000 ha)

Soil fertility in Central Asian countries is decreasing, which is a serious threat to the region's food security. Over the last decade, the area of cultivated land in Kazakhstan shrank by 30%, in Tajikistan by 20%, in Kyrgyzstan and Uzbekistan by 15%, and in Turkmenistan by 9%.

Seventy-seven percent of Central Asia's agricultural land is prone to degradation of the green cover, 9.1% to salinisation caused by intensive irrigation, 3.6% to salinisation due to the drying up of the Aral Sea, 5.9% to water erosion, and 1.5% to wind erosion.

The inefficient management of natural resources causes environmental crises which affect political and economic co-operation between the region's countries. Central Asia's unevenly weighted and uncompetitive economy, its exposure to emerging environmental crises, and growing competition for water all pose serious challenges to the region's sustainable development.

3.3. WATER ECONOMY AND THE ARAL ENVIRONMENTAL CRISIS

The environmental crisis in the Aral Sea basin has proved catastrophic for the five Central Asian countries and their combined population of nearly 40 million. The drying up of the Aral Sea was a result of errors committed under the command economy over many decades; now this disaster is having an extremely negative impact on the socioeconomic and environmental situation in the region. The basin is in the heart of a vast landmass and its remoteness from any ocean means it has an extremely dry continental climate, a particular feature of the region.

Atmospheric precipitation there does not exceed 100 mm per annum. Formerly, the Aral Sea was a large undrained water body: until 1960, it was the world's fourth largest undrained lake. In the 1960s, it held 1,064 km³ of water and had a surface area of 66,400 km².

The two largest rivers in the region empty into the Aral Sea: the Amudarya (2,540 km) in the south and the Syrdarya (2,200 km) in the north-east; until 1960-1970, their total runoff was 55-60 km³ per annum. This runoff allowed a stable water balance to be maintained. Extensive diversion of water from the Amudarya and the Syrdarya, to irrigate newly cultivated areas, resulted in a dramatic decrease in the runoff of these rivers. In 1913, irrigable land in the Aral Sea basin totalled 3.25 million ha. By 1965 this figure increased to 5.13 million ha. Until 1960, water diverted for all the region's needs did not exceed 63 km³.

The introduction of the concept of "cotton independence" and the economic policy that accompanied it required the area of irrigable land to be expanded. Irrigation systems in most of the region's republics were in an extremely poor condition and could not be relied on to provide any significant increase in cotton yields. In order to resolve this problem, however, it was decided to expand the area of irrigated land rather than to overhaul existing irrigation systems and improve soil fertility. During a relatively short period of 20-25 years, the area of irrigated land was expanded from 3.4 million ha in the late 1950s to 7.8 million ha in 1990. As a result, water diverted for irrigation from the rivers of the Aral Sea basin exceeded the environmental limit, and runoff to the sea shrank dramatically, thus disrupting the sea's equilibrium and leading to excessive evaporation losses.

In some of those years, no water reached the sea at all. As the level of the Aral Sea fell, the rate of shrinkage increased, and in 1989 it split into several bodies of water. The sharp decrease in, or in some years total absence of river runoff to the Aral Sea resulted in the shrinkage of the deltoid areas of the Amudarya and the Syrdarya, widespread desertification of the river deltas in the whole of the Aral region and a dramatic loss of land and water resources. The 22,000 km² surface of the dried sea is covered with sand and alluvia which contain elevated quantities of salts, toxic pesticides and fertiliser ingredients. Strong winds cause sand storms which annually carry 75-100 million tonnes of saline dust to fall far away from the Aral Sea. The transportation of mineralised dust and the discharge of heavily contaminated water to the lower course of the rivers are the main factors affecting the environment and living conditions in the Aral region.

River runoff declined so rapidly that the sea ceased to be a natural, water-draining body. In 1989, the Aral Sea split into two parts, the Great Sea and the Little Sea, and receded 100-150 km from its coastline. It thus ceased to function as a fishery and transport route. A one-way flow exists between the two water bodies (from the Little Sea to Great Sea through the Berg Strait). The Great Sea has since split into the West Sea and the East Sea.

According to the Executive Committee of the International Fund Aral Sea Saving (IFAS) (Dushanbe, 2008), at the beginning of 2008 the level of the Aral Sea was 28.6 m above that of the Baltic Sea, its volume had shrunk to 93.1 km³, less than a tenth of its volume in 1960, and its surface area shrank from 68,000 km² in 1960 to 12,370 km² over the same period, i.e. by five times.

Thanks to a dam constructed by Kazakhstan, the water level of the Little (North) Sea rose to 42.1 m in 2008, the water surface increased to 3,400 km² and volume to 27.4 km³, and salinity decreased to 17 g/l. In the Great (South) Sea, the water level has continued to fall, reaching 28.6 m, and the average salinity exceeds 90 g/l.

The unrestrained development of irrigation in the Aral Sea basin was based in part on the erroneous conclusions drawn regarding its impact. The inevitable shrinkage of the Aral Sea level as a result

of increasing water offtake, and the consequences this would have, were ignored. Moreover, in the plans and conceptual studies drawn up in that period, the Aral Sea was not considered as a natural water body into which a certain quantity of water must always be allowed to flow.

Water management schemes for the Aral Sea did not include water input in the form of river runoff to compensate for evaporation from the surface. The runoff in the lower reaches of the rivers and water inflow to the sea were limited to sanitary water use in the rivers themselves. Since no regional environmental and sanitary limits were in place, the Amudarya and the Syrdarya were viewed mainly as facilities for removing partially treated or untreated household and industrial wastewater, potentially contaminated with heavy metal salts and toxic chemicals. The environmental and social consequences of large-scale land development in the basin and the depletion and contamination of water resources were totally ignored. Moreover, no attention was paid to the fact that depletion of water sources results in increasing contamination of water and salinisation of irrigable land in the lower course of the rivers. These negative consequences and the poor design of irrigation systems severely undermined the region's water economy. The population in large parts of the basin, such as the Kyzylorda Oblast in Kazakhstan, the Republic of Karakalpakstan and some oblasts of Uzbekistan and Turkmenistan situated along the lower course of the Amudarya, have no access to properly purified drinking water.

TABLE 4. Changes in Aral Sea parameters

Parameter	Measurement unit	ГОДЫ				
		1960	1990	2007		
				Big Aral Sea	North Aral Sea	Whole of the Aral Sea
Level	m	53.4	38.24	28.6	42	
Volume	km ³	1083	323	65.4	27.7	93.1
Area	'000 km ²	68.9	36.4	9.1	3.27	12.37
Salinity	g/l	9.9	32	90-120	12-17	
Inflow to the sea	km ³ /year	63	12.5	2.105		

Source: Executive Committee of the International Fund Aral Sea Saving (2002–2008 IFAS Operating Report, Dushanbe, 2008).

The rate at which the Aral Sea is drying up, and the desertification of the surrounding areas, lead us to conclude that the sea is likely to disappear altogether in 2015-2020. According to forecasts, the disappearance of the Aral Sea will lead to the formation of a new manmade desert which will become an extension of the Karakum and Kyzylkum deserts. Images recorded by the European Space Agency confirm this forecast.

The environmental consequences of the intensive utilisation of water and land resources have had a very negative impact on the region's socioeconomic situation and have undermined its natural potential. The region's ill-advised economic development strategy, particularly with regard to irrigation, has resulted in extensive secondary salinisation of soil. According to estimates, about 70% of irrigable land is subject to varying levels of salinisation, which reduces crop yields.

Atmospheric and soil pollution results in unacceptable deterioration of the quality of drinking water from surface and underground sources.

In coastal areas, atmospheric precipitation and humidity have decreased, winter temperatures are lower whilst summer temperatures are higher. The fertility of soil exposed to the pollution has declined.

Water utilisation and distribution issues in Central Asian countries become especially acute during droughts. The droughts of 1998-2001 and 2007-2008 in the Aral Sea basin were particularly severe and took a heavy toll on the economies of Tajikistan, Uzbekistan, Kazakhstan and Turkmenistan, seriously affecting agriculture and food security in the region. In 2001, about 1.2 million people were threatened with famine.



3.4. REGIONAL ENVIRONMENTAL CO-OPERATION BETWEEN CENTRAL ASIAN COUNTRIES

The problems of the Aral region are primarily the manifestation of a protracted environmental and economic crisis which struck a vast region owing to the huge divergence between available water resources and the economic practices adopted in recent decades. In such a dry climate, the irreversible outflow of water from the Syrdarya and the Amudarya and extensive farming practices had an extremely negative impact on the region's environment, economy and living conditions.

The Aral Sea has an unusually important status as a natural resource because of its role in maintaining the ecological balance in the Aral basin, and because it is climate-forming. The sea used to be a unique natural purifier of surface water from the upper and middle sectors of the basin, and held immense biological resources. These nature-regulating functions were lost as the sea dried up. The negative consequences of this process are no longer a local problem confined to the area formerly under the sea. The problems of the drying sea affect all aspects of the environment and gradually move upstream to the mid-course of the rivers, causing serious deterioration of irrigable land, water-logging and salinisation, and damaging crop yields and the living conditions of the population. The damage not only threatens Kazakhstan, Uzbekistan and Turkmenistan, but also Tajikistan and Kyrgyzstan, since irrigated farming is the mainstay of the region's economy and vital to its standard of living.

The drying of the Aral Sea and its effects on human health and the environment have been recognised by international community as a major environmental catastrophe. On 26 March 1993, Kyzylorda hosted a conference of the heads of Central Asian states on the Aral problem with the participation of the Russian Federation, at which the *Agreement on Joint Actions for Solving the Problems of the Aral Sea and the Aral Region, Environmental Rehabilitation and Securing the Socioeconomic Development of the Aral Region* was signed and which established the International Fund Aral Sea Saving.

On 12 January 1994, the Nukus Conference of heads of Central Asian states adopted the basic provisions of the *Concept of Solving the Problems of the Aral Region, the Aral Sea and the Aral Basin*, and approved the *Programme of Actions for Improving the Environmental Situation in the Aral Sea Basin Taking into Account the Socioeconomic Development of the Region*. The objective of this Programme is to create favourable living and economic conditions in the Aral region and Central Asia, and to preserve and rehabilitate the sea as a natural resource with a smaller water area which will be sufficient for maintaining environmental stability. This Programme has provided a basis for national and regional plans to stabilise the social and environmental situation in the

region, and to create a phased and integrated solution to the Aral problem. Under this Programme, a number of projects were implemented in the Aral Sea basin to address various social and economic issues such as the improvement of medical and educational services, the fight against poverty, agricultural reform, etc.

One of the tangible achievements of the Programme was to address the problem of supplying clean drinking water in the region.

The latest water resource management concept relies on the principle that water use must be determined by natural and economic factors, and a balance must be maintained between the goals of economic development and the protection of river ecosystems. Each river basin has specific characteristics which dictate how its water is utilised, but in every case a similar approach towards water resources management applies: the utilisation of water must be planned in a way which preserves the integrity of the river ecosystem and all aspects of the environment. This approach towards the Aral problem was incorporated in the *Programme of Action for Improving the Environmental and Socioeconomic Situation in the Aral Sea Basin in 2003–2010*.

Bolat Nurgaliyev, Secretary General of the Shanghai Co-operation Organisation (SCO), said that the Aral crisis has extended far beyond the borders of the Central Asian region. Its universal lesson is that disturbing the natural ecological balance in any one region has consequences which recognise no states or borders. Natural and technogenic disasters should unite everyone in finding solutions to shared problems. It will be impossible to rehabilitate the Aral region and solve its most urgent problems, especially humanitarian ones, without a significant increase in financial and technical aid from international donors. SCO confirms that it is ready to play an active part in environmental protection and efficient natural resources management. Its commitment to this policy was demonstrated in the *Agreement on Long-term Neighbourliness, Friendship and Co-operation* signed by the heads of six states on 16 August 2007 in Bishkek. In accordance with this document, its signatories will co-operate in protecting the environment, securing environmental safety, and managing natural resources efficiently by devising and implementing special programmes and projects. The heads of state have approved two projects: *Forecasting the Water Content of Cross-border Rivers in the Aral Sea Basin*; and *Enhancing Co-operation in Environmental Protection and Improvement of the Environmental Conditions in the Aral Sea Basin – Developing a System of Geographic and Environmental Monitoring, Geological Information Systems for Geological Mapping, and Geographic and Geological Monitoring of the Aral Sea Basin*. In addition, SOC is finalising the approval of a draft Concept of co-operation in environmental protection, which will cover the Aral problem, and an agreement on efficient use of the runoff of cross-border rivers. Any progress in resolving the most urgent social and economic problems and implementing projects to restore favourable living and economic conditions in the Aral region, improve health and environmental protection, create new jobs, improve social infrastructure and restore biodiversity will only be possible if the efforts of the Central Asian, SCO, CIS and EurAsEC countries are supported by friendly states and UN institutions, above all the World Health Organisation (WHO), the UN International Children's Emergency Fund (UNICEF), the UN Fund for Population Activities (UNFPA), the World Bank, the Asian Development Bank and other international financial institutions.¹

3.5. THE PROBLEMS OF REGIONAL WATER RESOURCE MANAGEMENT

Problems associated with water supply are diverse and specific to each country. Finding solutions to these problems requires national water policies to be synchronised with programmes encouraging regional co-operation in the management of water resources. This applies particularly to countries which share cross-border rivers. Any legal co-operation between such countries must respect international conventions and guidelines for managing and protecting water resources. International regulations and guidelines must govern the formulation of national and regional water economy policies, the management of demand for water, and the protection of water quality in river basins.

¹ International conference *The Problems of the Aral Sea: Their Impact on the Population's Gene Pool, Plants and Animals, and International Co-operation for Mitigating Their Consequences* (Tashkent, 11-12 March 2008) www.sectSCO.org

Until 1992, Central Asian countries operated a fairly efficient system of centralised water resource management. The operation of hydro-electricity stations (also centrally managed) was co-ordinated with international water utilisation and cyclical adjustment of river runoff to ensure sustainable water consumption and the guaranteed flow of water to the lower courses of rivers in winter and spring. This co-ordination supported positive international relations in the hydroelectricity sector, maintained an optimum fuel and energy balance in each country and regulated energy supply and the international distribution of water.

After the Soviet Union disintegrated and its water and energy regulation bodies ceased to function, established water utilisation patterns in the basins of cross-border rivers were threatened and friction developed between Central Asia's national water industries. The most effective solution to the emerging problem was to preserve some of the functions of the formerly centralised water resource management body at the Central Asian level and transfer them to the domain of international co-operation. To this end, on 18 February 1992 the heads of water management bodies from Central Asian countries signed the inter-governmental *Agreement between the Republic of Kazakhstan, the Republic of Kyrgyzstan, the Republic of Uzbekistan, the Republic of Tajikistan and Turkmenistan on Co-operation in Joint Management of the Use and Protection of Water Resources and International Sources* which was the basis for establishing the International Co-ordinating Water Commission (ICWC), the Syrdarya Basin Water Association and the Amudarya Basin Water Association, all formed to manage water resources. However, ICWC and its institutions have no legal or economic instruments at their disposal and are not in a position to regulate international water distribution and sustainable development in the region.

The principal weakness of the existing national water and hydroelectricity industries is that they are poorly integrated into the international economic system and interact with one another outside the context of regional interests. Although they operate the same water facilities (multi-purpose reservoirs), their activities are uncoordinated and they pursue narrow, industry-specific goals. As



a rule, the officials who represent these parties in regional organisations are not senior managers, and therefore they are unable to take or implement any decisions.

The same is true of other regional organisations across Central Asia. Representation from other economic sectors in these organisations is also very weak, therefore the interests of these sectors are not taken into account objectively. No common approach is in place to enhance the hydroelectric potential of rivers in the context of the whole basin. Each country formulates its own water utilisation strategy, which increases competition for water and exacerbates water shortages and environmental problems.

The existing organisational and institutional structures of cross-border river management do not provide equal access to water resources and efficient use of hydroelectric energy potential for all countries in the region, nor do they allow international or national financial resources to be raised for regional investment projects.

The lack of legal and economic instruments regulating the hydroelectricity sector impedes the resolution of problems associated with the shared use of cross-border water resources. It has prevented the creation of a hydroelectric energy consortium in the Syrdarya basin. In fact, the protracted consultations engaged in by Central Asian countries in recent years have failed to yield any positive results.

Until recently, initiatives to resolve water supply issues have focused on the regulation and redistribution of river runoff. Henceforth, the emphasis will shift to demand management, the regulation of supply, the reduction of water consumption and the protection and improvement of water quality. Saving water is a relatively new priority in water management, necessitated by a number of economic and environmental factors which influence the use of water resources. The next planned increase in water consumption is being accompanied by a two-fold increase in the cost of water used and wastewater treatment. Therefore, there is no alternative to saving water if water use is to remain sustainable and safe in the future.

To encourage optimum distribution of limited water resources, especially in cross-border river basins, and amicable arbitration between competing economic sectors, regulation of all water use at national and regional level must be taken into consideration. The conventions surrounding the use of water must be revised, and governments must complete the transition to integrated water resource management. River basins must be used to their full potential, and properly coordinated regional and national water utilisation policies must be formulated taking into account the various organisational, financial and regulatory aspects of water economy based on systemic environmental and economic criteria.

Sustainable water utilisation is defined as the utilisation of water resources by economic sectors and the population in a manner that is not detrimental to river-basin ecosystems. This is quite a complex issue, however, since the influence of the environment itself on the nature and scale of water use must be taken into account as well as the growing anthropogenic impact on the environment. Water supply problems are also made worse by the uneven territorial distribution of water resources and water users, natural fluctuations in runoff, the continuous growth of water consumption and the contamination of water sources.

In order to eliminate water shortages and maintain essential water quality in river basins, runoff flows are being diverted and water reservoirs and other regulating facilities are being built. In almost all the countries, river runoff is totally regulated and river basins have a water saving or holding system. This is critical in encouraging international co-operation in the joint use of cross-border rivers, since water utilisation practices and other factors, including upstream contamination, affect the water security of downstream countries.

Today's water management systems must be adapted to the most urgent problems of water quality and water consumption. Solving these problems requires a combination of legal, economic and administrative procedures. All countries have effective water laws, but these must be modified in order to create a unified legal framework governing water resources and quality at national and local level and in the basin itself.



In many countries, laws pertaining to water are not fully harmonised with environmental protection provisions, and this impedes their transition to an integrated system for managing water resources. A river basin must be treated as a single geographic region in which water resources are efficiently managed in accordance with local social, economic and environmental circumstances. The principle of basin-centered management is becoming increasingly popular in many countries, and has a prominent place in international co-operation in the use of cross-border rivers.

National measures to reduce water consumption and protect water resources must include economic mechanisms, e.g., charging towards the rehabilitation and protection of water resources. Many national water policies prioritise price control as a means of protecting water and regulating consumption. Each country must take administrative, legal and economic steps to ensure that its national water utilisation practices (especially in the case of cross-border rivers) have no adverse effect on the water security of downstream countries.

Efficient implementation of a national water policy should be viewed as the most important contribution that a country can make to regional co-operation in the sharing of cross-border water resources. Since the social importance of water varies, the economic value of water sources is often overlooked in relations between countries with cross-border rivers. In such cases, the European doctrine that water is not a commercial item but heritage that must be protected and valued, provides a basis for fair and reasonable use of the resources of international rivers.

3.6. PROBLEMS OF SHARED ACCESS TO HYDROELECTRIC RESOURCES IN CENTRAL ASIA

The region has a vast and diverse resource base. Its recoverable reserves are estimated as 65 years for oil, 75 years for natural gas, and 600 years for coal. In addition, the region has considerable deposits of uranium and the potential to develop renewable energy sources. Its cost-effective hydroelectricity potential is estimated at 400 billion KW/h per annum, of which only 10% is being used. However, a feature of Central Asia's natural resources is that they are distributed unevenly across its territory. Virtually all recoverable fossil fuel reserves are concentrated in Kazakhstan, Turkmenistan and Uzbekistan, whilst Kyrgyzstan and Tajikistan have about 90% of the cost-effective hydroelectricity potential.



Water resources include renewable surface, underground and return water. Freshwater reserves are also distributed unevenly. Water shortages are becoming increasingly severe due to population growth and increasing water consumption by certain economic sectors, especially irrigated farming. A decrease in water consumption over the last decade provided only temporary relief and water offtake in the middle course of the Syrdarya, for example, has reached pre-reform levels.

The Central Asian countries together use nearly 84% of available water resources in irrigated farming. Household and industrial water consumption account for 4% and 12%, respectively. Economic conditions in Central Asian countries changed during the transition period, and with them the operating regime of the Toktogulskoye reservoir. This reservoir is now used only for domestic hydroelectric energy needs. As a result, the Toktogulskaya Hydroelectric Plant has increased its share of the total domestic power supply from 70% to 91%; water consumption by the electricity sector in autumn and winter has increased from 2.8 to 8.8 billion m³; and average daily water discharge has increased from 180 to 750 m³/sec.

This change in use of the Toktogulskoye reservoir, which formerly supplied water for irrigation and still functions as part of the Naryn-Syrdarya reservoir cascade, seriously affected water use in the Syrdarya basin in both winter and summer, and worsened international economic relations in the region. The issues involved included transfer of electric power, coal and gas supplies, safe increase of water discharge into the Syrdarya in winter, and water outflow into the main canals when water supply from the Toktogulskoye reservoir was reduced in summer.

The need for international regulation of the hydroelectricity industry arose as the region's countries attempted to create a mutually beneficial scheme to allow Kyrgyzstan to accumulate water in the reservoir in winter and discharge it in summer without restricting domestic and international irrigation supplies. Such an approach is vital for the region both politically and economically, since the dimensions and capacity of the Toktogulskoye reservoir were designed to regulate the runoff of the Syrdarya. The reservoir must hold adequate water reserves for dry years if it is to maintain the region's food and environmental security.

The absence of a comprehensive approach to the sharing of water between the power industry and irrigation has led to the continuous depletion of water reserves in the Toktogulskoye reservoir. This has undermined its role as a cyclical regulation facility. According to recent data, it has become almost a seasonal reservoir whose reserves can satisfy water needs only for one season. Since it is the only reservoir in the region which can sustain the operation of the whole series of downstream reservoirs in dry years, the loss of Toktogulskoye's multi-annual regulation function is a serious threat to sustainable water use and to the economies of Kyrgyzstan and other countries.

One of the solutions to this problem is the construction of the Kambaratinsk 1 and 2 Hydroelectric Plants upstream of the Toktogulskoye reservoir, which have a total capacity of 2,260 mW. Kambaratinsk 1 now has a pivotal role in maintaining sustainable water use in the region, and is expected also to fulfil the multi-annual regulatory functions of the Toktogulskoye reservoir and ensure the optimum operating cycle of the whole Naryn-Syrdarya cascade. With an installed capacity of 1,900 mW, Kambaratinsk 1 Hydroelectric Plant has a 4.34 km³ seasonal regulation reservoir and is located 15 km upstream of the Kambaratinsk 2 Hydroelectric Plant. These new power plants are designed to supplement the output of the Nyzhnenarynsk Hydroelectric Plants in winter. The Toktogulskoye reservoir will regulate water discharge for power generation by accumulating autumn and winter runoff, and will be able to provide water for irrigation by sharply reducing outlet to the power stations at such times. This project will require substantial investment and the participation of other countries and investors. In 1997, the establishment of an international hydroelectricity consortium had been proposed under the aegis of the existing regional associations (the Central Asian Community, the Central Asian Economic Community, and the Central Asian Co-operation Organisation) to address the worsening problems of the region's hydro-energy sector.

In their joint statement on the outcome of the Central Asian Co-operation Organisation meeting of 5-6 July 2003 in Almaty, the Presidents of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan announced a resolution to apply to international institutions (including the International Bank of Reconstruction and Development, the Asian Development Bank, the European Bank of Reconstruction and Development and the Islamic Development Bank) for assistance in establishing consortia to operate in the hydroelectricity, transport and food sectors.

NOTE: Following this application, in 2004-2006 the World Bank helped Central Asian countries to draft an agreement to set up an international hydraulic power consortium (IHPC) and carried out studies of:

- *hydraulic power resources in Central Asia, particularly, the Syrdarya basin; and*
- *the region's electricity export potential including estimates of long-term demand for electricity from Central Asian and other countries.*

The results of these studies were discussed with the donor community and, on a bilateral basis, the participating countries (Kyrgyzstan, Uzbekistan, Tajikistan and Kazakhstan). With assistance from the World Bank, a working group comprising representatives of CACO countries prepared a draft concept to establish an international hydraulic power consortium.

At the same time, the Eurasian Development Bank participated in drafting three agreements:

- *Strengthening the Organisational Structure for the Management, Protection and Development of Cross-border Water Resources in the Aral Sea Basin;*
- *The Formation and Functioning of National, Basin and Regional Databases for Comprehensive Use and Protection of Water Resources in the Aral Sea Basin; and*
- *The Protection of Cross-border Water Courses and the Rules of Controlling Their Quality and Environmental Stability in the Region.*

However, none of these drafts has so far been agreed, since the parties have different approaches to the principal issues of shared water use, and their interests do not coincide.

Enhancing co-operation between Central Asian countries in the use of hydroelectric energy resources is a priority for EurAsEC. This issue has been addressed on several occasions at head-of-state and heads-of-government levels. In August 2006, a decision was made to draft a Concept of efficient use of hydroelectric energy resources in Central Asia. A document drafted by the parties' experts outlines the principles of the efficient use of hydroelectric resources, priority areas of co-operation between EurAsEC countries, and the objectives, key phases, and timescale of the Concept. Differences between the parties mean this document is still under discussion. It is envisaged that a further draft agreement on co-operation between EurAsEC member countries on the efficient use and protection of the region's hydroelectric resources will be written.

3.7. ENVIRONMENTAL SAFETY AT MINING WASTE SITES

Waste from uranium production facilities poses a serious threat to the population and the environment in Central Asia. The waste has accumulated over many decades but is no longer reliably maintained, and there are insufficient funds to ensure that necessary land reclamation measures are being taken at uranium tailings sites. There is a high risk that any accident would have a severe cross-border impact and this situation calls for concerted action to ensure the safety of these sites.

IN BELARUS, the most urgent environmental problem is the radioactive contamination of about one quarter of its territory following the Chernobyl disaster.

IN KAZAKHSTAN, there is a high level of contamination from mining and uranium processing waste sites.

IN KYRGYZSTAN, there are many complex and radioactive ore processing dumps concentrated in river basins (of the 35 dump sites, 30 contain uranium processing waste and five contain non-ferrous metal wastes).

NOTE: *Between 1946 and 1968, a uranium deposit was exploited in the floodplain of the Mailuu-Suu (a tributary of the Syrdarya), 26 km from the Uzbek border (Madaniyat, Pakhtaabad District). A total of 23 tailing storage facilities were constructed to hold 2 million m³ of radioactive waste, and 13 dump sites contained a total of 845,600 m³ of radioactive overburden. The total area of the Mailuu-Suu tailings storage is 432,000 m². In Mailuu-Suu city itself there are 14 tailings storage facilities and 12 dump sites. As well as the Mailuu-Suu deposit, the nearby Shakafar, Kyzyl-Dzhar and other mines were also developed.*

Kyrgyzstan's uranium tailings sites pose a major threat to human health, the environment, and the security of Central Asia. They are a particular threat to the Fergana valley. The risk of an environmental catastrophe is high, and its potential impact may spread to Kazakhstan, Uzbekistan and Tajikistan. Therefore, securing the environmental safety of the Syrdarya and Chu basins, which are exposed to the cross-border impact of mining wastes and dump sites, is viewed as a key regional priority.

The VNIIPromtekhlogiya Institute (Moscow) has prepared a report entitled *An Assessment of the Radiation and Environmental Situation and the Feasibility Study for the Rehabilitation of Areas Affected by Uranium Production in the Republic of Kyrgyzstan*. The report includes a brief assessment of radioactivity at uranium tailings storage facilities and reclaimed radioactive waste storage sites in the Mailuu-Suu area. It also includes the Institute's engineering and environmental surveys and the results of previous studies by Kyrgyz and Uzbek specialists. The Institute's proposed project comprises an assessment of the present condition of the tailings storage facilities and surrounding areas, their effect on the environment, safety aspects, and technical solutions to rehabilitate these facilities and ensure safe working conditions. The project is intended to stabilise the radiation affecting the city of Mailuu-Suu and prevent the spread of radioactive materials to other parts of the valley along the alluvial cone of the Mailuu-Suu as a result of landslides, riverbed obstruction or flushing-out of tailings sites.

IN TAJIKISTAN, areas where dangerous radioactive waste has accumulated are a serious threat to health. In Sogdiyskaya Oblast there are large storage sites for radioactive tailings and low-

grade ores. The oblast is also home to the Anzob Mercury and Antimony Works and two gold mining facilities. Most tailings sites are situated close to cities and rivers. Close to Khudzhand and Chkalovsk, 9 km from the Syrdarya, is the 70-hectare Digmai storage facility, which contains radioactive tailings and the waste of rare-earth metal processing. Digmai is the largest facility of its kind in Tajikistan; it holds 20 million tonnes of uranium processing waste and 5.7 million tonnes of vanadium processing waste. The site has not been maintained since ore processing there was abandoned. Although the site was partly sown with reeds, its surface has dried out and radioactive dust is being carried by the wind to the surrounding area. Several radioactive tailings sites are located near the cities of Chkalovsk, Gafurovo and Taboshar, and the village of Adrasman; all of them are major sources of environmental pollution. Dumps and open pits at these sites have not been rehabilitated and waste is being spread by wind and rain.

A dangerous situation has also developed at the Anzob Ore Mining and Processing Works on the Yagnob river, an upper tributary of the Zeravshan. Temporary waste storage facilities are overloaded and there is a serious threat that waste will no longer be contained.

The cross-border industrial waste site near Bekabad in Uzbekistan also requires attention. The Bekabad Metal Works waste heaps, which are 5-20 m high and cover an area of 15 ha, are located in the territory of Tajikistan. Bekabad's large household landfill site is located nearby. The storage facilities there do not meet the environmental protection regulations of either country.

The most serious direct threat to health and the environment is posed by the Kanibadam toxic waste storage facility near the district's administrative centre, the Great Fergana Canal and the Kairakum reservoir. This contains toxic chemicals and biological preparations whose shelf life has expired or which have been banned from use. Between 1973 and 1990, a total of 4,000 tonnes of toxic waste accumulated there. The site has no waterproof ground membrane or drainage system. Underground aquifers are not protected against toxic chemicals, and the state of the toxic waste storage area is not monitored.



Under the aegis of EurAsEC, the Concept for an international programme entitled *Rehabilitation of Areas Affected by Uranium Production in EurAsEC Member Countries* is being drafted; this Concept is aimed at eliminating the risks of radioactive contamination.

NOTE: In EurAsEC member countries, a total area of 80 km² is affected by radioactive contamination from uranium production facilities total. This includes 51.7 km² in Kazakhstan, 16 km² in Russia, 6.5 km² in Kyrgyzstan, 3.0 km² in Tajikistan and 2.8 km² in Uzbekistan.

Tailings storage and mining waste sites in Kyrgyzstan and Tajikistan pose the most serious cross-border threat to the environment, as these can contaminate river basins.

The state corporation, Rosatom, prepared a draft Concept for the EurAsEC international programme entitled Rehabilitation of Areas Affected by Uranium Production in EurAsEC Member Countries. This Concept proposes a unified system for radiation safety and rehabilitation of areas contaminated by radiation to international standards, in order to prevent cross-border environmental disasters; trials of certain elements of this system will be carried out at the most dangerous sites in Kyrgyzstan (Kadzhi-Sai and Minkush) and Tajikistan (Taboshar).

According to a preliminary estimate (2008), this programme will cost 446 million roubles; it will be implemented in 2010-2015.

It is envisaged that the programme will be financed by EurAsEC, international organisations, private investors and by the governments of EurAsEC member countries.



4. Environmental Problems in the Caspian Region

As international demand for oil and gas increases, the vast oil and gas reserves of the Caspian region have attracted the attention of international energy companies and individual countries.

The proven oil reserves owned by Azerbaijan, Russia, Kazakhstan, Turkmenistan and Iran are estimated at 17-49 billion barrels, which is 3-5% of the world's oil reserves. Natural gas reserves total 6.5 trillion m³, comparable to those of Saudi Arabia, whilst probable reserves are estimated at 9.3 trillion m³. As at the end of 2006, proven oil reserves totalled 39.6 billion barrels (3.3% of the world's reserves) in Kazakhstan and 0.5 billion barrels in Turkmenistan.



In 2006, oil production in the region totalled 2.3 billion barrels per day, almost equal to oil output in Brazil, the second largest oil producer in South America. It is expected that, in 2010, the Caspian region will produce 2.9-3.8 million barrels of oil per day, surpassing Venezuela's output. The region's natural gas production in 2005 reached 147 billion m³. This almost equals the total gas production of South and Central America and Mexico.

The economy of the region's post-Soviet states is heavily dependent on the production and export of fossil fuels. The economic importance of coastal areas, national economies, living and environmental conditions in the region have all changed accordingly.

The Caspian Sea is the world's largest inland water body. Its size and its ecology largely depend on the water quality of the rivers that empty into it. The effects of human activity in the region are augmented by climate change and extreme weather conditions. As a result, the ecosystems of the Caspian basin bear an excessive anthropogenic load, detrimental to the environment and the living conditions of the population. Mismanaged industrial development, pollution and the exploitation of valuable resources (oil, gas, uranium, sturgeon and other fish, etc.), all harm the environment. There is an inevitable social and economic price to pay both nationally and internationally. Rising Caspian Sea levels in 1978-1996 were a huge environmental problem for the region's countries which were faced with the associated problems of flooding, salinisation of pasture and other agricultural land and degradation of infrastructure. Intensive fishing and contamination have decimated the sea's biological resources.

Of all the economic activity undertaken in the eastern Caspian region, intensive oil and gas exploration and production have the worst impact on the environment. Pollution of the sea, air and soil is being recorded in many offshore and onshore areas. To date, desertification, soil consolidation and soil contamination resulting from the production and transportation of oil have affected a total area of 500,000 ha. Severe soil degradation resulting from spillages of oil and oil products has been recorded over 5,000 ha in the Atyrau and Mangistau Oblasts. Data on soil contamination in Turkmenistan is incomplete but, according to preliminary estimates, may affect 1,000 ha.

A boom in offshore and onshore oil exploration and production and the expansion of the pipeline network create risks for the environment. The Volga alone carries several thousand tonnes of oil products annually from onshore facilities to the Caspian Sea. The rivers that empty into the Caspian Sea are responsible for over 50% of its total oil contamination. Future development of onshore and shelf deposits is expected to increase this pollution. Currently, the northern part of the sea, mainly the Volga delta, has a high content of phenols and oil products, which may affect plant and animal life. Depletion of fish stocks, damage to the beauty of the landscape, the deterioration of water quality and other negative influences may undermine prospects for future

development, especially of fisheries and tourism. Oil from certain Caspian deposits has higher natural radioactivity. The long-term exploitation of these deposits, especially in Mangistau Oblast, has resulted in the accumulation of 10,000-15,000 tonnes of low-radiation, oil-bearing waste and scrap metal in temporary storage facilities close to the oil deposits. These sources of radiation are an additional threat to environmental safety.

In Turkmenistan, oil production in the Cheleken peninsula, and the transportation of oil and gas by tanker and pipeline, have harmed local biodiversity and ecosystems. Several specialised chemical plants are also located in Cheleken. This high concentration of oil and chemical facilities raises particular environmental protection issues, since not only is there an increased risk of water and air contamination, but the rising Caspian sea level could also cause industrial sites to flood. Offshore oil production in the Turkmen sector of the Caspian, near the Cheleken peninsula, is based on dozens of platforms producing 350,000 tonnes of oil annually. Before the oil boom in Cheleken, flat pits formed by saline soil on the shore (*takyrs*) served as natural water reservoirs. These *takyrs* provided fresh water to some 10,000 people, farm animals (camels, sheep and goats) and migrating birds. When oil production began, many *takyrs* were used as evaporation ponds for oily fluids and became contaminated with oil products, surface reagents and heavy metals. Oil spills and other emergencies continue to threaten the environment and public health.

Given the need to preserve the ecosystem and natural resources of the Caspian Sea as oil reserves are developed, Kazakhstan and Turkmenistan must keep a close eye on environmental protection and safety. For example, Kazakhstan banned the flaring of gas and discharge and burial of waste at sea. Environmental standards and industrial safety in both countries have been brought up to international levels. In addition, these countries implemented a package of measures to ensure prompt reaction to oil spills, including the formation of a special offshore rescue team. A National Plan of Action was developed to prevent and respond to oil spills in the sea and inland water bodies. Under the Tehran Convention (Framework Convention for the Protection of the Marine Environment of the Caspian Sea), several protocols to tackle the region's most acute problems were drafted and forwarded to other Caspian countries for discussion and ratification.

In order to secure the environmental safety and sustainable development of the Caspian region, a review of the defence industry is also needed, particularly the production, processing and storage of uranium. Projects to assess the threat posed by such facilities and to reclaim land must be planned and implemented, and information on any threat to human health and the environment around such facilities must be made publicly available.

The expansion of the energy sector in the region over the last decade has had a significant impact upon the socio-economic climate, changes in which are often linked to the increasing burden on the environment. Political stability and security in the Caspian basin is a vital prerequisite for future development. In order to reduce actual and potential threats to security, Caspian states should continue to build mutual trust and take steps to promote regional co-operation and integration. This will enable them to respond more efficiently to new challenges such as climate change.

Industries in all the coastal oblasts of Kazakhstan and Turkmenistan are highly specialised, and increases in their gross regional product is attributable mainly to the energy sector, whilst agricultural production in the same areas is declining.

Caspian cities have become strategic centres for the energy sector – the location of their financial services, transportation, housing, etc. – and this attracts many migrants from rural areas, other regions and even other countries. At present, more than half of the region's population lives in urban areas close to oil and other raw material deposits. This widens the social and economic divide between these cities and the agricultural areas located at some distance from the sea.

Development of these areas is seriously impeded by a shortage of drinking water. Over the next decade, the availability of fresh water will be the key factor in the sustainable development of the region's cities.

One of the signs of the growing human impact on the sea is the dramatic shrinkage in the population of Caspian seals – from one million a century ago to 350,000-400,000 animals in the 1960s and 110,000 at present. Until recently, the decline in the seal population was attributed to excessive

hunting and poaching, but the main reason for the decline of this species are now thought to be environmental pollution, scarcity of food, ecosystemic change, global warming and disease.

It is believed that fluctuations in the Caspian Sea level are mainly due to climate change, especially in the Volga basin, which contributes about 80% of total run-off to the sea. Rising seas and natural events such as storm surges have led to the flooding of oil wells and infrastructure. This in turn has resulted in the contamination of vast areas of land and the deterioration of scarce farm land. Earthquakes can also have a devastating effect on the region's energy infrastructure, population and environment.

The rapid development of the fishing industry in the 1950s, and other factors such as the degradation of spawning grounds in the Volga and Ural deltas, dam building, intensive fishing, poaching and pollution, have all resulted in the dramatic depletion of Caspian fish stocks. The process was accelerated by predation by non-native fish species introduced to the Caspian Sea. The catch of sturgeon, the Caspian's main commercial fish, fell from 16,800 tonnes in 1981 to 8,000 tonnes in 1991 and 200 kg in 2007. In 2001, a temporary ban on the export of sturgeon caviar was introduced under the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The depletion of the sea's natural resources has had serious economic and environmental consequences.

Achieving a balance between the development of energy resources and the prevention of excessive depletion of resources and harm to the environment is a complex challenge for this region. A study of the environmental and socioeconomic problems that may provoke conflict in the region should lead to the formation of a coordinated policy to ensure environmental and industrial safety in the Caspian region. It will also encourage co-operation in the utilisation of cross-border water resources.



5. A Comprehensive Approach to Environmental Problems

In all Central Asian and Caspian economies, almost every sector is dominated by resource-intensive production. This has a significant environmental impact. Efforts being made at the national level to ensure environmental safety are inadequate. Rates of morbidity attributable to environmental pollution are rising or remain high. The urgent problem of industrial waste processing is unresolved. Areas affected by radioactive contamination or in which dangerous industrial waste is stored face intolerable risk to health and the environment. The problems of soil erosion and loss of soil fertility are escalating. A considerable proportion of fixed industrial assets do not meet environmental safety standards. Water quality in most cross-border watercourses does not meet statutory requirements. The supply of fresh drinking water is becoming critical in all these countries.

Cross-border pollution poses numerous threats to the environment. In many cases, contamination spreads to neighbouring countries, with severe economic and social consequences. Air and water are particularly exposed to contamination. Accumulated industrial waste threatens public health and ecosystems, particularly in border regions. However, efforts to solve cross-border environmental problems are poorly co-ordinated. The environment does not often take centre stage in international relations, and there are no established procedures in place to resolve cross-border environmental issues.

The contamination of very scarce water resources is a serious obstacle to sustainable development and environmental protection in Central Asian countries. Their economies are seeing immense structural change, involving upheaval in the ownership of land and the means of production. In many cases this brings with it a change in water consumption patterns and, subsequently, a redistribution of investment between economic sectors. High energy costs restrict the profit that can be generated from available resources, making investors reluctant to invest in the water sector.

The lack of effective distribution of water across borders, the conflicts which arise from this, poor communication regarding the quality and utilisation of water, and restricted common access to information, all threaten the progress of regional co-operation. It is notable that states concerned tend to share out the benefits of access to water, rather than the water itself. This complicates the problems associated with joint use of cross-border rivers. Declining water quality and quantity and the risk of flooding are huge threats to sustainable development. This situation requires the creation of effective and authoritative co-operation organisations and the implementation of regional security measures. Until now, there has been no integrated management of the utilisation and protection of river basin water resources.

The higher frequency of natural and manmade disasters causes disproportionate damage to the region's poorest countries. All countries prone to natural disasters suffer economic losses, but they strive to adapt to such loss rather than change their approaches radically.

All these inter-related problems are dealt with separately at the national and regional levels, reducing the effectiveness of the response to environmental challenges. Therefore, regional co-operation must focus on formulating a comprehensive environmental security policy.

6. Integrating Environmental Standards into the Investment Policies of International Financial Institutions

Environmental considerations are of increasing importance to international institutions, especially those operating in the cross-border context. In June 2003, the ten largest international banks declared that their investment decisions would be governed by the Equator Principles. These principles are so called because a project must comply equally with the requirements of national and international laws pertaining to environmental protection and industrial safety. The number of major lending institutions which have adopted the Equator Principles has reached sixty, and altogether they control 80-85% of the global project financing market.

The Equator Principles are based on the environmental protection and social standards adopted by the International Financial Corporation, a member of the World Bank. When a bank adopts the Equator Principles to assess the environmental and social impact of a project, this means that it assumes responsibility for the environmental safety of the project as early as the pre-investment phase. Thus international financial institutions are changing their policy of non-intervention to one of joint responsibility for efficient natural resources management and environmental protection. Unfortunately, the Equator Principles have not yet been adopted by banks in post-Soviet countries.

The Equator Principles apply to new project financing in all sectors with total capital costs of at least \$10 million. They form a benchmark against which financiers assess all the project's risks, including environmental, social and socio-economic issues. Recipients who do not meet these criteria must either repay their loans with a risk premium or review their business. Normally, these criteria apply to sizable, complex or costly projects such as power plants, chemical facilities and mines and transport, environmental and telecommunications infrastructure.

Financial institutions adopting the Equator Principles must develop their own project-financing procedures covering various aspects of corporate social responsibility and effective and safe environmental management. In so doing, these institutions undertake to lend only to projects where there is a provenability and willingness to comply with social and environmental protection measures. The bank must designate each project as either Category A, B or C (i.e. high, medium or low environmental or social risk). For Category A and B projects, the borrower is required to carry out a special environmental impact assessment. This approach enables the bank to eliminate or minimise the project's potential negative impact on ecosystems and the population.

Since the Equator Principles constitute a new approach towards investment, they should be explained in more detail:

PRINCIPLE 1: REVIEW AND CATEGORISATION

Projects are categorised according to the magnitude of their potential impact and risk in accordance with the following environmental and social assessment criteria:

Category A – projects with potentially significant adverse social or environmental consequences that are diverse, irreversible or unprecedented;

Category B – projects with potentially limited adverse social or environmental consequences that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures; and

Category C – projects with minimal or no social or environmental consequences.

PRINCIPLE 2: SOCIAL AND ENVIRONMENTAL ASSESSMENT

For each project assessed as either Category A or Category B, the borrower must carry out a Social and Environmental Impact Assessment and propose mitigation and risk management measures that are relevant and appropriate to the nature and scale of the proposed project.

PRINCIPLE 3: APPLICABLE SOCIAL AND ENVIRONMENTAL STANDARDS

Standards applied fall into the following categories: social and environmental impact assessment and management systems; working conditions; prevention and elimination of environmental pollution; public health and safety; acquisition of land and forced migration; preservation of biodiversity and comprehensive management of natural resources; indigenous people; and cultural heritage.

PRINCIPLE 4: ACTION PLAN AND MANAGEMENT SYSTEM

For all Category A and B projects the borrower must prepare an Action Plan which addresses environmental protection, industrial safety and social activity. Borrowers will build on, maintain or establish a Social and Environmental Management System that addresses the management of these impacts, risks, and any remedial action required in order to comply with applicable host country social and environmental laws and regulations.

PRINCIPLE 5: CONSULTATION AND DISCLOSURE

For all Category A and, as appropriate, Category B projects, the government, borrower or third party expert must consult with the communities affected by the project in a structured and culturally appropriate manner.

PRINCIPLE 6: GRIEVANCE MECHANISM

For all Category A and, as appropriate, Category B projects, consultation, disclosure and community engagement must continue throughout construction and operation of the project, the borrower will, commensurate with the risks and adverse impacts of the project, establish a grievance mechanism as part of the management system.

PRINCIPLE 7: INDEPENDENT REVIEW

For all Category A projects and, as appropriate, Category B projects, an independent social or environmental expert not directly associated with the borrower will review the Social and Environmental Impact Assessment, Action Plan and consultation documentation in order to assess compliance with the Equator Principles.

PRINCIPLE 8: COVENANTS

For Category A and B projects, the borrower will include in financing documentation covenants to comply with all relevant host country social and environmental laws, regulations and permits; to comply with the Action Plan (where applicable) during the construction and operation of the project; and to provide periodic reports in a format agreed with the banks.

PRINCIPLE 9: INDEPENDENT MONITORING AND REPORTING

To ensure ongoing monitoring and reporting over the life of the loan, the banks will, for all Category A projects, and as appropriate, Category B projects, require the appointment of an independent environmental and/or social expert, or require that the borrower retain qualified and experienced external experts to verify its monitoring information.

Through the EDB Technical Assistance Fund (EDB TAF), the Eurasian Development Bank offers financial assistance for pre-investment and innovative studies at international, country and industry levels. The EDB TAF is designed to enhance the flow of knowledge, skills, ideas, technology and methods that demonstrate best international practice and adhere to international standards of corporate governance.

The EDB's TAF programme is being developed in accordance with the Bank's mission and strategic objectives.

THE TECHNICAL ASSISTANCE PROGRAMME for investment project participants is aimed at accelerating and enhancing the efficiency of project implementation; it includes support for feasibility studies, marketing surveys, personnel training and qualifications (on-the-job training, preliminary training, distance education, seminars, training sessions, etc.), administration, project monitoring and project assessment on completion.

THE REGIONAL INTEGRATION STUDIES PROGRAMME focuses on financing research and educational projects. Priority is given to national, international and industry studies of regional integration. These studies may relate to reform in various economic sectors and any accompanying legislative changes, (including model legislation) or to integration problems. Grants may be provided for educational projects with an integration element and for seminars, round tables and conferences dedicated to various aspects of economic integration.

THE PROGRAMME OF SUPPORT FOR INNOVATIVE ECONOMY is designed to encourage innovation and economic diversification in the member states and the manufacture of competitive, higher-value-added, hi-tech products in non-raw-material sectors. Assistance may be provided for applied studies of innovative industries, clusters and producers, feasibility studies of innovative projects, marketing surveys related to innovative technology, the publication of specialised periodicals and creation of websites.

THE PROGRAMME OF SUPPORT FOR INTER-REGIONAL AND INTERNATIONAL PROGRAMMES is aimed at inter-regional and international programmes, including those being implemented under the aegis of EurAsEC. Eligible programmes include those relating to co-operation between the border regions of the Bank's member states and other countries in the region. Support may also be provided for applied studies, open seminars, round-tables, forums, conferences, publication of periodicals and creation of websites dedicated to inter-regional and international co-operation.

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JOURNAL OF EURASIAN ECONOMIC INTEGRATION

The Journal of Eurasian Integration is a quarterly academic and analytical journal published in Russian by the Eurasian Development Bank. The members of Editorial Board and Advisory Council are distinguished academicians, practitioners and experts in regional integration. Eurasian Economic Integration brings together academic and analytical articles, reviews of books relating to regional integration, interviews and quarterly chronicles of regional integration. With its focus on economics, the journal is a rich source of material addressing a broad range of issues specific to Eurasian integration. These include integration theory and its relevance to the development context; economic integration (trade, investment, financial institutions); institutional integration; cooperation issues in the post-Soviet space; and international experience of regional integration. The first issue was published in the third quarter of 2008.

REQUIREMENTS FOR SUBMISSIONS. Papers should be sent by e-mail to editor@eabr.org for blind review. There are no strict limitations on the length of articles. However, the Editorial Board recommends authors to adhere to 6,000-8,000 words or 30,000-40,000 characters. In addition to the main text, authors must a brief author(s)' biography (100-150 words), executive summary (100-150 words) and bibliography. These materials must be attached in a separate file.

EDB EURASIAN INTEGRATION YEARBOOK

Eurasian Integration Yearbook publishes wide range of articles and other materials in English language on theory and practical aspects of Eurasian integration. The major part of the annual Yearbook consists of English versions of selected articles published in the Journal of Eurasian Economic Integration and other analytical publications of EDB. These will be supplemented by integration chronicles for the respective year. The Yearbook will improve access of the world community to the best papers on various issues of regional integration published in Russian language. Apart from papers published in the Journal of Eurasian Economic Integration, papers written specifically for the Yearbook are also welcome (submission in English or Russian).

INDUSTRY REPORTS

AS OF TODAY THE FOLLOWING INDUSTRY REPORTS HAVE BEEN PUBLISHED AND DISTRIBUTED:

- Nuclear Energy Complexes in Russia and Kazakhstan: Prospects for Development and Cooperation. April 2008. In Russian.
- Water and Energy Resources in Central Asia: Utilization and Development Issues. April 2008. In Russian
- The CIS Common Electric Power Market
<http://www.eabr.org/rus/publications/AnalyticalReports/>

THE FOLLOWING INDUSTRY REPORTS ARE IN THE PROCESS OF PREPARATION:

- Integration of Stock Markets
- The EurAsEC Transport Corridors

CONSULTANCY

The Bank provides consultancy services to its strategic partners and clients. The Bank's Strategy and Research Department has in-house expert resources and can involve specialists from other departments, such as project managers, corporate financing, treasury, legal department. External experts from the extensive pool of CIS countries' experts could be mobilised to work on consultancy projects.

AREAS OF EXPERTISE:

- Analysis of current status and dynamics of development in selected sectors in the member states of the Bank and other EurAsEC countries;
- Financial markets analytical reviews in the EurAsEC countries;
- Economic and legal analysis of integration agreements and institutions in the Eurasian space;
- Development banks' operations and activities in the CIS countries and issues of cooperation.

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