UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
Committee on Environmental Policy

ENVIRONMENTAL PERFORMANCE REVIEWS

KAZAKHSTAN

Second Review
Synopsis

UNITED NATIONS
New York and Geneva, 2010

NOTE

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Preface

The second Environmental Performance Review (EPR) of Kazakhstan began in April 2007 with a preparatory mission, during which the final structure of the report was discussed and established. The review mission took place from 10 to 19 September 2007. The team of international experts included experts from Finland, France, Italy and Sweden, and from the secretariats of the Organisation for Economic Co-operation and Development (OECD) and the United Nations Economic Commission for Europe (UNECE).

The draft EPR report and its translation into Russian were submitted to Kazakhstan for comments and to the Ad Hoc Expert Group on Environmental Performance for consideration in March 2008. During its meeting of 17 and 18 April 2008, the Expert Group discussed the report in detail with expert representatives of the Government of Kazakhstan, focusing in particular on the conclusions and recommendations made by the international experts.

The EPR recommendations, with suggested amendments from the Expert Group, were then submitted for peer review to the fifteenth session of the UNECE Committee on Environmental Policy on 21 April 2008. A high-level delegation from Kazakhstan participated in the peer review. The Committee adopted the recommendations as set out in this report.

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

UNECE would also like to express its deep appreciation to the Governments of Austria, Bulgaria, Estonia, Germany and the Netherlands for their financial contributions, to the Governments of Finland, France, Italy and Sweden for having delegated their experts for the review, and to OECD, the Organization for Security and Cooperation in Europe and the United Nations Development Programme for their support to the EPR Programme and this review.

Executive summary

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

OVERALL CONTEXT

Since 2000, the economy of Kazakhstan has grown significantly, with GDP growth of more than 10 per cent per year and a reduction in the inflation rate to around 8 per cent on average in the period 2002–2006. This success has been driven primarily by increased production and exports of oil, minerals and other commodities.

The poverty rate has declined considerably, by some 20 per cent from 2000 to 2006. At the same time, the official unemployment rate remains high and the estimated 30 per cent share of the shadow economy in GDP shows slight if any signs of reduction.

With respect to the environment, despite certain promising developments, Kazakhstan still has a long way to go. The budget devoted by the Government on environmental spending (0.5% of the overall government budget) is too low for a country where environmental challenges are both considerable and diverse. Greenhouse gas emissions per GDP that rank among the highest in the world, the situation around the Aral Sea and Lake Balkhash, the drastic reduction of Caspian Sea sturgeon population, land degradation and desertification, the accumulation of untreated industrial waste, radioactive contamination, industrial pollution (especially from mining and heavy industries), and insufficient infrastructure for water and solid waste are among the major problems that Kazakhstan is facing.

POLICYMAKING, PLANNING AND IMPLEMENTATION

The decision-making framework and its implementation

Kazakhstan is making sustainable development a priority … In 2006, Kazakhstan adopted the *Concept of Transition to Sustainable Development for the period 2007–2024 (CTSD)* with a long-term view, quantitative targets and indicators for the measurement of its progress. The country also created institutions to make this approach work, such as a National Council for Sustainable Development. The Concept is aiming at achieving the balance between economic, social and environmental goals without endangering the international competitiveness of the economy, and established a major target to bring Kazakhstan into the group of 50 most competitive countries of the world by 2012.

… but actions for sustainable development fall short compared with intentions. The major emphasis is on economic growth, while important social and environmental dimensions of sustainable development are not sufficiently addressed. The Concept does not provide the tools for an intersectoral approach, and the integration of the environment into areas such as energy, transport and agriculture has not yet been achieved. The Kazyna Fund for Sustainable Development has the potential to integrate sustainable development into investment projects. Thus far, however, the Fund has focused exclusively on fostering economic diversification and competitiveness, and has not financed any environmental projects or projects integrating sustainable development and environment components. While it is true that poverty has significantly decreased in Kazakhstan, much remains to be done vis-à-vis improving the environment, social conditions and the overall quality of life, especially in the rural areas. Only a few regions have started to develop their own sustainable development programmes and action plans. More generally, civil society involvement in the strategic planning process and the implementation of sustainable development remains relatively limited.

The Environmental Code of 2007 integrates main environmental laws and regulations, both existing and recently developed. The Code also contains obligations from international environmental conventions. It extends the validity of permits from one to three years; introduces the notion of integrated permitting, based on best available techniques, and a differentiated approach to regulation of large and small enterprises; and

elevates the status of inspection and enforcement bodies. So far, the integrated permitting system has only pilot status, as major procedural aspects are still under development.

Enforcement of legislation has improved thanks to institutional reforms … The recent legal changes have given impetus to reforms of regulatory approaches. Policymaking and regulatory functions are now separated, and control authorities have autonomous status except for their budgets. Kazakh authorities have broadened the use of integrated inspection, improved the design of enterprise monitoring, increased the level of sanctions and promoted social disapproval of violations. In addition, both governmental and non-governmental actors have helped increase knowledge of legal requirements. The institutional framework for compliance monitoring has improved due to structural and procedural reforms and better allocation of resources.

Still, many problems remained unsolved. The regulatory requirements are not always clear and realistic. The "check and punish" strategy of compliance assurance is largely intact and related work methods have improved only marginally. The probability of discovering and responding to non-compliance in a timely manner has remained low, and the system of civil, administrative and criminal enforcement is still oriented towards imposing sanctions rather than improving compliance behaviour. Some concerns remain with respect to fairness, proportionality and transparency of enforcement.

The Ministry of Environmental Protection (MEP) has lost important environmental protection tasks since responsibilities between different ministries were reallocated in 2002. Competencies for the protection of water, forest and natural resources and their use have been shifted, through a number of specialized committees, to the Ministry of Agriculture. While there is effective cooperation between ministries, especially in the area of environmental inspection, responsibilities for coordination need to be more clear-cut in other areas of environmental protection management.

Environmental institutions continue to suffer from limited capacity and inefficient internal organization ... For instance, resource allocation in the control bodies is not aligned with the regulatory workload, which has been constantly increasing in recent years. The very high turnover of staff shows that working conditions do not support the full "professionalization" of staff within the MEP and its subdivisions.

… which prevents Kazakhstan from going ahead with modern instruments and practices. For example, the immediate implementation of integrated permitting is hampered by limited knowledge of production processes and poor fiscal evaluation of projects. In addition, procedural aspects and the content of integrated permits still need clarification. Despite efforts to improve inspection practices and adopt risk-based approaches, the probability of discovering non-compliance is low: inspections are not frequent enough and are always announced in advance. Inspectorates are understaffed, and inspectors are insufficiently trained and place a traditional focus on procedural compliance (i.e. validity of permits, timely submission of reports and payments of pollution charges). Possibilities to determine compliance through a better analysis of reports submitted by the regulated community are scarcely used. In general, the non-compliance response strategy is mostly driven by fiscal objectives.

Environmental monitoring, public participation and education

Environmental monitoring has improved since the first EPR. After a decline in 1990s (it was even discontinued in 1997), environmental monitoring recovered in such areas as air quality, water and radiation monitoring, with more monitoring stations and points. Obsolete equipment and devices are being replaced thanks to improving State budget financing. This progress is critical at a time when adverse impacts on human health and ecosystems can be observed in various regions due to the overall growth of the economy and particularly of the most polluting industries. Nonetheless, important gaps in monitoring coverage and monitoring reliability remain, for instance, there are no monitoring activities in the Aral Sea area. Current monitoring networks are generally unable to link pollution levels with emission patterns and thus identify activities that violate emission norms and/or environmental quality standards under normal operating conditions.

Since 2000, Kazakhstan has made significant progress in improving public access to environmental information and involving the public in environmental decision-making. Several legal acts, regulations and detailed procedures have been introduced to enhance public participation and meet obligations under the Aarhus Convention[1]. A Public Environmental Council was established to serve as a forum for dialogue, and the MEP cooperates with NGOs in various ways at both the national and local levels. Several NGOs were involved in public hearings during State ecological expertise (SEE) of a number of large projects. However, draft sectoral strategic documents are not submitted for public hearings, even though current legislation provides for public participation in SEE, because no detailed procedures have been established to this end. The public is often involved on an ad hoc basis, but this is unsystematic and there is no transparent and clear framework. Concerns remain with respect to the public's access to justice on environmental matters.

The lack of education and training on environment and sustainable development at all levels has created a dearth of specialists in the public and private sectors in a context of rapidly developing polluting industries. The Concept of Environmental Education contains general provisions, but it has not been made operational. Cooperation between the ministries responsible for environment and education is insufficient, and mechanisms for cooperation are non-existent. No public authority is clearly responsible for promoting non-formal and informal adult education.

International cooperation and commitments

Kazakhstan is a party to 24 multilateral environmental agreements, 12 of which have been ratified since the first EPR. With its rapidly growing economy, the country is positioning itself as a major player both regionally and globally. One of Kazakhstan's policy goals is to harmonize its national environmental legislation with international norms and standards, particularly those of the European Union. The country is developing policies and action plans to meet the requirements of the ratified conventions, and foreign assistance has often been sought for their implementation.

However, the implementation of these international environmental agreements could be more efficient. Several ministries and agencies are directly responsible or involved in implementation of certain MEAs and international cooperation on particular environmental issues, with the MEP being the main such authority. Success in international cooperation and projects is closely tied to good cooperation and coordination of activities between the MEP and other ministries, which in Kazakhstan is sometimes lacking. Capacity and allocated resources are often inadequate for effective implementation. The country has been slow to ratify the protocols that make those MEAs operational, e.g. the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the protocols to the UNECE environmental conventions. Ratifying the Kyoto Protocol is of particular importance, as Kazakhstan could then take advantage of the benefits of the flexible mechanisms to renovate its industrial facilities while cutting greenhouse gas emissions.

MOBILIZING FINANCIAL RESOURCES FOR THE ENVIRONMENT

The use of economic instruments is dominated by pollution charges, levied on a very large number of air and water pollutants as well as on different types of waste. Product charges play only a marginal role. Provisions for introducing other instruments (e.g. subsidy schemes for cleaner technology, rehabilitation funds and introduction of market-based emission trading schemes and compensation for environmental damages) are contained in the 2007 Environmental Code, but details for their implementation are still lacking. The application of pollution charges is linked to a system of permits. This system is quite complex and administratively onerous. The calculation of charges lacks transparency. An important change is that the number of pollutants subject to payment of pollution charges – although still high compared to the OECD[2] countries – was reduced in 2008.

The Government has continued to raise considerable revenues from pollution charges. Together with environmental fines, these revenues represented 0.3 per cent of the GDP in 2006: 73 per cent were levied on air pollution, 25 per cent on waste and 2 per cent on water pollution. Since 2002, revenues have been channelled to

[1] The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.
[2] Organisation for Economic Co-operation and Development.

local budgets without earmarking for environmental purposes. As an incentive to reduce pollution and increase investment in pollution abatement and control, they appear to have had little effect on enterprises.

Environmental protection expenditures represented 1.2 to 1.3 per cent of GDP in the period 2001–2006, with roughly half spent on investments. In 2006, 87 per cent of investment expenditures on the environment were from enterprises, with 7.5 per cent from foreign assistance and only 5.5 per cent from the State budget. Enterprises allocated 75 per cent of their environmental investments to air protection, while State budget expenditures went primarily to water protection and land rehabilitation. Very little is allocated to waste management. The rapid economic growth since 2000 has led to strong growth in fiscal revenues and substantial increases in government expenditures. Meanwhile, environmental protection is not given sufficient priority in government budget plans. Accordingly, progress in ameliorating the public environmental infrastructure for waste management and wastewater treatment has been limited.

The level of environmental expenditures at local level is insufficient to ensure good environmental services. Central government transfers are too limited and local governments are not allowed to engage in direct transactions with either domestic or foreign banks or multilateral financial institutions. This constitutes a serious constraint vis-à-vis financing of much needed improvements of the environmental infrastructure. Attracting more funds from the central government, local capital markets and multilateral financial institutions requires adequate local institutional capacity for developing environmental projects with clear targets and time frames, supported by a sound assessment of financial costs (investment, operational and maintenance costs) and sustainable financing strategies; all these capacities are as yet lacking at the local level.

INTEGRATION OF ENVIRONMENTAL CONCERNS IN ECONOMIC SECTORS AND PROMOTION OF SUSTAINABLE DEVELOPMENT

Energy and the environment

Although improved, Kazakhstan's energy intensity remains among the highest in the world. The country's rapid economic growth has resulted in a strong increase in energy demand. Domestic energy production, mostly from the burning of indigenous coal, was not accompanied by the introduction of cleaner and more efficient technologies. Related environmental impacts have been severe, especially that of air pollution resulting from the use of low-quality coal. Energy efficiency is low and could be improved considerably, for instance through strengthening energy-saving measures and reducing energy losses, which would simultaneously decrease the environmental impacts of the power sector.

The country has a significant potential in primary sources of energy, notably in coal, gas and oil as well as renewables such as hydro, wind and solar power. Fifty-one per cent of domestic needs are covered by coal, 25 per cent by gas and 23 per cent by crude oil. Renewables (except for large hydropower plants) have not yet tapped because of the lack of supporting legislation, strategies and incentive mechanisms. This has prevented clean energies from competing with domestic coal, which is abundant and available at very low prices.

Kazakhstan is striving to introduce more sustainable practices in the energy sector ... Over the past decade, the Government has elaborated strategic documents and new legislation on renewable energies, energy efficiency and the environmental impacts of energy production and use. A long-term strategy until 2024 on the efficient use of energy and the development of alternative energy sources in the context of sustainable development is undergoing inter-ministerial consultation. It includes measures and targets for increased renewable energy use. In parallel, environmental legislation is gradually being improved. The 2007 Environmental Code provides for incentives to promote the implementation of environmental protection measures in the energy sector. Even so, strategies and legislation need to find concrete application through appropriate means of implementation.

… although energy prices are still regulated and subsidized by the Government. Rates are too low to promote full cost recovery. This is a major barrier to implementing energy efficiency measures and attracting energy-saving investments, making it impossible, inter alia, to install new cleaner and efficient energy technologies based on best available techniques such as combined cycle power plants and to improve the efficiency of the

power transmission and distribution grid. Both the Kazakh authorities and energy operators recognize that there is a need to raise rates in order to attract investors, and to build capacity and improve skills through know-how and technology transfer.

Management of mineral resources and the environment

Kazakhstan is rich in mineral resources. Its industrial sector is largely based on their extraction and processing. In 2004, the mining sector accounted for nearly half the total industrial output and more than 20 per cent of employment. Kazakhstan's rapid economic growth is mainly due to the rapid development of the oil and gas sector, which is at the same time creating considerable environmental pressures.

The intensity of environmental problems in the regions where oil and gas are produced has continued to increase since the first EPR in 2000. The extraction of new deposits both onshore and offshore and the construction of pipelines, roads, railways and oil and gas refineries have been associated with increasing pollution and long-term impact on water, air, soil, fauna and flora. There is little understanding of the serious environmental, health and safety consequences of mining and oil and gas operations. These consequences have not been properly assessed, nor have they been addressed sufficiently by measures designed to reduce pollution. Their cumulative effects, particularly in the environmentally sensitive area of the Caspian Sea and its coastal zone, are largely underestimated.

Mining does not follow sustainability principles. For instance, coal mines produce considerable methane emissions. While methane can result in mine explosions causing death and injuries, methane recuperation is a way to improve safety, decrease environmental pollution and bring in revenues. A few joint implementation projects on coal-mine methane are currently on hold until the Kyoto Protocol is ratified by the country. As mining and metallurgy generate both greenhouse gas emissions and a huge amount of waste, both are of great concern with respect to human health. Kazakhstan does not have a specific strategy for integrating sustainable issues into mineral sector policies, nor is there a mine health and safety law in place.

Water management for sustainable development

Kazakhstan has embarked on a modernization of water policy based on integrated management of water resources. In 2003, a new Water Code was adopted. The country defined eight river basins over its territory, established river basin organizations (RBOs) in each of them, and signed a number of international agreements on transboundary river basins. The national authority for water management is the Committee on Water Resources at the Ministry of Agriculture. The Committee is responsible for developing a master plan on integrated water use and protection based on the plans of each of the eight basins. So far, these plans are still in their infancy: they are mainly oriented towards quantitative management issues, and lack action programmes and financial mechanisms.

Political impetus to go further is weak, and the needed adjustment of institutions slow. Reform in the water sector has not yet been accompanied by the strengthening of administration. Currently, the various institutions in charge of specific aspects of water management (e.g. protection of the environment, agriculture use, groundwater extraction and water-quality monitoring) do not coordinate their work properly. The Committee on Water Resources does not have sufficient authority for such coordination.

Decision-making in integrated water management is still at an early stage in Kazakhstan, as the high-quality technical and financial information needed as a basis is lacking. The eight RBOs transmit information on quantities of water used to the Committee on Water Resources, as was done in the past, but provide limited information on water quality and corrective measures. National water management authorities therefore do not have sufficiently detailed information to develop coherent national policy. Moreover, existing capacity is still too limited in the Committee on Water Resources and RBOs to undertake such new tasks. Efforts in this direction have already been initiated with assistance from international organizations. At this point, information and communications technologies (ICTs) are not sufficiently used to share skills and experience between the national specialists.

The drastic under-investment in the maintenance of all water infrastructure since the 1990s is a matter of increasing concern. Eighty per cent of infrastructure is obsolete in some of the major cities, and the inter-oblast distribution network has even collapsed in some areas. Since the Programme on drinking water and the Programme for rural development were adopted in 2002 and 2003 respectively, State funds have been increasingly spent on rehabilitating drinking-water infrastructure (increasing from approximately US$ 5 million in 2000 to $200 million in 2007). Ownership of rehabilitated water facilities in a given oblast is transferred to that oblast's administration, which assumes responsibility for its maintenance. But difficulties remain: most of the time, the oblast administration neither prepared nor has the capacity to accomplish its tasks properly. Moreover, the too low water prices make it impossible to provide water services of good quality. The performance of water utilities is not monitored, and water service professionals need further training.

Conclusions and recommendations

Chapter 1: Policymaking framework for environment protection and sustainable development

Sustainable development is a key challenge for Kazakhstan. SD is commonly understood to have three interdependent and mutually reinforcing pillars, namely economic development, social development and environmental protection. Kazakahstan's *Concept of Transition to Sustainable Development for the period 2007–2024 (CTSD)* is aiming at achieving the balance between economic, social and environmental goals without endangering the international competitiveness of the economy. It is important to take into account the linkages between economic activity and the environment in order to optimize the inevitable trade-offs from an overall societal point of view. This requires establishing institutional arrangements, which ensure appropriate representation and integration of environmental policy concerns in these development strategies. The National Council for Sustainable Development, with the Ministry of Environmental Protection as its operational body, is responsible for the implementation of the *Concept.* However, intersectoral coordination and the integration of the environment into areas such as energy, transport and agriculture are not sufficient. Despite the considerable progress achieved with regard to poverty alleviation, much remains to be done vis-à-vis improving social conditions and the overall quality of life, especially in the rural areas. More generally, civil society involvement in the process of strategic planning and implementation of SD remains relatively limited but is increasing gradually.

Recommendation 1.1:
In order to achieve a better balance between economic, social and environmental policy areas, the Government, through the National Council for Sustainable Development should:

- *Increase the coordinating role of the Ministry of the Environmental Protection in improving cooperation between competent ministries to ensure adequate integration of environmental and social issues in sectoral policies and strategies;*
- *Give the MEP responsibility for analyzing the draft sectoral policies and strategies on their compliance with sustainable development principles;*
- *Increase partnerships and transparency in the development and implementation of sustainable development programmes at the national and local levels, involving all major stakeholders, including civil society and NGOs.*

Regional SD planning should be established at the territorial level for the eight "SD zones", which correspond to the eight river basins in the country. A few regions have started to develop their own SD programmes and action plans, e.g. the Balkhash-Alakol basin and Astana and Almaty. But there has been little progress made so far in other regions, notably rural areas. A lack of awareness and capacity at the local level has restrained the development and implementation of actions related to the *Concept.* Regional SD plans and territorial development programmes, carried out partly in cooperation with international organizations, have taken different approaches, which risks leading to overlaps and contradictions if adequate cross-sectoral cooperation and coordination mechanisms are not in place. Moreover, national SD research and information in the *Concept*'s implementation phase appear to be insufficient. Improvements in these areas would also help to raise international visibility of the country's SD policies.

Recommendation 1.2:
In order to support the implementation of the Concept of Transition to Sustainable Development for the period 2007–2024 at the regional and local levels, especially in rural areas, the Government should:

- *Strengthen cross-sectoral cooperation and coordination at the regional and local levels by establishing local intersectoral coordination councils and task forces on development and implementation of sustainable development programmes;*
- *Increase capacity-building at the local level, e.g. by providing civil servants with training on developing sustainable development programmes at the territorial level, including access to international experience in this field;*
- *Develop education programmes and raise public awareness concerning sustainable development issues, including the responsibilities of local authorities and other major stakeholders, including the general public.*

See also recommendation 3.6.

The Kazyna Fund for SD, created in 2006, is a new mechanism for coordination of investment projects, designed to foster economic diversification and competitiveness. In principle, there could be considerable social benefits from a strategy designed to promote the integration of social and environmental considerations in corresponding sector investment strategies, thereby promoting SD. But such a strategy is lacking. There appears to be a need to broaden the Fund's mandate to also include the financing of environmental projects and projects integrating SD and environment components.

Recommendation 1.3:
The Government should, in cooperation with the Kazyna Sustainable Development Fund and other stakeholders, develop a strategy for the effective integration of SD principles and environmental considerations into the Fund's investment policy and projects. The Government should also consider extending the mandate of the Fund to include financing of environmental investments.

Since 2002, there have been changes in the allocation of environmental protection competencies across different ministries. This has involved, inter alia, that the competencies for the protection of water, forestry and natural resources and their use are now concentrated in a single ministry, i.e. the Ministry of Agriculture. Specialized committees, e.g. the Committee on Water Resources and the Committee on Forestry and Hunting within the Ministry of Agriculture, also have mandates that extend beyond the areas of environmental protection. This overall constellation risks blurring responsibility for environmental protection measures and can lead to conflict of interest. Although there is fairly effective cooperation between the different ministries in the area of environmental inspection, there is still some overlapping of functions in environmental management.

Recommendation 1.4:
The Government should clearly define the horizontal responsibilities in environmental policy matters across and within different ministries, including responsibilities for coordination of environmental management. This is especially true for the areas of protection of natural resources, water resources and forest resources.

Since the first review, Kazakhstan has strengthened and modernized the legal and policy framework for environmental protection management. In 2006–2007, Kazakhstan took the important step of integrating main environmental laws and regulations in the *Environmental Code*. A series of by-laws have been adopted in 2007–2008 to make it operational. The *Environmental Code* could be used as a basis for further improvement of environmental legislation according to the best international practices.

Recommendation 1.5:
The Ministry of Environmental Protection, in cooperation with stakeholders at the national level and with international institutions, should further improve the environmental legislation by continuing its harmonization with relevant EU Directives.

Chapter 2: Compliance and enforcement mechanisms

Since the first EPR of Kazakhstan, the Government has launched important regulatory and institutional reforms, e.g. the Environmental Code introduced the notion of integrated permitting based on best available techniques and a differentiated approach toward regulation of large and small enterprises; the status of inspection and enforcement bodies was elevated, and training and better facilities were provided. Kazakh authorities broadened the use of integrated inspection, improved the design of enterprise monitoring, increased the level of sanctions and promoted social disapproval of violations. Also, both governmental and non-governmental actors helped increase knowledge about legal requirements. The institutional framework for compliance monitoring has improved due to structural and procedural reforms, and increased allocation of resources.

Despite these positive changes, many problems remained unsolved. Institutions continue to suffer from low capacity. The regulatory requirements are not always clear and realistic. The "check and punish" strategy of compliance assurance is largely intact and related work methods have improved only marginally. The probability of discovering and responding to non-compliance in a timely manner has remained low and the system of civil, administrative and criminal enforcement is still oriented towards imposing sanctions rather than

improving compliance behaviour. Some concerns remain with respect to fairness, proportionality and transparency of enforcement.

Under these circumstances, profound changes in the institutional and regulatory frameworks and compliance assurance strategies are still required. Key areas for improvement are the following.

Institutional development

According to international benchmarks, regulatory and enforcement authorities need to be established as autonomous institutions with clear, legally defined responsibilities. In a vertical structure, the mandate to take enforcement-related decisions should be delegated to the lowest level, where issues can be effectively managed. National-level authorities should support subnational units in maintaining integrity, strengthening their capacity, providing methodological guidance and staff training, and establishing appropriate funding and performance-measurement mechanisms. The internal organization should promote teamwork, and effective working relations should be established and maintained with other agencies and departments whose activities are linked to environmental enforcement. Furthermore, competent authorities need adequate resources (human, material and financial) to carry out their functions effectively and efficiently. The number and particularly the quality of human resources are decisive. However, even most skilled experts cannot fulfil their roles without adequate funding and support facilities.

In Kazakhstan, the policymaking and regulatory functions are now separated after establishing the new Committee on Environmental Regulation and Control. At the same time, the MEP has not established sufficiently clear priorities for its implementation arms, which are not receiving a budget commensurate with the tasks that they have to carry out. In addition, a high turnover of staff denotes unsupportive working conditions that prevent a full "professionalization" of the civil servants working within the MEP and its subdivisions. Resource allocation is not aligned to the regulatory workload, which has been constantly increasing over lasting recent years.

Recommendation 2.1:
The Ministry of Environmental Protection should further strengthen the institutional capacity for compliance assurance. More specifically, it should:

- *Link budget planning to activity planning, and provide budgets that are commensurate with the scope of regulation and inspection;*
- *Create conditions that would retain staff and motivate their high performance.*

Reform of strategies and tools

Regulation and compliance assurance is not an end but a means to achieving compliance and environmental improvements. Within such a system, competent authorities should establish regulatory requirements and design their strategies in a way, which induces voluntary compliance and deters violations. The choice of specific instruments or their mix will depend upon the profile – in particular, the compliance history – of the regulated community. The regulated community must be treated equitably, with consistency and in a transparent and proportionate manner. To enforce environmental law effectively and fairly, the competent authorities should have access to the full range of informal, administrative, civil, and criminal remedies. Whatever remedies are available, guidelines should define the criteria for selecting one path of enforcement over another.

Recent legal changes in Kazakhstan have given impetus to reforms of regulatory approaches. Most importantly, a differentiated treatment of the regulated community became possible. The pace of reforms and their outcomes will be contingent, however, upon the capacity to manage change, which still has to be developed. For example, the immediate implementation of integrated permitting is hardly possible because of the limited knowledge of production processes and economic evaluation of projects. In addition, procedural aspects and the content of integrated permits still need clarification. At the same time, simplification of regulation of SMEs is being delayed by the lack of sector-specific legally binding rules. The value of public participation for establishing regulatory requirements is not given credence; public hearings are regarded as a procedural burden rather than as a mechanism that helps manage environmental and financial risk.

Despite efforts to improve inspection practices and adopt risk-based approaches, the probability of discovering non-compliance with substantive requirements, e.g. ELVs, is low. To a large extent, this stems from procedural drawbacks (e.g. restrictions on the frequency of inspection or mandatory announcement of any site visit two weeks in advance), but also from insufficient staff training and a traditional focus on procedural compliance (i.e. validity of permits and timely submission of reports and payments of pollution charges). Absence of environmental benchmarking within specific sectors is another symptom of excessive attention to procedural compliance. At the same time, the possibilities to determine compliance through a better analysis of reports submitted by the regulated community are hardly exploited.

Among non-compliance responses, fines are predominant. While following general principles that are stipulated in the administrative enforcement legislation, the process of fine calculation remains very opaque. The abrupt application of high fines after long periods of passive condoning undermines the credibility of environmental enforcement authorities. In general, the non-compliance response strategy is mostly driven by fiscal objectives.

Recommendation 2.2:

In order to promote a higher environmental compliance and performance among the regulated community, the MEP should gradually reform the procedures on EIA and State ecological expertise and the compliance assurance instruments, with due attention to capacity constraints. To accomplish this, the MEP should:

- *Simplify and shorten the EIA and SEE procedures for certain medium- and small-scale projects;*
- *Implement the recently developed regulations and procedures for transition to integrated permitting for large industry and further elaborate the structure of environmental permits for large industry, so that it fully corresponds to best international practice, and set related deadlines and schedule;*
- *Introduce decommissioning conditions in environmental permits;*
- *To increase the probability of discovering non-compliance, lift frequency restrictions (in conjunction with promoting greater transparency) and further develop the risk-based approach to inspection, whereby the highest priority is given to largest polluters and companies that are systematically in non-compliance, and conduct unannounced checks as deemed appropriate;*
- *Improve the methods of conducting site visits and pay attention to checking environmental performance, including the technical state of facilities;*
- *Reduce the administrative burden of self-reporting and boost the MEP capacity to use self-reported information for decision-making;*
- *Introduce, on a pilot basis, the requirement to rehabilitate ecosystems as part of the environmental liability regime, rather than systematically imposing monetary penalties;*
- *Develop and use transparent, computer-based tools to assess the level of fines. While providing response to administrative violations, follow the enforcement pyramid from mild to severe sanctions in order to promote the credibility of the Government.*

Iterative assessment and correction of performance

Competent authorities need specific indicators to measure, manage and disclose progress in achieving regulatory compliance. An adequate system of performance management is pivotal not only for monitoring operations, as is typically done, but also to better design instruments and strategies, and to enhance accountability.

Kazakhstan environmental authorities have made efforts to improve the system of performance management, but improvements remain piecemeal, often limited to one agency rather the whole range of authorities, ensuring the functioning of the regulatory cycle. One major problem is the descriptive character of performance information, and hence its poor adaptation to decision-making. The general public has access only to statistical yearbooks, where compliance and enforcement information is restricted to output indicators with very limited relevance for measuring performance. Activity reports of competent authorities are not disclosed.

Recommendation 2.3:

In order to promote a better functioning of institutions involved in the whole cycle of environmental regulation, the MEP, in cooperation with the National Statistical Agency, the General Prosecutor's Office and other partners needs to improve the system of performance management. To do this, the MEP should:

- *Review the compliance and enforcement indicators throughout the entire regulatory cycle and keep a selection of the most relevant of these indicators;*
- *Standardize and normalize enforcement and compliance data;*
- *Analyse and present enforcement and compliance data in a meaningful way to reflect the decision-making process;*
- *Build more comprehensive, accurate, and user-friendly data management systems and create a public database containing permitting and inspection data;*
- *Disclose activity reports produced by all agencies involved in environmental regulation and compliance assurance.*

Chapter 3: Information, public participation and education

Environmental monitoring in Kazakhstan is recovering after the decline in the 1990s in such areas as air quality, water and radiation monitoring. The number of monitoring stations and points has been increasing since 2000 and obsolete equipment and devices are being replaced thanks to improving State budget financing. The single transboundary air monitoring station was refurbished and automated. Kazakhstan has expanded cooperation with its neighbors regarding water-quality monitoring in transboundary waters.

In spite of these efforts, important gaps in monitoring coverage remain. The Aral Sea is not covered by regular observations. The number of observation points is far below the requirements of the applicable monitoring regulations. The number of parameters measured is limited and the data quality is doubtful owing to insufficient frequency of sampling. Air concentrations of a number of pollutants identified by the international community as most harmful to human health and the environment are not measured in Kazakhstan. Background monitoring is conducted on one station only. Although monitoring stations in the country give a good indication of the population's exposure to pollution they are not always capturing the full impact of pollution episodes. Moreover, the current monitoring networks are generally unable to link pollution levels with emission patterns, and thus identify activities that violate emission norms or environmental quality standards under normal operating conditions.

Recommendation 3.1:
The Ministry of Environmental Protection should review the environmental monitoring programme run by Kazhydromet to identify gaps, weaknesses and inconsistencies and to develop a strategy with an action plan for further modernization and upgrading the monitoring networks in line with international guidelines and best practices. Such action plan should establish time frames and specify budgets:
(a) *To link monitoring objectives with priority environmental problems at national and territorial levels and make monitoring an instrument to assess progress in achieving environmental policy targets set in State programmes and plans;*
(b) *To enlarge the number of parameters to measure, in particular, ground-level ozone, PM_{10}, heavy metals and POPs in ambient air and biological parameters in water;*
(c) *To establish additional background and transboundary monitoring stations in line with internationally agreed guidelines;*
(d) *To complete the transition to automatic measurements and improve data quality control and storage procedures;*
(e) *To link environmental quality data with emission data by enterprises to establish cause-effect relationships to be reported to compliance control and policymaking authorities for possible action;*
(f) *To develop monitoring network in the Aral Sea area.*

Since 2002, the *Law on Air Protection* introduced an obligation on enterprises in Kazakhstan to carry out an inventory of polluting emissions in addition to existing reporting on emissions to statistical authorities. Enterprises register their pollution sources in the Registry of Stationary Sources of Pollution and Their Characteristics. The emission data reported to the Agency on Statistics is not matched with this roster as the Agency follows a different sectoral nomenclature. Moreover, the emissions of heavy metals and of POPs are practically not reported in Kazakhstan due to the lack of reliable calculation methods. State statistical reporting includes emissions from stationary sources only. All this complicates the preparation of emission inventories that Kazakhstan has to produce for its own environmental policy and to report to the international community.

To implement the requirements of the *Environmental Code*, Kazakhstan is introducing modifications to its system, in operation since 2001, of environmental monitoring of enterprises. To this end, the MEP issued in 2007 a regulation that obliges enterprises to report on the results of the environmental monitoring of their production processes to the territorial bodies of the MEP. The regulation lacks specifics on the parameters to be reported. This leaves inspectorates with considerable discretion to interpret the actual content of enterprise reports, and therefore creates conditions for conflict of interest and corruption.

Recommendation 3.2:
The Ministry of Environmental Protection and the Agency for Statistics should jointly review their environmental reporting requirements for enterprises and prepare the necessary modifications to harmonize and streamline these requirements so that enterprise reporting data could facilitate the preparation of emission inventories in line with international guidelines and the development, step by step, of territorial and, thereafter, national pollutant release and transfer registers.

Since 2005, the MEP is developing an electronic database on natural resources cadastres (inventories). It contains data on the local, oblast and national levels for forestry management, protected areas, wild animals and fisheries, and is supported by maps presenting data. It is planned to make the database even more sophisticated by adding, in the near future, data on water use and on waste. There are no plans, however, to complement this data by ambient environmental quality data produced by Kazhydromet.

Kazhydromet produces periodic bulletins on environmental pollution in the country as well as some basins and regions. Only monthly and quarterly bulletins on environmental pollution in the country are circulated among governmental bodies using the distribution list annually approved by the MEP. For other institutional and private readers, Kazhydromet provides its information products for a fee. Its website, which presents only very limited environmental data and information, needs to be upgraded and to disclose daily information on the quality of the environment.

Recommendation 3.3:
The MEP should review the current information dissemination procedures of Kazhydromet to make data and information on ambient environment freely available to all information users, including all governmental bodies at all levels, business and industry, and the general public. Restrictions, if any, should not go beyond those referred to in the Aarhus Convention, to which Kazakhstan is a Party. Kazhydromet should also upgrade its website by uploading all its bulletins and information on ambient air, water and soil quality as measured by its networks.

Kazakhstan took useful steps to better coordinate environmental monitoring and data collection activities through the development of the USSENRM. The MEP established an Inter-agency Working Group to Organize and Conduct the USSENRM that helped to reach an agreement between agencies on the Concept for USSENRM and on the type of information to be exchanged, format and schedule for the exchange of information within USSENRM. A database on natural resource cadastres is under development in cooperation with the Working Group.

In addition, the MEP initiated the development of a comprehensive database accessible via the Internet that is expected to cover, inter alia, data on emissions, discharges, waste, biodiversity and natural resources. The intention is, once the structure and operation modalities of the database have been tested and approved, to proceed with the selection of a database managing company every second year through tenders. This approach is unlikely to ensure continuity in data collection, as there will be no continuity of institutional memory. Moreover, the database segment with environmental and natural resource data risks duplicating the existing database on natural resource cadastres.

Recommendation 3.4:
The MEP, with the support of the USSENRM Inter-agency Working Group, should critically review its plans to establish, in addition to the database on natural resource cadastres, a self-standing database on environment with the aim of either making these two databases mutually supplementary or of considerably expanding the former database by including datasets on emissions, discharges and ambient environmental quality. The

database(s) should be made accessible to contributing agencies and the general public following the Aarhus Convention obligations.

Kazakhstan adopted several legal acts to harmonize national legislation with the obligations under the Aarhus Convention. A requirement for public participation in decision-making relating to the environment is integrated into the 2007 *Environmental Code*. The MEP issued a number of regulations to establish detailed procedures in this regard. A Public Environmental Council was established by the order of the Minister of Environmental Protection. Territorial offices of MEP cooperate with NGOs in various ways. Several NGOs were involved in public hearings under the State Ecological Expertise of a number of large projects.

Despite these important steps, much remains to be done. Current legislation of Kazakhstan provides for public participation in strategic environmental expertise (SEE). However, no detail procedures have been established to this end. As a consequence, draft sectoral strategic documents are not submitted for public hearings. Circulation of draft regulations to the industry and business associations for comment (see section 3.4 above) cannot be interpreted as public participation in the broad sense. While there are cases of ad hoc public involvement in discussions on some MEP draft plans, these efforts are not systematic and as such do not establish a transparent and clear framework. Concerns remain with respect to the public access to justice on environmental matters.

Recommendation 3.5:
The Government, and in particular the MEP and the Ministry of Justice, should complete the adjustment of the national legislation to the requirements of the Aarhus Convention and could promote practical implementation by authorities as well as application by the courts of the Convention's provisions, especially at the local level. This would require, inter alia, the preparation, in cooperation with the Supreme Court of Kazakhstan, of a strategy aimed at building the capacities of civil servants and the judiciary, and at introducing effective mechanisms to facilitate citizens' access to courts when their environmental rights and the rights of their associations are violated.

Kazakhstan has included provisions on environmental education and training and ESD into its *Environmental Code* and Concept of Sustainable Development. The Concept of Environmental Education, jointly adopted by the MEP and the Ministry of Education and Science, contains general provisions that have not been made operational. The Ministry of Education and Science does not have a focal point responsible for environmental education or ESD. Cooperation between Ministries and with major other stakeholders is insufficient to implement the UNECE Strategy for ESD.

The lack of a conceptual approach to environmental education in schools makes it doubtful that the majority of school graduates gain a holistic understanding of environmental concerns. No environmental course has been included in the curricula of vocational schools. There appears to be no curricula in higher education institutions on important subjects such as environmental management, environmental law and environmental control. The lack of training on these subjects does not provide the public and private sectors with the specialists needed in a country with rapidly developing polluting industries. No public authority is clearly responsible for promoting non-formal and informal adult education.

Recommendation 3.6:
The Ministry of Education and Science, in cooperation with the MEP and other relevant Ministries responsible for certain areas of professional education (e.g. the Ministry of Health), should establish an interdepartmental coordination mechanism on ESD. This mechanism should include experts in preschool, grade school, vocational and higher school education as well as non-formal and informal education, and representatives of other stakeholders, including NGOs and the mass media, to help promote and facilitate the implementation at the national level of the UNECE Strategy for ESD.

Chapter 4: Implementation of international agreements and commitments

Kazakhstan continues to pursue an active policy in the area of international environmental cooperation. It has participated in major global and regional environmental forums, has continued to develop bilateral and multilateral cooperation, and has ratified a number of MEAs since the first EPR (see annex II). Harmonization

of national environmental legislation with international norms and standards, particularly with EU Directives, is one of Kazakhstan's policy goals, and it is making efforts to achieve this goal. Adoption of the 2007 *Environmental Code* is viewed as a step in this direction. To meet the requirements of the ratified conventions, policy and action plans have been or are being developed, and foreign assistance has often been sought for their implementation.

The MEP is the main governmental authority responsible for the implementation of national policies in international environmental cooperation. Other Ministries and agencies, in particular the Ministry of Agriculture and the Ministry of Emergencies, are also directly responsible or involved in implementation of certain MEAs and international cooperation on particular environmental issues. However, cooperation and coordination of activities between the MEP and other ministries is sometimes insufficient. Additionally, the MEP is perceived as a weaker governmental body than other ministries. It is lacking resources and capacity to implement national policies in international environmental cooperation. The analysis of Kazakhstan's efforts in this area conducted by the MEP emphasizes the benefits of international cooperation for the country and the country's achievements but lacks critical assessment of gaps and drawbacks in implementation. While Kazakhstan is a party to many global and regional environmental agreements, it has been slow to ratify protocols that make those MEAs operational, e.g. the Kyoto Protocol to the UNFCCC and all the protocols to the LRTAP Convention.

Recommendation 4.1:
The Ministry of Environmental Protection, in cooperation with other relevant ministries, should establish appropriate mechanisms to ensure proper coordination of all activities at the national level related to implementation of multilateral environmental agreements (MEAs) and bilateral and multilateral cooperation.

Recommendation 4.2:
The Ministry of Environmental Protection should undertake analysis of existing drawbacks in the implementation of MEAs ratified by the country and of the importance of MEAs not yet ratified. Particular emphasis should be put on protocols to those conventions to which Kazakhstan is a party. Based on this analysis, the MEP should:
(a) *Develop a set of actions on specific MEAs where implementation could be improved. This might include identifying financing needs, including proposals to the international community with requests for funding;*
(b) *Draft legislation on ratification of the protocols of priority importance for Kazakhstan, in particular the protocols to the five UNECE Conventions and Montreal, Copenhagen and Beijing Amendments to the Montreal Protocol to the Vienna Convention for the Protection of the Ozone Layer, and submit it for consideration by the Government and subsequently by the Parliament.*

The Kyoto Protocol is of particular importance to Kazakhstan because climate change would have potential negative impacts on land use, soil quality, water availability, biodiversity and ultimately, national economy. Kazakhstan can take advantage of the benefits of the flexible mechanisms under the Kyoto Protocol to renovate its industrial facilities while cutting GHG emissions.

Recommendation 4.3:
The Government should speed up the process of ratification of the Kyoto Protocol, to attract more funds for financing investments in clean energy technologies, which would at the same time improve energy efficiency.

Chapter 5: Economic instruments for environmental protection

The system of pollution charges in Kazakhstan is quite complex and administratively onerous. A huge number of air and water pollutants are subject to payment of emission charges. Emission limit values (ELVs) are not benchmarked on sector-specific best available technologies (BAT), but rather on health and sanitary standards, which are reflected in local/regional MACs of pollutants. The calculation of charges lacks transparency. There are no specific pollution charges for individual major pollutants, only for an aggregate of air or water emissions, measured in terms of so-called "conditional tons". The criteria for determining specific levels of pollution charges are not known, and there appears to be a large element of discretion. ELVs in combination with the large pollution charge "multiplier" (a factor of 10) for emissions above the established limits, moreover,

encourage companies to negotiate sufficiently high emission ceilings to avoid non-compliance fees. This risks being a source of corruption. The lack of focus on major pollutants and polluters means that the pollution charge system can hardly be managed effectively given the limited resources of the MEP, notably as regards the inadequate capacity for compliance monitoring (see chapter 2).

The environmental effectiveness of this system of pollution charges, i.e. the extent to which these payments provide incentives for pollution reduction, has not been established. The lack of focus on major polluters and pollutants makes it impossible to more or less reliably gauge the relation between pollution charges and marginal pollution reduction costs. The system is clearly not designed to achieve specific environmental objectives, which, moreover, have also not been defined. Pollution charges appear to be mainly an instrument for local governments to raise fiscal revenues. In a more general way, the current system falls short of implementing the "polluter pays" principle.

The further reform of the permit system that is under way is a step in the right direction towards significantly reducing the number of air and water pollutants subject to ELVs and related payment of pollution charges. But the number of pollutants to be included in the permits appears still to be quite large, not only compared to international standards, but also in view of the limited government resources available for environmental policy design, implementation and monitoring. What is also required is an increased focus on major polluting firms.

Recommendation 5.1:
The MEP should review the existing system of pollution charges with a view to:

- *Limiting payment of pollution charges to major pollutants and polluters;*
- *Gradually raising pollution charges to levels that provide adequate incentives for adopting cleaner production methods;*
- *Improving the "policy mix" between incentives from economic instruments and regulations by*
- *Benchmarking ELVs on sector-specific BAT;*
- *Developing, in consultations with industry and other major stakeholders, targets for reducing emissions of major air and water pollutants;*
- *Improving fiscal incentives for enterprise investment in clean technologies and for increasing observance of international environmental management systems such as IS0 14001.*

The *Environmental Code* establishes the basic legal framework for waste management. But there is no national waste strategy and action plan in Kazakhstan for dealing with industrial and municipal waste, including the large amounts of waste accumulated from resource mining activities over many decades. Enterprises are responsible for the organization of the collection and disposal of waste generated by them; and they have to pay user charges for these services to the corresponding specialized service companies and/or municipal waste disposal facilities. Pollution charges are also applied to the waste generated by industries, which is not very common by international standards. As is the case for charges for water and air emissions, the criteria for determining the corresponding specific charge levels for the different categories of waste is not clear, suggesting that they are mainly regarded as a source of fiscal revenue. In any case, there is little rationale for this "double-charging" system. Adequately priced waste collection, treatment and disposal services should be sufficient for creating effective incentives for waste minimization, including recycling of used materials. Toxic materials that cannot be adequately handled and constitute a risk to public health should be forbidden.

Recommendation 5.2:
The MEP, in cooperation with regional and local authorities and other stakeholders needs to improve the overall management of municipal and industrial waste. This should involve, inter alia:

- *The development of a national waste management system and the associated specialized legislation with regard to the monitoring, treatment, disposal and recycling of waste;*
- *Streamlining of the existing system of payments for waste production and disposal by:*
- *Establishing user charges for industrial and municipal waste services at levels that create effective incentives for waste reduction;*
- *Abolishing pollution charges for generated industrial waste;*
- *Establishing effective incentives for promoting waste recycling;*

- *Improving incentives for observance of international environmental management standards such as ISO 14001.*

Enterprises have to pay for exhaust emissions from vehicles. These fees are proportional to annual motor fuel consumption, but they are not linked to vehicle emission standards. The associated costs are, moreover, very low and therefore do not create incentives for using vehicles with reduced environmental impacts. It is also difficult to justify that these pollution charges are not applied to the much larger group of private passenger cars, which, taken together, are a much more important source of air pollution than enterprise vehicles, leaving aside the costs of administering such charges. A first step in reducing vehicle emissions is the application of Euro 2 vehicle emission standards for new cars from 2008. There is an urgent need to increase incentives for fuel saving and to promote the wider use of better-quality fuels, especially as regards sulphur content. The current excises on petrol are very low by international standards, and moreover, do not discriminate in favour of higher quality fuels.

Recommendation 5.3:
The Government should take measures designed to reduce the environmental pressures from motor vehicle emissions. This would involve:
- *Announcing a time frame for moving to the Euro3 and Euro 4 vehicle emission standards over the medium term;*
- *Gradually raising excise taxes on petrol and diesel, and abolishing the discriminatory pollution charges for exhaust emissions from enterprise vehicles;*
- *Application of differential excise taxes for promoting the shift to low-sulphur fuels;*
- *Tax incentives for scrapping of old cars and purchase of new ones (possibly to be combined with special temporary financial incentives from car dealers);*
- *Stringent technical vehicle controls with regard to exhaust emissions.*

The situation in the water sector of Kazakhstan is a matter of major concern, mirrored in the poor state of the urban water supply and wastewater treatment infrastructure. Low tariffs do not allow water utilities to generate revenues beyond those required for covering operational costs, if at all. Funds necessary for adequate repair and maintenance, let alone for new investments in the enhancement and modernization of the water sector infrastructure, have been lacking. Low tariffs do not provide incentives for more economical use of water, and this is reflected in a high water consumption per capita. Tariff increases were limited by concerns of the regulatory body (ARNM) about their affordability by lower-income groups. But there has been no systematic assessment of the affordability of higher water charges in urban and rural areas.

Recommendation 5.4:
The Government should take measures that lead to a more economical water use, improve the financial health of water utilities, and ensure their long-term financial sustainability. This would involve:
- *Raising water abstraction charges to a level that encourages water saving;*
- *Reforming the tariff system in the water sector by gradually raising tariffs to a level that allows sufficient funding to cover operation, maintenance and reconstruction costs while moving to full cost recovery for utility services;*
- *Using targeted subsidies to address affordability problems of lower-income water users;*
- *Further increasing the installation of water meters for water users connected to the water supply network;*
- *Increasing the operational independence of public utility management from local authorities by means of performance-based contracts.*

Chapter 6: Expenditures for environmental protection

The environmental sector in Kazakhstan has suffered from a long period of chronic underinvestment in physical infrastructure and human resources. Accordingly, the environmental needs are considerable. Aggregate environmental expenditures have been on a strong upward tendency in recent years; however, this has been mainly on account of the enterprise sector, which traditionally has contributed the lion's share of environmental spending in Kazakhstan. Enterprise environmental expenditures are mainly determined by the mix of traditional regulations (command-and-control measures) and economic instruments. There is considerable scope for

improving this policy mix, inter alia, by a radical overhaul of the current largely ineffective system of pollution charges and a greater reliance on cost-effective regulations and product charges (see chapter 5).

Public environmental expenditures have grown significantly, in line with overall government expenditures. But public environmental expenditures have remained very small as a proportion of total government expenditures and on a per capita basis. This suggests that the environment does not rank high on the Government's priority list. Little is known, moreover, about the environmental and cost-effectiveness of public environmental expenditures.

The fiscal position of the public sector has, however, improved considerably, mainly due to the rapid expansion of oil and gas revenues. The savings of the NFRK have, moreover, risen sharply in recent years. This should, in principle, allow for larger transfers to the central and local government budgets for supporting the financing of environmental projects, which have a high ratio of social benefits to social costs.

What is important in this overall context is that the MEP can make its voice better heard in intergovernmental mechanisms designed to elaborate medium-term public expenditure frameworks. This also holds for the integration of environment in sector development strategies. In this context, the important potential role of the Kazyna Sustainable Development Fund for promoting, in cooperation with MEP and other stakeholders, the effective integration of environmental concerns into economic diversification and competitiveness strategies needs to be particularly emphasized.

Recommendation 6.1:
In order to achieve a better consideration of environmental impacts and related needs for environmental protection investments:
(a) The Government should set higher priorities for the environment-related issues within the national budgetary planning framework;
(b) The Government should ensure adequate representation of the MEP and other stakeholders in inter-ministerial mechanisms and institutions such as the Kazyna Sustainable Development Fund, which elaborate industrial development strategies, including the attraction of foreign direct investment.
(c) The Ministry of Environmental Protection should strengthen the resources allocated to the monitoring and evaluation of major expenditure programmes to ensure that established environmental targets are achieved and that the funds are employed in a cost-effective manner.

A large part of public sector environmental spending occurs at the local government level. But environmental concerns have been often marginalized in the budget allocation process in the face of competing sectoral priorities for limited revenues. This is reflected in the fact that local environmental expenditures were persistently and significantly smaller than local revenues from pollution charges in recent years. The large use of revenues from pollution charges for non-environmental purposes runs counter to the polluter-pays principle, a problem which was already pointed out in the first EPR but has not been solved in the meantime (see implementation status of Recommendation 2.1 of the first review in Annex I). There are more efficient fiscal instruments than pollution charges for raising the government revenues needed for the financing of non-environmental programmes at the local level. Also in this context, the rationale for central government transfers to support local environmental expenditures is not obvious.

Recommendation 6.2:
The Government should continue the efforts to ensure that all revenues from pollution charges are effectively used for financing of environmental protection measures. This could take the form of direct financing of government high-priority projects and/or partial recycling of these revenues to polluting enterprises in order to create incentives for environmental investments.

Local governments are not allowed to engage in direct transactions with either domestic or foreign banks or multilateral financial institutions. In the presence of limited central government transfers, this can constitute a serious constraint for financing of much needed improvements of the environmental infrastructure. Attracting more funds from the central government, local capital markets or multilateral financial institutions requires an adequate local institutional capacity for developing environmental projects with clear targets and timeframes, supported by a sound assessment of financial costs (investment, operational and maintenance costs) and

sustainable financing strategies. In a more general way, this argues also for the development of MTEFs at the local government level as a mechanism for strengthening public financial management and for increasing spending efficiency.

Recommendation 6.3
The Government should strengthen local capacity for planning, financing and implementation of environmental protection measures. This would involve, inter alia:

- *Building capacity for project management, including project analysis, evaluation and design as well as capacity in financial planning and management;*
- *Giving municipalities more scope for direct borrowing in local capital markets and for engaging in direct contractual relations with multilateral financial institutions and foreign donors. The corresponding projects should be in line with the environmental priorities established in the territorial development plans.*

Chapter 7: Energy and the environment

Over the past decade, the Government has elaborated strategic documents and new legislation on renewable energies, energy efficiency and environmental impacts of energy production and use. Energy policy issues are emerging e.g. from the 2006 Concept of Transition to Sustainable Development for the period 2007–2024 and its further specification to the energy sector in the Draft Concept on the efficient use of energy and the development of alternatives energy sources in the context of sustainable development until 2024. Energy issues also loom large with respect to sustainable development policies pursued at the local government level.

The key problems of Kazakhstan's economy remain its high energy intensity and related environmental impacts, especially air emissions associated with low quality coal. There is considerable scope for improving energy efficiency, strengthening energy saving measures and reducing energy losses, as well as for mitigating the environmental impacts of the power sector. Yet, strategies and legislation need to find concrete application through appropriate means of implementation.

Recommendation 7.1:
The Ministry of Environmental Protection should set more stringent environmental requirements on power plants, with a view to reducing pollutant emissions and improving monitoring and control equipment.

Investments in cleaner energy technologies are needed. This requires adequate financial means and qualified human resources. The so-called flexible mechanisms of the Kyoto Protocol (Clean Development Mechanisms (CDM) and Joint Implementation (JI)) could offer real opportunities in this context. They would help attract investors and improve internal capabilities and skills through know-how and technology transfer. Some project proposals have, in fact, already been prepared for JI in the prospect of the Protocol being ratified soon.

See Recommendation 4.3 in Chapter 4.

Renewable energy is underdeveloped in Kazakhstan, although the country's potential in renewable energy exploitation is remarkable, above all in the hydropower, wind and solar energy sectors. An effective legislative framework and clear incentive mechanisms are necessary for developing and promoting these energies. There is a need for regulatory instruments and specific programmes to boost projects (e.g. direct financing for facilities' construction or other financing mechanisms, with the involvement of the banking sector, stimulating the demand side). The creation of domestic manufacturing capacity for renewable energy technologies, such as solar power, if combined with the implementation of appropriate financing mechanisms stimulating the demand side, could effectively bring down costs thus contribute to increasing the national share of renewable energy sources and achieving relevant results in terms of CO_2 emissions reduction.

Local expertise on energy saving technologies could be strengthened as well. The achievement of targets needs to be ensured by using effective tools (such as metering systems) and adequate planning and monitoring of measures implemented. For instance, the creation of energy service companies (ESCOs) could result in substantial improvements in energy efficiency. In this field, sectoral Ministries could build on the know-how gained from long-time collaboration with international organizations (Box 7.1). In Kazakhstan, ESCOs could represent a suitable tool to be further developed in this regard.

Heat and power production will continue to rise as the economy is projected to remain on a strong upward trend. Energy production can be enhanced with the installation of new cleaner and efficient energy technologies based on BAT such as Combined Cycle Power Plants (CCPP). Grid transmission and distribution also need to be reinforced.

All these instruments and programmes would help renewable energies compete with traditional sources, especially in off-grid applications in remote areas that are now outside the traditional electricity supply network.

Recommendation 7.2:
With a view to move toward a more sustainable production and use of energy:
(a) The Government should:
- *Adopt the draft Concept on the efficient use of energy and the development of alternative energy sources in the context of sustainable development until 2024, and develop appropriate legislative instruments, such as tradable renewable energy certificates, to meet its targets;*
- *Urgently elaborate and implement effective energy efficiency and energy-saving measures and programmes in power and heat production, transmission, distribution and consumption;*
- *Create a conducive environment for the operation of energy services companies;*
- *Use effective information and awareness raising tools towards producers and consumers.*

(b) The Ministry of Energy and Mineral Resources and the Ministry for Environmental Protection should develop mechanisms and incentives to make renewable energy projects viable, including stand-alone renewable energy systems in remote off-grid areas.

In Kazakhstan, the energy industry remains heavily subsidized by the State and energy tariffs for households are still very low. These low tariffs are still a major barrier to the above-mentioned measures, as they do not encourage investments in energy efficiency and environmental improvements. Higher energy tariffs are needed for creating such incentives. Higher tariffs would also result in higher revenues for energy companies, thus making available new financial resources that could be used for the rehabilitation of power plants and infrastructure and to increase plants' capacity and production performance.

The need to increase tariffs is apparent to both the Government and operators. The open question is if and how the Government will allow it. Market rules and competition between distributors and suppliers could be the main drivers. In any case, a clear signal to both producers and consumers, informing them sufficiently in advance so that they have time to adjust to the situation, is needed. A significant rise in energy tariffs might have to be accompanied by targeted social support measures for low-income groups of the population.

Recommendation 7.3:
The Government should:
- *Support the setting of energy tariffs at adequate levels that allow cost recovery and create incentives for reducing energy consumption;*
- *Prepare targeted social measures to ensure that most vulnerable population groups have adequate access to energy supply.*

Chapter 8: Management of mineral resources and the environment

Kazakhstan's rapid economic growth, which is mainly due to the rapid development of the oil and gas sector has at the same time created considerable environmental pressures. The intensity of environmental problems in regions of oil and gas exploitation has continued to increase since the first EPR in 2000. The development of new deposits on land and offshore, and the construction of pipelines, roads, railways, and oil and gas refineries has been associated with increasing pollution, which is having a cumulative long-term impact on water, air, soil, fauna and flora. There is little understanding of the serious environmental, health and safety consequences of mining and oil and gas operations that are neither properly assessed nor addressed by measures designed to reduce pollution. Their cumulative effects, particularly in the environmentally sensitive area of the Caspian Sea and its coastal zone, are largely underestimated.

Recommendation 8.1:
In order to reduce the serious environmental, health and safety adverse impacts of mineral resources extraction, including oil and gas production activities, especially in the Caspian Sea region:
(a) The Ministry of Energy and Mineral Resources, together with mining, oil and gas companies and the scientific community, should carry out a comprehensive assessment of the cumulative effects of mineral resources extraction, including new oilfields and current oil exploration and related activities, for the Caspian Sea and its coastal zone. The Ministry of Environmental Protection should carry out the State ecological expertise of this activity;
(b) The Government should design and implement measures to reduce pollution, taking fully into account the "polluter pays" principle. It should also provide increased funding for environmental conservation, monitoring and control in the areas of mineral resources extraction and processing.

The Government of Kazakhstan has allocated coal reserves as well as coal mine methane to private mine operators as part of their exploitation contracts. Coal Mine Methane (CMM) project developers must enter into agreement with coal operators for methane exploration and exploitation. However, there is a lack of a comprehensive and consistent legal framework for CMM projects. Currently, there are few CMM projects waiting to be implemented under the Kyoto Protocol once it has been ratified. The arrangement of joint implementation projects under the Kyoto Protocol would result in both a decrease of methane emissions and an improvement of mine safety. This could also affect energy markets, by making profitable energy production from methane, given also the increasing domestic and regional gas demand. Rising global natural gas prices are also making CMM investments economically attractive.

Recommendation 8.2:
The Government, in cooperation with other major stakeholders, should continue preparing Coal Mine Methane projects that would be eligible for support by the flexible mechanisms of the Kyoto Protocol.

See also Recommendation 4.3 in Chapter 4.

Mining companies are aware of the safety risks of CMM and understand the associated environmental issues. Environmental and safety standards are improving, but also are driving up development costs, which some companies cannot afford alone, requiring aid from the State. Coal mine safety is a key concern in both surface and underground mines in Kazakhstan. However, so far there is no mine health and safety law in place. In recent years, numerous deaths and injuries due to methane mine explosions have underscored the importance of this problem and the need to have efficient mine safety standards in place.

Recommendation 8.3:
The Ministry of Labour and Social Protection of the Population and the Ministry of Health, in cooperation with the Ministry of Emergencies should prepare a mine health and safety law and its supporting regulations according to international standards to ensure the health and safety of mine workers in Kazakhstan. The Government should also provide the necessary funds for aiding compliance with such standards by companies that cannot afford it.

Kazakhstan is making significant efforts to move towards a greater diversification of the economy from oil and gas and to promote sustainable development, including by creating a legal framework, national institutions and funds for this purpose. However, the efficiency of recently created institutions such as the Kazyna Fund, and their sustainable development goals are hampered by the lack of skilled personnel, domestic technology start-up, innovative ideas and clear project assessment criteria. Very often, new projects are accepted or refused with insufficient assessment of their sustainable development objectives and viability. Projects to improve environmental performance in mining, metallurgy, and the oil and gas industries, and strategic projects that ensure safe, fair and sustainable development by meeting high standards of environmental protection, health and safety both need to be prioritized. Particular attention should be paid to improving transparency and governance, notably in the context of the Extractive Industry Transparency Initiative. These tasks are not yet possible due to the weak capacities of these new institutions.

See Recommendation 1.3 in Chapter 1 and Recommendation 6.3 in Chapter 6.

Kazakhstan should also take advantage of the current favourable economic context for developing and using its scientific potential more effectively and creating a favourable environment for enterprises to innovate in the mining and oil and gas sectors. The introduction of win-win schemes would foster interaction between mining companies and local suppliers, workers, and research institutions. The creation of technical centres in specialized fields of activities and different geographic areas would aid in developing and introducing more innovative technology in the sector. The Best Available Techniques Reference Documents of the EU, based on Directive 2008/1/EC concerning integrated pollution prevention and control, which give a detailed description of best available technical solutions for a large number of industrial production processes and for the management of mining waste, can serve as useful guidance in this approach.

Recommendation 8.4:

a) The Government should promote and support research and development and enterprise innovation in the mining and oil and gas sectors with the creation of Centres of Innovation and Cleaner Technologies in such areas as oil extraction, metallurgy, and environmental management.

b) The Ministry of Environmental Protection and the Ministry of Energy and Mineral Resources should launch activities to develop and implement best practices for raw materials production processes and develop benchmarking indicators. These best practices should become binding in the medium term.

Chapter 9: sustainable management of water resources

Since the first EPR, thanks to new laws and strategies a modernized water policy is aiding development towards an integrated management of water resources in the vast territory of Kazakhstan. Through international cooperation projects, the elements necessary for this new policy have been prepared, different agreements and conventions in international cooperation on transboundary basins signed, and river basin councils initiated in every of the eight river basins to improve stakeholder involvement.

Nevertheless, due to weak political impetus, the reform and strengthening of administration in the water sector has not really gotten under way since the first EPR. One of the major causes is the lack of coherence and coordination between water-resource management functions over different administrative bodies. Currently, the various institutions in charge of specific aspects of water management (e.g. protection of the environment, agriculture use, groundwater extraction, water-quality monitoring) work separately if not in opposition with each other. Although it is under the Ministry of Agriculture, a main water user, the Committee on Water Resources does not have sufficient authority, independence and credibility vis-à-vis the other bodies and organizations involved in water management to coordinate their respective functions. Meanwhile, the Government makes its decisions without a satisfactory view of overall water-management issues. Moreover, the low status of CWR in the administrative hierarchy also weakens its ability to negotiate on crucial issues concerning transboundary water resources. The elaboration of a satisfactory compromise between the Central Asian countries and China necessitates agreements made at the highest level that are based on more complete information and integrated planning.

There is an urgent need to stop counterproductive power struggles between the institutions involved in specific aspects of water management and to move towards better teamwork and decision-making based on improved intersectoral information. High-level decision-making and better coordination between ministries must be ensured. There is a need to bridge the existing gap between the government entities, where decisions are too often made independently.

Recommendation 9.1:

The Government should entrust the National Council on Sustainable Development with high-level decision-making and coordination on main issues regarding the protection and use of water resources.

The National Council on Sustainable Development would need high-quality technical and financial information to make its decisions. Such information, currently missing, could be provided by a national authority working in direct liaison with the eight river basin organizations. This authority could be set up through the reorganization of the current Committee on Water Resources, thus keeping the current hierarchical link with the 8 river basin organizations. It would ensure the proper coordination of activities in the water sector, starting with the preparation of an integrated water resource management (IWRM) plan. This task would necessitate (a)

improved data management capacity; (b) economic analysis to better integrate the financial constraints; (c) communication to organize public participation and awareness-raising; and (d) water monitoring and data modelling. In particular, this body would be responsible for certain tasks that are not currently covered by any other administrative body such as preparing an action programme to restore a minimum level of water quality for multipurpose water use, coordinating data management, elaborating and managing the national water monitoring programme and implementing the "user pays" and "polluter pays" principles.

Recommendation 9.2:
The Government should establish an appropriate structure with sufficiently high status focused on integrated water management planning and responsible for ensuring the coordination of actions in the water sector. This could be done by reorganization of the Committee on Water Resources of the Ministry of Agriculture so that it has the authority to develop and implement national policy on the use and protection of water resources.

To achieve the different objectives of Recommendation 9.2 and to undertake the new tasks that the Kazakh administration will face in coming years, increasing staff capacity and building up new skills among its staff is necessary. International cooperation projects can provide considerable information and support. Active cooperation with other Central Asian States regarding water management practices would allow for a sharing of the benefits of various ongoing projects pursued in different States. Such a move has already been initiated among the members of the Inter-State Commission for Water Coordination in Central Asia with the creation of the water resources training network, but needs to be further promoted and developed. The Kazakh water administration (CWR and RBOs) can also spread new skills through a better networking of the existing but still limited capacities at the national level. Modern tools such as information and communications technology (ICT) are efficient, and allow staff based in different geographical areas to work together and to pool their respective information, expertise and backgrounds. Such measures are also cost-efficient; for instance, organizing coordination meetings between staff with similar responsibilities and tasks in the different RBOs could be done inexpensively. Such meetings, possibly organized and coordinated by experts of the CWR or the recommended national high status structure, would allow for greater efficiency in work at the RBO level, as well as for the sharing of new skills and experience.

Recommendation 9.3:
The Government should support capacity-building and training of new teams to accompany the reform toward Integrated Water Resources Management in the organization of the water sector institutions. Modern means such as information and communications technology should be promoted so as to ensure obtaining complete and reliable information on the status of water resources.

With a drastic under-investment in its maintenance of drinking-water supply and wastewater collection networks and water treatment facilities since the 1990s, Kazakhstan is depleting the legacy of the infrastructure inherited from the Soviet era and postponing much-needed modernization. Eighty per cent of infrastructure has passed its prime in some oblast main cities, and the inter-oblast distribution network has even collapsed in some areas. As State investment has been reintroduced to finance the National Water Programme, water-service governance appears to be a crucial ally of river basin governance in terms of efficient and sustainable investment in the water sector. IWRM will provide valuable support for establishing a clearly defined water policy and selecting the best adapted water resources for water supply and best measures for its use and protection.

Other improvements to ensure better water-services governance need to be introduced, e.g. an adjustment of water prices, an improvement of the water-services quality, the monitoring of water companies' performance, and training of water services professionals. These actions should be undertaken by water basin authorities with cooperation at all levels, as appropriate, under the supervision of the CWR.

Recommendation 9.4:
The Government should introduce governance mechanisms for water services companies (Vodokanals) to restore efficient investment in water supply and water sanitation facilities.

See also Recommendation 5.4.

Implementation of 1st EPR recommendations

PART I: THE FRAMEWORK FOR ENVIRONMENTAL POLICY AND MANAGEMENT

Chapter 1: Legal Instruments and Institutional Arrangements for Environmental Protection

Recommendation 1.1:
Further work on the legal framework for environmental protection should concentrate on the development of the by-laws and laws that are necessary to close existing gaps in legislation (ozone, biodiversity, flora) and to fully enforce the existing laws. The priorities should be the by-laws enabling environmental monitoring, completing the procedure for environmental expertise, establishing an environmental insurance scheme (including liability schemes), and clarifying procedures for public participation as well as for enforcing the right to obtain environmental information. The legal instruments that retain practices from the former Soviet Union should be modernized. A department for environmental legislation should be established in the Ministry to coordinate work on all environmental legislation. See Recommendations 3.1, 5.1, 7.1, 8.1, 9.1, 13.1.

Since 2000, the country adopted a number of laws and by-laws trying to close up the existing gaps. In 2007, following the 2006 annual Message of the President, the country adopted the Environmental Code. The Environmental Code attempts to harmonize the national environmental legislation with provisions of Multilateral Environmental Agreements (MEAs), to take into account best practices of environmental legislation in other countries, to allow transition to new standards, and to improve the system of the state environmental control. The Environmental Code has been developed in one year. Major pieces of environmental legislation, such as the Law on Air Protection and the Law on Environmental Protection, as well as approximately 80 normative legal acts became part of the Environmental Code. At the time of the adoption over 40 by-laws were lacking due to the short time allowed for drafting the Environmental Code. By April 2008 all the necessary 46 by-laws have been adopted. The Department of Legal Support and International Cooperation in the Ministry of Environmental Protection is the body responsible for dealing with all aspects of environmental legislation and coordinating all related activities.

Recommendation 1.2:
The National Environmental Action Plan should be revised and complemented with clear priorities to become the only core plan for systematic environmental actions. The actions included in the plan should be accompanied by funding provisions. The revision should preserve consistency with other strategic policy documents. The revised plan should be widely published and brought to the attention of Parliament. A regular monitoring of implementation and updating mechanisms for the plan should be agreed and published. See also Recommendation 14.2.

The National Environmental Action Plan (NEAP) ended in 2000. In 2003, the country adopted the Concept of Ecological Safety for 2004-2015, which could be seen as a version of NEAP. Adopted in 2004, the Plan of Measures for the Period 2004-2006 outlines actions for the implementation of the next phases of the Concept. The Environmental Protection Programme for 2005-2007 was adopted in 2004. The Plan of Measures for the Period 2007-2009 was adopted in 2007. The actions and projects in the programme include information on the responsible governmental body, timeframe for implementation and cost. These are prerequisites for any project or programme to be included in the annual State Budget. However, the country lacks tools to monitor the implementation of actions and relies on the implementation reports and information on project expenditures for their assessment.

Recommendation 1.3:
All the tasks and responsibilities of environmental management institutions should be optimized and made transparent. In this process, contacts within the Ministry of Natural Resources and Environmental Protection and with other ministries and administrations should be improved. The institutions responsible for radioactivity management should be identified. The department responsible for the preparation of state-of-environment

reports should be designated. Environmental inspections should be strengthened, primarily with training, equipment and operational means. See Recommendation 6.5.

After 2000, restructuring in the Government resulted in changes in the environmental authorities. The Ministry of Environmental Protection, which replaced the Ministry of Natural Resources and Environmental Protection, no longer has responsibility for geology and the protection of water, land, forest and biodiversity. These responsibilities were transferred to other ministries. It is not clear that this change has improved the quality of environmental protection in these areas. The inter-ministerial cooperation had deteriorated to some extent because of conflicts of interests between the different governmental bodies after the new distribution of responsibilities. Nowadays, thanks to both requirements for official coordination between governmental bodies and communication on the personal level between staff of different ministries, the cooperation between governmental bodies improved and the responsibilities are more clearly defined. Responsibility for radioactivity management is under the Ministry of Energy and Mineral Resources. The national report on the state of the environment is prepared annually by the Kazakh Research Institute on Ecology and Climate (KazNIIEK) within the framework of the State budgetary programme "Scientific research on environmental protection" under the overall guidance of the Department of Sustainable Development and Scientific and Analytical Support within the Ministry of Environmental Protection. While certain work on strengthening environmental inspections has been done, capacity to assess production processes and environmental performance is still limited due to a number of factors such as poor knowledge of production processes, lack of practical experience, and limited availability of monitoring equipment.

Recommendation 1.4:
An integrated environmental information system should gradually be established. The dissemination of environmental information should be regulated in the system. It should start with an inventory of environmental information available in the Ministry for Natural Resources and Environmental Protection and other government institutions. The early and systematic publication of the inventory would facilitate the required public access to environmental information. See Recommendations 10.1 and 12.4.

Legal and institutional steps were taken to better coordinate environmental monitoring and data collection activities that are conducted by various governmental bodies through development of the Unified State System for Environmental and Natural Resources Monitoring (USSENRM). In 2001, the Government approved the Rules for Establishing and Conducting USSENRM. In 2005, the MEP established an Inter-agency Working Group to Organize and Conduct USSENRM. Its membership includes officials from the MEP, other governmental bodies and research institutions. In May 2007, the MEP specified the type of information to be exchanged and format and schedule for the exchange of information within USSENRM. Other steps to promote USSENRM included adoption by the MEP in 2006, jointly with other governmental bodies, of the Concept for USSENRM and the introduction of its elements into the 2007 Environmental Code.

In 2004, the MEP initiated development of a model for a comprehensive Internet-based database with four major groups of data, one of which is data on emissions, discharges, waste, biodiversity and natural resources. Since 2005 the Information and Analytical Centre of the MEP is developing an electronic database on cadastres (inventories) of natural resources. This is done in the implementation of the 2000 Government Resolution "On the Creation of Unified System of State Cadastres of Natural Objects of the Republic of Kazakhstan on the Basis of Digital Geo-information Systems". The 2007 Environmental Code reconfirms the establishment of such cadastres and a database.

Recommendation 1.5:
The Ministry for Natural Resources and Environmental Protection should consider cooperating more with non-governmental organizations to raise environmental awareness. Possible cooperation might also be explored in the area of environmental education. Cooperation with the Ministry of Science and Education could be extended to the joint funding of environmental training programmes. Training programmes of staff in the Ministry for Natural Resources and Environmental Protection, as well as in the relevant environmental administrations of oblasts, should be identified. See Recommendation 10.1.

The Public Environmental Council was established by the order of the Minister of Environmental Protection. Its membership includes representatives of national environmental NGOs. The Council members participate in the

extended meetings of the Collegium (Board) of the MEP and comment on draft documents discussed therein. Territorial environmental protection offices (TEPO) of the MEP cooperate with NGOs in various forms. For instance, the Almaty TEPO signed a formal cooperation agreement with 22 environmental NGOs that are most active in the city. The MEP has been supporting financially environmental NGO activities since 2004. In 2007 the MEP disbursed 10 million Tenge for four projects to be implemented by NGOs. TEPOs are also allocated budgetary funds to support local NGOs.

The MEP's Information and Analytical Centre administers the Training Center on Environmental Protection and Natural Resources Management since 2005. In addition, the Kazakhstan Research Institute of Ecology and Climate (KazNIIEK) provides specialized technical courses for enterprises. The Academy of Public Management, the main State institution for training of civil servants included environmental subjects in its curriculum. The Ministry of Education and Science does not have a focal point responsible for environmental education or education on sustainable development (ESD). Its Action Plan for Implementation of the State Programme for Development of Education in 2005–2010 does not contain actions on environmental education or ESD. Cooperation between the two Ministries, as well as between the Ministries and other stakeholders (NGOs, universities, business community etc.) is insufficient.

Chapter 2: Regulatory and Economic Instruments

Recommendation 2.1:
Kazakhstan should make a conscious and clearly visible effort to contribute governmental funds to the management and solution of environmental problems, as a prerequisite for sustainable development. Environmental payments made to the State or regional budgets and/or environmental protection funds should actually be used for environmental protection projects and investments. If the levels of environmental payments exceed the needs of environmental expenditures, their rates should be reduced, and any resulting losses in public revenues should be made up by increases in other taxes. See Recommendation 8.6.

The government has continued providing funds for addressing environmental problems, although on a rather limited scale. Government spending on environmental protection was on average only 0.5 per cent of total government expenditures in recent years. The dominating feature over the period 2002-2005 was for local government environmental expenditures to be significantly lower than their revenues from pollution charges. Only in 2006, expenditures were, on average, at approximately the same level as revenues from pollution charges.

Recommendation 2.2:
A system of tax incentives, stimulating environmental protection expenditures by leaving part of due pollution payments in enterprises, should be established. In the longer run, part of the pollution payments could be used for facilitating soft loans for environmental investments, when the environmental situation is improving significantly.

There are no significant tax incentives in place for stimulating private sector environmental protection expenditures. Revenues from pollution charges (or part of them) received from enterprises are not given back to the enterprises to be used to finance pollution abatement and control measures. A system of soft loans to enterprises for financing environmental protection measures does not exist.

Recommendation 2.3:
Revising the management practices of environmental protection funds should improve the possibilities for reducing regional disparities in environmental conditions.

Environmental protection funds as well as the earmarking of pollution charges were abolished in 2002. Governmental funding for environmental protection comes from the national and local budgets.

Recommendation 2.4:
The process of improving the environmental permitting and the environmental impact assessment systems should be continued so that the system can better address new conditions and needs. The most urgent need in

this further revision would be to start incorporating technology-based criteria into permits. See Recommendation 11.2.

Reform of EIA and permitting has largely been driven by international practice. The EIA system has become more open to public participation and its procedures has been made more transparent. At the same time, the EIA scope covers almost all enterprises irrespective of their size. This does not address the current needs taking into account the current structure of the regulated community, which is dominated by SMEs. Separate medium-based environmental permits have been integrated into a single document, and the new Environmental Code calls for the introduction of integrated permitting for large industry in 2008. Conditions stipulated in integrated permits will be based on Best Available Techniques (BAT). However, there are serious capacity constraints for adopting this approach.

Chapter 3: International Cooperation

Recommendation 3.1:
National environmental legislation should take international norms and standards into account and should be both enforceable and strictly enforced. True implementation, compliance and enforcement of environmental norms and action plans following existing international commitments should be a major priority in Kazakhstan's environmental policy. See Recommendation 1.1.

The Environmental Code adopted in 2007 is an attempt at unification of the national environmental legislation and its harmonization with international norms and standards, particularly EU legislation. However, effective mechanisms for implementing environmental legislation are still insufficient. To meet the requirements of the ratified international environmental agreements, a number of policy and action plans have been or are being developed. The Ministry of Environmental Protection, the main governmental authority responsible for the implementation of national policies in international environmental cooperation, is lacking resources and capacity to implement national policies in international environmental cooperation. The main policy documents in environmental protection and sustainable development do not list specific areas for international environmental cooperation.

Recommendation 3.2:
Regional cooperation in Central Asia, especially on transboundary waters, should be strengthened and focused more on environmental protection and the rational use of natural resources instead of solely looking at pressing economic interests. In the development of the regional environmental action plan, a more integrated approach to the regional problems should be considered.

Kazakhstan is active in developing bilateral and regional cooperation in environmental protection. It has bilateral agreements on environmental protection issues with more than a dozen countries, including some of its neighbours in Central Asia. Particular importance in the regional cooperation is given to the transboundary water issues. The Commission on the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas between Kazakhstan and Kyrgyzstan has been established. The activities of the Commission have been assessed positively, and are viewed as an example for Central Asian countries to follow with respect to efforts to improve cooperation on transboundary waters.

To address major regional problems, the Regional Environmental Action Plan (REAP) was developed in 2001. However, there is no information on follow-up to REAP at the national level and no regional and bilateral programmes and projects based on it. It appears that the plan's potential for enhancing regional cooperation and an integrated approach to the regional problems has not been achieved.

Recommendation 3.3:
The capacity and experience of the National Environmental Centre should be sustained and integrated into the Ministry of Natural Resources and Environmental Protection. Awareness of international environmental conventions and policies and their social and economic importance at both the national and the local levels should be raised with special training and educational programmes targeting all levels of government as well as the public. Kazakhstan should work towards the ratification of all major international environmental conventions in accordance with its analysis of the importance of these conventions for the country.

The National Environmental Centre is no longer operational. The Department of Legal Support and International Cooperation of the MEP has the responsibility for organization and implementation of international cooperation in environmental protection, as well as development of policies on compliance with international environmental agreements and coordination of their implementation. Some educational and training programmes, mostly at the national level, to raise awareness of international environmental agreements have been developed.

Kazakhstan is a party to 24 multilateral environmental agreements (MEAs), 12 of which have been ratified since the first EPR. However, it has not ratified many protocols that make those MEAs operational, e.g. the Kyoto Protocol to the UNFCCC and the protocols to the UNECE Conventions.

PART II: MANAGEMENT OF POLLUTION AND OF NATURAL RESOURCES

Chapter 4: Air Management

Recommendation 4.1:
Short-term and annual maximum permitted concentrations for a reduced number of pollutants should be adopted and harmonized with World Health Organization guiding values. Technology-based emission limits for new and reconstructed sources should be incorporated into the air protection legislation. For existing sources, sufficient time should be given for complying with those emission limits.

The regulation of air quality is still not aligned with WHO approaches and guiding values. In order to bring existing polluters into compliance, the environmental permits in Kazakhstan feature a new element, the programme of environmental improvements – an instrument that allows a step-by-step improvement of environmental performance.

Recommendation 4.2:
The air-quality and meteorological monitoring programmes should at least return to 1990 levels of performance in order to be useful for minimum air management purposes. In order to prepare for future requirements of air management, a new monitoring strategy adapted to both national and local needs should be developed together with the adoption of revised ambient air quality standards. See Recommendation 14.6.

The number of fixed monitoring stations had tripled over the period from 2000 to 2007. Ten newly established mobile laboratories are now in operation in Kazakhstan. The network undergoes modernization. The increased State budget allocations for monitoring in 2006-2008 would provide funding for 29 automatic monitoring stations and 9 mobile laboratories in place in the country by early 2009. A monitoring strategy has not been developed.

Recommendation 4.3:
Financial means available for reducing air pollution should preferably be allocated to the heavily polluting energy sector, where good opportunities for cost-effective emission reduction exist through the introduction of cleaner technologies and/or the use of cleaner fuels. See Recommendation 13.2.

No specific considerations with regards to the energy sector have been given in allocating financial means for reducing air pollution. However, issues of cleaner fuels and cleaner technologies have been introduced in government strategies and policy documents, e.g. in the Concept of Transition of the Republic of Kazakhstan to Sustainable Development for 2007 – 2024. Specific measures are expected to be adopted in the plans of implementation for the Concept. The bulk of investments in air pollution abatement and control measures is financed by the enterprises. Only limited government funds have been made available for financing air protection measures, including in the energy sector.

Recommendation 4.4:
Both legislative measures and economic incentives should promote a phase-out of leaded petrol and of illegal leading of unleaded petrol. See Recommendation 14.5.

Use of leaded petrol was officially phased out in 2003. However, there are indications of illegal use of imported leaded fuel and illegal leading of unleaded fuel.

Recommendation 4.5:
A regulation of technical parameters aiming at air protection for cars should be introduced. Car taxes or import duties should be relatively lower for vehicles with functioning technical parameters reducing air emissions. Effective car inspections should be enforced that control the functioning of the regulated technical parameters.

The concept of technical regulation was introduced through a law enacted in 2003 that applies to all sectors. In line with this law, specific regulations must be developed. Within this context, the Ministry of Environmental Protection prepared a draft Governmental Resolution on air emissions from vehicles that mandates emission limit values for toxic exhaust gases, the acceptable noise levels, and the fuel quality. These requirements were aligned with the Euro 2/II standard. The Government intends to apply Euro 2 vehicle emissions standards as of 2008 to new cars, but not to vehicles already circulating in the country. There are no plans for introducing differentiated taxes on motor fuels to promote the use of fuels with lower sulphur content. For passenger cars, the rate of the annual vehicle tax increases with the engine size. However, cars produced in the Commonwealth of Independent States (CIS), which are more than six years old, benefit from preferential tax rates, even though these cars tend to pollute more than cars of similar age imported from other regions.

Chapter 5: Municipal and Industrial Waste Management in the Eastern Oblasts

Recommendation 5.1:
The adoption and enforcement of a law on wastes should be seen as an urgent requirement for the introduction of a modern waste-management system, including appropriate capacity-building measures at regional and local levels. Once the law is adopted, the necessary by-laws should be developed and enacted. See Recommendation 1.1.

The amendment to the Law on Environmental Protection in 2004 took into consideration modern waste management system for industrial and municipal waste. Seven by-laws have been adopted. Construction of landfills meeting the legal requirements has begun. Waste management regulations, which took into account international standards related to waste, were introduced into the Environmental Code adopted in 2007. The waste classification system has been adjusted in accordance with the Basel Convention and EU Directives.

Recommendation 5.2:
The coordination of waste management at the different levels of the administration should be undertaken through the development of a waste-management programme. The programme should aim at avoiding undesirable regional differences in environmental conditions. In addition, the following issues should be addressed, even before the final formulation of a comprehensive waste strategy:
- *Increasing the degree of extraction and recycling of valuable components from ore-mining and metallurgical wastes*
- *Introducing municipal waste collection, sorting and controlled disposal throughout the country, starting in the most problematic big cities, including the gradual closure of uncontrolled landfills*
- *Introducing the private collection, transport and recycling of municipal waste in all big cities, including for the generation of energy from waste*
- *Creating capacities for the safe treatment of medical wastes*
- *Developing and funding a monitoring system for all waste-disposal installations.*

See Recommendation 9.2

The Environmental Code specifies the norms defining the property rights for waste and assigning the waste with no identifiable owner as municipal or State property. The Ministry of Environmental Protection is responsible for establishing the normative system for waste disposal and payment for storage of waste. As of 2006, all oblast environmental protection programmes must include a section on waste management. Process of closure of uncontrolled landfills has started. Municipal waste collection is functioning in the big cities. Collection and transport of municipal waste has so far remained in municipal ownership and is in general

problematic. Medical wastes are treated safely through incineration in special ovens at landfills. Overall, significant improvement in the waste management sector is necessary.

Recommendation 5.3:
The Agency on Statistics, in cooperation with the Ministry of Natural Resources and Environmental Protection and local administrations, should further improve the statistical information and reporting system for the generation, treatment and disposal of both industrial and municipal wastes, including the preparation of lists of contaminated sites and of actually existing, closed or abandoned landfills.

In 2006, the Agency on Statistics introduced two new modern statistical forms for data collection on household waste. Results were not yet measurable at the time of the second Environmental Performance Review.

Chapter 6: Management of Radioactively Contaminated Territories

Recommendation 6.1:
It is necessary to acquire all relevant documents on uranium-mining dumps (location as well as other), safety zones, nuclear explosions, the storage of radioactively contaminated material, environmental monitoring and on radiation exposure investigations from the Russian authorities and archives (military, environmental, SES) as well as from all possible other sources including the international ones, and to declassify, evaluate and forward all information (in full geographical detail) for consideration in national, regional and local decision-making and further processing.

The institution Volkovgeologia is zoning areas throughout the country that were contaminated by radioactive substances as a result of former uranium mining and identifies sites. It cooperates with the sanitary and hygienic service of the Ministry of Health in development of the so-called radiation and hygienic passports (profiles) of contaminated areas. This is being implemented within the framework of the 2004 State Programme "On Radiation Safety of the Republic of Kazakhstan". The National Nuclear Centre is carrying out radiological and environmental assessments on the territory of the former nuclear testing site Semipalatinsk. Areas of radioactive contamination were identified on lands that were previously considered safe.

Recommendation 6.2:
The radiometric network of Hydromet should be revitalized and equipped with modern measuring and analytical techniques. Standardized measuring, evaluation and reporting procedures have to be introduced. Of primary importance are the areas with high natural or anthropogenic radioactivity. Measurement should be extended to the monitoring of radon levels. See Recommendation 14.4.

Kazhydromet monitors radioactive contamination of the atmosphere through daily measurements of gamma-radiation exposure and radioactive fall-out from the atmosphere in cities.

Recommendation 6.3:
Standards and guidelines, which are commonly derived from accepted dose limits, should be developed for the future use of contaminated land and material. Decisions on future use should be made at State or local level after consideration of the optimum effects of a clean-up or the safe confinement of radioactivity to the site and prospected use. The population should be involved in all decision-making as part of an information programme.

Within the framework of the 2004 State Programme "On Radiation Safety of the Republic of Kazakhstan" the institution Volkovgeologia is identifying sites contaminated by radioactive substances as a result of former uranium mining for regular radiological monitoring.

Recommendation 6.4:
A comprehensive storage concept should be developed for radioactive waste from the mining and milling of uranium and other natural resources, from military and peaceful nuclear explosions, from the industrial applications of radiation sources and from nuclear reactor operation, in line with site-specific parameters and the ALARA principle. See Recommendation 9.4.

The Environmental Code specifies requirements for the use of radioactive materials, nuclear energy and ensuring radioactive safety when treating radioactive substances and waste. It also contains requirements for the facilities where radioactive waste is disposed and stored. The Programme of Conservation of Uranium Production Enterprises and Liquidation of Consequences of Mining of Uranium Deposits for 2001–2010 was adopted in 2001 and is being implemented (See Box 8.3 in Chapter 8).

Recommendation 6.5:
The distribution of responsibilities in the management and regulation of contaminated territories and radiation protection should be streamlined. The Atomic Energy Committee should be subordinated to the Ministry of Natural Resources and Environmental Protection to emphasise policy priorities. See Recommendation 1.3

The management and regulation of contaminated territories and radiation protection are under the responsibility of the Ministry of Energy and Mineral Resources (MEMR). The Atomic Energy Committee is part of MEMR. However, the Committee works in cooperation with the Ministry of Environmental Protection on issues related to contaminated territories and protection from radiation.

Recommendation 6.6:
Remedial and rehabilitation measures and projects prepared for the Semipalatinsk Nuclear Testing Site should be adapted to other sites which have been subject to similar impacts. Experience gained at the Semipalatinsk Nuclear Testing Site should be used and incorporated.

Activities are being carried out to ensure monitoring and safety of the storage facilities for radioactive materials and waste. The Programme of Conservation of Uranium-Mining Facilities and Mitigation of Consequences of Uranium Mining for 2001–2010 was adopted in 2001 and is being implemented. Experience gained at the Semipalatinsk Nuclear Testing Site is of limited use because of the uniqueness of the site.

Chapter 7: Management of Water Resources and Quality

Recommendation 7.1:
The Water Code should be revised as soon as possible. The revised law should focus on the efficiency of water use and the reduction of water pollution. It should cover ambient water quality as well as waste-water discharge and effluent standards and should identify necessary regulatory and economic instruments which are likely to reach the objectives specified in the law. See Recommendations 1.1 and 14.1.

The new Water Code was adopted in 2003. It provides a framework for a more modern management of water resources. Despite the fact that water remains the sole property of the state and responsibilities of various governmental bodies overlap to some degree, on the whole, the role of the Government now appears to be better defined and separate from the role of the economic actors. The integrated water resources management (IWRM) principle has been introduced into legislation but no economic instruments or state financing has been made available to enforce it. As a consequence, one of the first set-backs has been lack of staff with specific knowledge and skills to implement IWRM principle.

Recommendation 7.2:
Institutional frameworks should be envisaged that bring together water utilities, non-governmental organizations, the private sector, and community groups to exchange views, contribute skills and prepare decisions on water-supply and sanitation projects. The responsibility for standard-setting should be streamlined in order to avoid differences in water management as undertaken by the various participating institutions. Institutional changes should favour the preparation of basin action plans, particularly for high-risk basins, including their rivers, lakes and groundwaters.

A legal framework for the creation of river basin councils was created by the 2003 Water Code, and the River Basin Councils were established with the support of UNDP. However a lot of additional work has to be done. The first priority at the national level would be to set up consultation mechanisms to prepare the legislative reform. At the local level it is necessary to enhance public participation on matters related to water supply and sanitation to make sure the proposed new services correspond to the needs and readiness to pay. Clearly defined reference data and quality management are still needed for monitoring and standard-setting.

Recommendation 7.3:
Measures are required for improving the long-term security of the drinking-water supply to both the urban and the rural population. They should involve the identification of suitable groundwater reserves and their protection, as well as the development and application of rapid assessment procedures for the identification, inventory and quantification of pollution sources endangering groundwater quality in abstraction areas. See Recommendation 14.1.

The Sectoral Programme "Drinking Water" for 2002–2010 has been adopted and is being implemented with funding from the State budget in the amount of approximately US$ 100 million. Although the Government has made some initial investments for rehabilitation of the interregional water supply and distribution network, the investments in water facilities remain insufficient. As a result, facilities continue to age and security of urban drinking water supply remains under threat due to obsolete infrastructure. There is a lack of sufficiently trained staff at the national level for monitoring water utilities and at the local level for investment management.

Recommendation 7.4:
A comprehensive water strategy and a complementary programme for implementation should be developed. In addition to drinking-water supply issues, it should focus on waste-water treatment efficiency. The following measures could be envisaged:
- *The identification of a priority list for investments in sewerage and waste-water treatment, covering the construction of new and the repair of old installations, their scheduling, and their funding arrangements.*
- *The introduction of water metering for all users.*
- *The specification of a long-term water pricing strategy to cover the full cost of investment, maintenance and operation of all water-production and waste-water treatment infrastructure. The resulting social hardship should in the long term be avoided through solutions other than water pricing, in order not to complicate water supply and treatment unduly.*
- *The training of waste-water treatment staff in plant operation, process control and instrument operation.*

Reforms have been slow to enable the country to develop and adopt a comprehensive water strategy to solve long-term water management issues. However, there has been an improvement in the quality of management of water utilities, as well as an increase in the installation and use of the water metering equipment, which could pave the way for a much needed change in water tariffs.

Chapter 8: Management of Selected Problems in the Aral and Caspian Sea Regions

Caspian Sea management
Recommendation 8.1:
The legal framework necessary for the implementation of the Caspian Environmental Programme should be urgently created and enforced. The framework should specify the obligations of the relevant institutions to participate in the implementation, and should regulate the important coordination requirements for the solution of problems. In particular, the sharing of information between participating institutions should become obligatory, and the funding of the Programme should be specified in detail. See Recommendation 1.1.

After 2000, regulations related to the Caspian Sea region were developed and adopted. To a large extent they cover special requirements for the companies working in the Caspian Sea region. They cover activities in the region and the obligations of the enterprises, such as monitoring and submission of the environmental information to the local and national environmental protection authorities. The information is made available to all stakeholders in and outside the region, including general public, through printed and electronic media. The 2007 Environmental Code contains provisions dealing with the protection of the Caspian Sea.

Recommendation 8.2:
Companies (State-owned as well as private) involved in oil production should be requested to contribute to the funding of any necessary remedial action. Pilot projects should be financed to clean up past polluted sites and find adapted technology to do it. The possibility of establishing a fund for contributions by the oil industries to finance rehabilitation work should be explored.

Major oil companies undertake environmental protection activities related to both current and past pollution. Most of the major companies, including KazMunaiGaz, Tengizchevroil (TCO) and Agip, have received ISO 14001 certification. State-owned company KazMunaiGaz has developed Comprehensive Environmental Programme for 2006–2015 that addresses specifically the issue of remedial action for past pollution. There is no information on establishing a special fund to finance rehabilitation work.

Recommendation 8.3:
A comprehensive territorial planning approach to land use in the Caspian Sea coastal area should be taken. It should include ecological considerations, building upon the inventory work on biodiversity mapping which has been accomplished by the Thematic Group on Biodiversity Protection in Atyrau. Defining the zones of the delta that deserve to be protected could be an appropriate first step. See Recommendations 10.1 and 10.4.

The Plan of Actions for 2005-2007 to implement the Programme to Combat Desertification in the republic of Kazakhstan for 2005-2015 has been adopted and includes actions in the Caspian Sea coastal area. The Ministry of Energy and Mineral Resources has developed Comprehensive Plan for Development of the Coastal Area of the Kazakhstan Sector of the Caspian Sea and submitted it other ministries for comments. Activities on flood protection, protection from sand encroachment, rehabilitation of degraded and contaminated land, and elimination of illegal dumpsites in coastal areas are conducted in Atyrau and Mangistau oblasts. Preliminary work has been done in establishing several natural reserves in Atyrau and Mangistau oblasts, among them the state natural reserve Akzhayik in the Ural River delta. Assessment of the impact of oil and gas industry on biodiversity has been conducted in Mangistau oblast. Zoning of the protected area of the Northern part of the Caspian Sean to limit the impact of marine activities on biodiversity is in preliminary stages.

Recommendation 8.4
The environmental monitoring system of the Caspian Sea in Kazakhstan should be restored. Monitoring programmes should be useful to policy-making. Policy programmes should be translated into measurable objectives, and the monitoring system should measure the progress made.

In 2005, Kazhydromet established the Centre for Monitoring of the Caspian Sea on the basis of its territorial body in Atyrau. Its monitoring programme covers observations of air quality near oil-industry facilities, precipitation, quality of surface inland and marine waters and of bottom sediments near oil industry facilities in the sea, soil quality in urban areas and near oil-industry facilities, and radiation in the area.

Aral Sea management

Recommendation 8.5:
Kazakhstan should, as a member of the International Fund for Saving the Aral Sea, promote a clearer coordination among international funding organizations and countries. Transparency with regard to both progress and expenditure on the Aral Sea Basin Programme should be a prerequisite for its effective implementation. In addition, communication and information-sharing on local and national initiatives between the participating States should be improved.

Several regional projects on improving the situation in the Aral Sea Basin have been developed and implemented, including “Developing capacity in the Aral Sea Basin and Testing sustainable development indicators in the Aral Sea Basin”. Another project, “Regulating the riverbed of Syr Darya and the North Aral Sea”, is implemented. The first phase of the project is funded by a $64.5 million loan from the World Bank and co-financed from the State budget of Kazakhstan in the amount of $21.3 million. The project aims *inter alia* at improving environmental conditions in the Syr Darya River delta and around the North Aral Sea.

Recommendation 8.6:
The political priority for the solution of the Aral Sea and Caspian Sea problems should be reflected in increased national funding for remedial projects, including environmental monitoring, research and the control of air, water, soil and food quality. See also Recommendation 2.1.

The State Programme of Development of the Kazakhstan Sector of the Caspian Sea was adopted in 2003. Within its framework, activities financed from the State budget include rehabilitation of the decommissioned oil

wells and environmental impact assessment of activities in the oil sector. The Programme of Comprehensive Measures to Solve Problems of the Aral Sea Region was adopted in 2004.

Chapter 9: Management of Mineral Resources

Recommendation 9.1:
The current legal and regulatory basis for the sustainable management of mineral resources should be improved and strengthened, in particular the oil and gas regulations. Special attention should be paid to the introduction of effective mechanisms for implementation and enforcement, specifically economic mechanisms. See Recommendation 1.1.

The legal framework for the management of mineral resources has improved significantly since 2000. The primary legislative act regulating matters of mineral resources use is the 1996 Law on Subsoil and Subsoil Use, which has been amended several times, most recently in January 2007. The amendments include requirements for reducing environmental impact. In 2004, significant changes regarding environmental protection were made in the 1995 Law on Oil and Gas. These included modifications to the regulation of gas utilization and flaring during oil operations, and environmental requirements for oil operations in the national protected areas in the northern part of the Kazakhstan sector of the Caspian Sea. However, implementation and enforcement gaps are still significant issues and require further improvements.

Recommendation 9.2:
The introduction of new technology to improve environmental performance in mining should be encouraged by all possible means. Financing support for the establishment of cleaner production centres in each of the principal mining regions of the country should be considered. See Recommendation 5.2 and 11.3.

No specific incentives to encourage introduction of new technology to improve environmental performance in mining have been developed. The 2007 Environmental Code envisages the possibility for mining companies to obtain IPPC permits based on BAT but this has not been implemented in practice. Two cleaner production centers are functioning in Pavlodar (one of the principal mining regions) and Almaty. However there is no information on specific activities of these centers intended for promoting cleaner production in the mining sector.

Recommendation 9.3:
A full environmental management system (EMS) developed according to international environmental management standards (ISO 14000 series or equivalent), should be made a prerequisite for the granting of mining leases. The establishment of a code for environmental management in mining should be encouraged. Environmental management in mining should be adopted as an important part of the basic curriculum of mining schools, and of other educational establishments training professionals for mining and gas industries and environmental training for mining professionals at all levels is strongly advised.

The environmental legislation requires a company to have an environmental management plan to obtain a license, however there is no requirement for a full EMS in accordance with international environmental management standards. Rates of pollution charges for companies certified according to ISO 14000 standards are lower due to rate reduction coefficients. The Tax Code provides tax incentives for companies certified according to both ISO 14000 and ISO 9000 standards. Training programmes on environmental management, particularly for mining sector professionals, is still at the early stages.

Recommendation 9.4:
All priority projects included in the National Environmental Action Plan concerning the prevention or elimination of environmental pollution by the mineral sector should be implemented as soon as possible. A broad programme for the management of existing mining tailings, including hazardous and radioactive tailings, should be developed, financed and implemented. See Recommendation 6.4.

A number of projects concerning prevention and elimination of environmental pollution by the mining sector has been implemented and are under implementation. However numerous problems related to pollution by mining enterprises remain. The Programme of Conservation of Uranium Production Enterprises and

Liquidation of Consequences of Mining of Uranium Deposits for 2001–2010 was adopted in 2001 and is being implemented. Rehabilitation of some radioactive tailings is underway.

Recommendation 9.5:
Mining operations should be monitored according to international environmental standards and regulations. The introduction of an effective system of State monitoring producing reliable environmental information should be seen as a matter of urgency. In this framework, the monitoring plan developed by the Committee of Geology and Subsoil Protection should be implemented as it is.

The Environmental Code contains tougher requirements for production control and monitoring. The Committee for Environmental Control is responsible for ensuring the companies' compliance, including those in the mining sector. The system of State environmental monitoring has improved but significant gaps in monitoring coverage remain.

Recommendation 9.6:
The creation of a geological survey for underground resources is a priority for the improvement of mineral resources management. Technical assistance, an integrated information system and staff training are essential tools to reach this objective.

The Committee of Geology and Subsoil Protection of the Ministry of Energy and Mineral Resources acts as the country's geological survey. The responsibility for protection of subsoil has been transferred to the Ministry of Environmental Protection.

Chapter 10: Nature and forest management

Recommendation 10.1:
The progressive implementation of a comprehensive management system for both nature use and biodiversity conservation should aim at (a) the completion of the legislative framework (particularly with the development of legal instruments regulating sustainable use and protection of nature components, especially plants) and an increased level of local and regional management responsibilities, (b) the adequate programming and funding of relevant research activities, and (c) the improvement of nature use practices with the help of public awareness campaigns and education efforts. The systematic improvement of information on all species present in the country, their possible use, their habitats and the most important threats to their conservation should be seen as a precondition for the implementation of such a management system. See Recommendations 1.4, 1.5, 8.3, 12.1 and 12.3.

Objectives for conservation of biodiversity have been incorporated into national policy documents. This work includes the development of action plans and targets for rare and endangered species, the monitoring of species population including migratory species and the improvement of legislative framework. Concept for the Development and Management of Protected Areas till 2030 sets a target of total protected areas at 17.5 million ha (6.4% of the country's territory). Activities for establishing new protected areas have started. However, work on a comprehensive management system for nature use and biodiversity conservation has to continue.

Recommendation 10.2:
The protected area system should be made more representative of all the typical ecosystems in the country, and afford reliable protection for the total number of endangered species. The protected area categories should also be harmonized with internationally accepted practices. The ecosystems of deserts and semi-deserts, wetlands and other aquatic ecosystems and their native species seem to be in particular need of protection. The introduction of alien species, in particular into aquatic ecosystems, should be strictly controlled. Special research efforts are required to improve the knowledge of species, habitats and biodiversity.

The Concept for the Development and Management of Protected Areas till 2030 envisages establishing 13 more national parks (with an area over 2,100 ha), 25 State nature reserves (over 2,800 ha) and six biosphere reserves (670,000 ha) with assistance from international organizations. Protected area categories are being harmonized with internationally accepted practices. Kazakhstan has submitted request for inscription of the site Sary-Arka – Steppes and lakes of Northern Kazakhstan in the UNESCO World Heritage list. The Committee on Fisheries of

the Ministry of Agriculture makes efforts to control and prevent introduction of alien species into aquatic ecosystems.

Recommendation 10.3:
The establishment of new forest reserves and of genetic reserves in the regions that are insufficiently endowed with them should be considered. The extension and centralization of gene banks of economic species should be considered. Measures to protect forests from pests and fires should be strengthened. Afforestation should be considered as a major aim for forest management and appropriately funded.

In 2004, Kazakhstan adopted the Programme "Kazakhstan Forests" for 2004-2006. Its implementation included activities on forest protection, including from fires and pests, forest rehabilitation, afforestation, and improvement of the forest age structure. Annual funding from the State budget for implementation of the Programme is approximately $ 80 million.

Recommendation 10.4:
A reliable monitoring network of the biodiversity in marine and coastal ecosystems of the northern Caspian region, which would provide the information required for effective nature protection, should be urgently established. See Recommendation 8.3.

The Committee on Fisheries of the Ministry of Agriculture surveys fish species and maintains a fish cadastre (inventory) in Kazakhstan. In addition, it conducts periodically surveys of rare and threatened species of fish (in particular sturgeon) and Caspian seals.

Recommendation 10.5:
The implementation of the declared objectives for biodiversity conservation should be supported by sufficient funds, distributed equitably among the administrative levels that are responsible for implementation. Action plans including biodiversity conservation measures should frequently be revised and upgraded. The measures included should progressively be associated with deadlines and funding provisions. A control mechanism for the implementation of the measures should be created.

Kazakhstan has been active in pursuing measures to fulfil its obligations under international agreements in the area of biodiversity conservation. The country has benefited from international technical assistance in this area, has been allocating funds from the State budget for these purposes and has been implementing policies and projects that are making a positive impact (See section 4.3 in Chapter 4).

PART III: ECONOMIC AND SECTORAL INTEGRATION

Chapter 11: Introduction of Cleaner Technologies in Industry

Recommendation 11.1:
The Ministry of Natural Resources and Environmental Protection, together with the Ministry of Energy, Industry and Trade and other interested institutions, in cooperation with the industrial associations and individual enterprises, should promote the conditions for enterprises to become more involved in cleaner production issues.

Industrial enterprises are implementing ISO 14000 standards and developing programmes for cleaner production in this process. The Ministry of Environmental Protection provides incentives for introducing the ISO 14000 standards at the enterprises of the energy sector through coefficients reducing charges for air emissions and ash disposal. Rates of charges for environmental pollution over the limit are several times higher than within the limit.

Recommendation 11.2:
The permitting system for enterprises should be changed in order to integrate the assessment of applied technologies with the setting of emission limit values. Regulations on the appropriate consideration of cleaner technologies in environmental assessments and on the performance of environmental audits should be established as a matter of urgency. The strengthening of economic incentives – like the revision of relevant

taxes and fines – could become an effective instrument for the introduction of cleaner production. Consideration should be given to making voluntary agreements on simplified inspections and improved self-monitoring and reporting an instrument for the promotion of cleaner technologies, particularly in selected enterprises polluting the environment. See also Recommendation 2.4.

The Environmental Code introduced a new system of issuing environmental permits. Separate medium-based environmental permits have been integrated into a single document. Introduction of integrated permits for large industry has been scheduled for 2008. Conditions stipulated in integrated permits will be based on Best Available Techniques (BAT). However, there are serious capacity constraints for adopting this approach. Economic incentives, such as taxes and fines, are still weak and do not pay a major role in influencing companies' decisions on implementing cleaner production.

Recommendation 11.3:
The Ministry of Natural Resources and Environmental Protection should speed up the National Environmental Action Plan project aiming at the establishment of Cleaner Production Centres. The respective work should be undertaken in cooperation between all institutions currently involved in cleaner production initiatives, notably the Ministry of Natural Resources and Environmental Protection and the Ministry of Energy, Industry and Trade See Recommendation 9.2.

Several cleaner production centres have been established in Kazakhstan at different times. Functioning of some of them has been discontinued. In 1998, within the framework of the project on waste minimization, the Cleaner Production Centre was established in Pavlodar. Currently the Centre provides various environmental consulting services to companies, e.g. on developing norms for emissions and discharges. In 2002, with support of the Government of Norway, the Centre for Energy Efficiency and Clean Production has been established in Almaty. Its main mission is implementation of energy saving programmes in the household sector. In 2005, within the framework of the Tacis project Cleaner Production in Selected CIS Countries – Moldova, Georgia and Kazakhstan, the Sustainable Production and Consumption Centre was established in Almaty. It works with governmental bodies, NGOs and business community on the issues of implementation of sustainable production and consumption models, development of training programmes and implementation of pilot projects.

Recommendation 11.4:
The Ministry of Natural Resources and Environmental Protection should initiate and support a cleaner production demonstration project within selected priority sectors as a matter of great importance. The demonstration project should in particular include the introduction of Environmental Management Systems and low-cost investments by the participating enterprises.

The Ministry of Environmental Protection intended to initiate a cleaner production demonstration project but it has not been implemented. In November 2007, the Interagency Commission on Stabilization of the Quality of the Environment reviewed the issue of implementation of cleaner production at enterprises. The Commission has indicated the objective of selecting two or three enterprises in each industrial sector and implementing cleaner production pilot projects there as a tool to support ISO 14001 certification.

Chapter 12: Agriculture and Desertification

Recommendation 12.1:
The rights and duties of farmers and farmer associations in relation to the use of land, farm facilities and water for irrigation in the light of requirements for environmental protection should be clarified in the new law on land. The rules for allotment of land plots should preclude excessive fragmentation. See Recommendation 10.1.

The Land Code (2003) contains provisions regarding environmental protection and land protection. Rules of allotting land are defined by a governmental order, which takes into consideration the prevention of threats to the land, in particular fragmentation and desertification. In 2007, amendments to the Land Code were adopted. The amendments are intended to promote development of the market for agricultural land.

Recommendation 12.2:
A specific research programme should be implemented in order to develop the technologies to be applied in the fight against desertification. The organization of environmental education and the heightening of public awareness of desertification problems should be considered a short-term and not a long-term goal of the National Strategy and Action Plan to Combat Desertification to ensure that local populations play a key role. Realistic funding mechanisms should be determined for anti-desertification measures.

The Programme to Combat Desertification in the Republic of Kazakhstan for 2005-2015 was adopted in January 2005. A number of actions in the area of research and information support are incorporated in the Programme. Among the objectives of the first stage of the Programme for 2005-2007 is raising public awareness and ensuring participation of the general public in decision-making on desertification problems. The Plan of Actions for 2005-2007 to implement the Programme has also been adopted. The second stage (2008-2010) includes seminars for farmers and education programmes for local residents on environmental aspects of agriculture. Most of the funding for the Programme implementation is anticipated to come from international donors (about US$ 25 million for the 3-year period), and about US$ 1 million for the same period is allocated in the national budget.

Recommendation 12.3:
The coordination between different institutions, policies, plans and programmes should be improved, in order to increase their mutual consistency with regard to environmental priorities. Criteria for sustainable agricultural development should be included in relevant national strategies and programmes. See Recommendation 10.1.

See the implementation of Recommendation 1.3. All concepts and the Concept of Sustainable Development of Agriculture for the period 2006–2010 include criteria for sustainable agricultural development and environmental policy measures. These criteria are included in the medium-term plans of social and economic development of oblasts and cities.

Recommendation 12.4:
A monitoring system should be implemented for the identification of areas at high risk of desertification. The introduction of monitoring of irrigation water in connection with the management of secondary salinization should be seen as an urgent requirement. See Recommendation 1.3.

Kazhydromet monitors soil pollution by heavy metals (Cd, Cr, Cu, Pb and Zn) in 16 cities. It plans to start by 2010 monitoring of the agricultural lands pollution by pesticides and other POPs. There is no information on monitoring of areas with high risk of desertification or monitoring of irrigation water.

Chapter 13: Environmental Concerns in Energy

Recommendation 13.1:
The transition of the energy sector should concentrate on energy-saving programmes, starting with the development and enforcement of the regulations required for the implementation of the Law on Energy Saving. A stable legal, regulatory and institutional framework for investments in the energy sector should be created. It should contain environmental impact assessment procedures, as well as the usual provisions for environmental protection in this sector, while meeting the need to attract large-scale investment. See Recommendation 1.1.

The Law on Energy Saving (1997) has produced limited results in increasing energy efficiency, mainly due to the difficulty in implementing its measures and incentives in the Kazakhstan context and to the lack of suitable institutional structures responsible for implementation. Main achievements and project activities in energy efficiency and energy savings are related to pilot initiatives carried out in cooperation with international organizations. Plans to adopt a new law on energy saving in 2008-2009 are under consideration by the Kazakhstan Government. The issue of low energy tariffs is still present as a major barrier to energy efficiency measures and investments. The Ministry of Environmental protection has developed a draft of the Strategy on efficient use of energy and renewable resources for sustainable development until 2024 and a draft law on support for use of renewable energy sources. Both documents have been submitted to the Government for inter-ministerial consultations.

Recommendation 13.2:
The transition of the electricity supply system should concentrate firstly on reducing air emissions from existing thermal power stations and, in the longer term, on completing an integrated and interconnected grid system inside the country linked to neighbouring States. See Recommendation 4.3.

Major investments in existing power stations have been mainly oriented to rehabilitation of energy production facilities to meet increasing demand. Although some plants have been installing new and less polluting technologies to replace old and obsolete equipment, effective investments towards proper pollution reduction and control systems remain weak. The expected increase in tariffs would allow government to require new and effective measures to be implemented for reducing air pollution. An improvement of the grid system is on course of development and better efficiency and reliability is expected, mainly due to the reinforcement of the North-South interconnection. It is planned to be completed soon and will allow improvement of electricity balance and energy security.

Recommendation 13.3:
The action foreseen for environmental protection in relation to the activities of the oil and gas producing sectors should be implemented as a matter of urgency. Companies involved in these activities should introduce environmental management systems and undertake protective measures.

Environmental protection in the oil and gas producing sector remains a matter of concern however actions for its improvement have been implemented. Major oil companies undertake environmental protection activities related to both current and past pollution. Most of the major companies, including KazMunaiGaz, Tengizchevroil (TCO) and Agip, have received ISO 14001 certification. Gas flaring during oil production has been banned, and companies are expected to implement measures for gas utilization by the end of 2009.

Chapter 14: Health and the Environment

Recommendation 14.1:
Drinking-water quality and supply should be improved. Restructuring of the drinking-water supply (safe drinking-water sources, source protection and improvement of the water distribution networks) is a priority. The measures that should be taken immediately are reliable chlorination of drinking water, and proper desalination of highly mineralized raw water. The required measures call for the establishment of a respective State programme and of legislation on drinking water supply and quality, in accordance with WHO Water Quality Guidelines. See Recommendations 7.1 and 7.3.

The Sectoral Programme "Drinking Water" for 2002-2010 was adopted in 2002. With its adoption, State funding has been gradually increased to rehabilitate drinking-water supply systems. These investments are aimed mainly at rehabilitation of the interregional water supply and distribution network. However, investments in water facilities remain insufficient. Low rates for water supply and sanitation services are still an obstacle for water utilities (Vodokanals) to make investments in improvement of water supply. Security of urban drinking water supply remains under threat due to obsolete infrastructure.

Recommendation 14.2:
Local environmental health action plans should be developed as part of the implementation of the National Environmental Health Action Plan. All these plans need to be coordinated between the ministries involved, the local authorities, health institutions and NGOs and should be widely disseminated. See Recommendation 1.2.

No information on development of local environmental health action plans is available.

Recommendation 14.3:
Food quality and nutritional status should be made stricter. Food chain safety control should be intensified in order to reduce the risk of food-borne disease outbreaks. Special educational programmes promoting food hygiene and a balanced diet should be set up for the manufacturers and suppliers of food products, and for the general population. The National Nutrition Policy, proposed by the Institute of Nutrition, should be implemented.

No information on major changes regarding food quality control and nutrition policy is available.

Recommendation 14.4:
Nuclear test sites should be closed to people and livestock. The old uranium mines should be sealed off. A survey of the use of building materials from old uranium mines should be carried out. The level of indoor radon should be assessed to identify the high-risk areas, to enable preventive measures to be taken and to evaluate them. A public awareness campaign should be launched to inform the population about the risks associated with using building materials from old uranium mines, and about radon and its associated risks. Regulations on the radioactive content of building materials should ensure a safe radiation level in buildings and be enforced. See Recommendation 6.2.

The Programme of Conservation of Uranium Production Enterprises and Liquidation of Consequences of Mining of Uranium Deposits for 2001–2010 has been adopted and is being implemented. In the framework of its implementation, radioactive waste disposal sites closest to residential areas have been closed. All activities at and near the former nuclear testing site Semipalatinsk are carried out under the strict control of the National Nuclear Centre. Research on assessing the radon levels in buildings continues. Regulations establishing limits on radioactivity of building materials and safe radiation levels in buildings have been adopted.

Recommendation 14.5:
The use of unleaded petrol should be promoted at least in large settlements. See Recommendation 4.4

Use of leaded petrol was officially phased out in 2003. However, there are indications of illegal use of imported leaded fuel and illegal leading of unleaded fuel.

Recommendation 14.6:
More attention should be paid to indoor air pollution, starting with the collection of data on its most important sources. Likewise, a monitoring system for indoor air quality at the work places should be developed and implemented. See Recommendation 4.2.

The impact of indoor pollution is regularly quantified by the Ministry of Health and reported to WHO. This information shows that indoor smoke from solid fuels belongs to the ten leading risk factors that cause disease burden in Kazakhstan, despite the fact that less than 5 per cent of households are concerned. New regulations on ensuring safe working conditions have been adopted. However, there is no information on development and implementation of a monitoring system for indoor air quality at the work places.

Recommendation 14.7:
The restructuring and strengthening of the system of Sanitary Epidemiological Services to improve the performance in environmental health should be seen as a priority, including the upgrading of its computing and laboratory equipment to improve the usability of the data collected. A study to find the optimal scale of the Sanitary Epidemiological Services in terms of geography and demography is recommended.

Certain activities on upgrading of the computing and laboratory equipment of the Sanitary Epidemiological Services is taking place, however no major changes in restructuring and strengthening of its system have occurred.