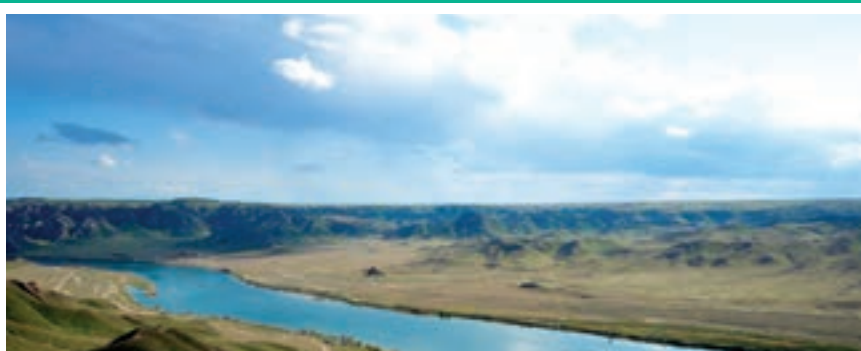


Kazakhstan

Environmental Performance Reviews



Third Review – Highlights



Sustainable Development Goals

In 2018, an institutional framework for the implementation and monitoring of the Sustainable Development Goals was formed in Kazakhstan. This framework is to be led by the Coordination Council on Sustainable Development Goals, headed by the Deputy Prime Minister and supported by five intergovernmental working groups and a secretariat. Overall coordination of the implementation of Sustainable Development Goals is vested with the Ministry of National Economy. The Ministry of Energy is leading one of the intergovernmental working groups.

As of 2018, Sustainable Development Goals are mentioned in two strategic documents: the 2018 Strategic Plan for Development until 2025 and the 2017 Main Directions of the State Policy on Official Development Aid for the period 2017–2020. While there is a fair amount of common coverage between the national and sectoral plans and the 2030 Agenda for Sustainable Development, no systematic effort has yet been applied to explicitly integrate the Sustainable Development Goals into sectoral programmes and plans.

Under the leadership of the Committee on Statistics under the Ministry of National Economy, a draft national Sustainable Development Goals indicator framework consisting of 257 indicators has been prepared. In late 2018, a section on reporting on the Sustainable Development Goals became operational on the Committee's website.

Kazakhstan is advanced on some targets of the 2030 Agenda for Sustainable Development. For example, with regard to target 3.1 (By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births), Kazakhstan has already made remarkable progress in reducing the maternal mortality ratio. Maternal mortality shows a decline by 2.46 times, from 31.2 per 100,000 live births in 2008 to 12.7 per 100,000 live births in 2016.

With regard to target 7.1 (By 2030, ensure universal access to affordable, reliable and modern energy services), universal access to energy services is almost achieved in the country. The level of electrification reached 100 per cent, but in some rural areas supply of electricity is not reliable. At the same time, more than 1,400,000 people in Kazakhstan still use polluting fuels for cooking.

Addressing persistent regional differences is crucial for the achievement by Kazakhstan of the 2030 Agenda for Sustainable Development. For example, Kazakhstan shows steady progress in reducing infant mortality. In 2016, the average under-5 mortality rate was 10.79 per 1,000 live births. However, there are differences between regions, from 13.55 per 1,000 live births in Kyzylorda Oblast to 7.86 per 1,000 live births in the capital.

Similar regional differences are observed with regard to target 11.6 (By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management). The coverage by regular waste collection ranges from more than 90 per cent in the capital city, Almaty City and Atyrau Oblast to less than 50 per cent in Akmola, Kostanay, North Kazakhstan and Turkistan oblasts.



Another crucial aspect for the achievement of the 2030 Agenda for Sustainable Development is to leave no one behind.

With regard to target 4.a (Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all), in 2017, 49.3 per cent of schools in Kazakhstan had decentralized sanitation and 9.7 per cent had a decentralized water supply. Of all schools, 86 per cent provided hot meals to their pupils but 9.7 per cent had to transport drinking water to prepare meals. No studies are available on gender aspects of equitable access to water and sanitation.

Table 1: Basic services in schools, 2009–2017, per cent

	2009	2010	2011	2013	2014	2015	2016	2017
Schools with decentralized sanitation system	74.8	74.1	73.7	73.7	61.5	49.3
Schools with decentralized water supply system	28.0	26.0	26.3	24.4	22.4	21.5	12.6	9.7
Schools with portable water	24.0	22.0	18.7	16.2	13.8	12.6	11.5	9.7
Schools with decentralized heating system	13.0	11.4	10.0	7.5	6.6	5.8	5.7	4.8

Source: Ministry of Health, 2009–2017.

Recommended measures:

- **Ensure regular and transparent activities for the implementation and monitoring of the Sustainable Development Goals;**
- **Raise awareness on the Sustainable Development Goals and their relevance for Kazakhstan;**
- **Explain the synergies between existing national targets and the Sustainable Development Goals;**
- **Proceed with setting up additional national targets based on the Sustainable Development Goals in those areas where such targets are not defined;**
- **Ensure that the existing strategic documents are revised to mainstream the Sustainable Development Goals;**
- **Ensure that the Sustainable Development Goals are explicitly integrated into all future strategic documents;**
- **Ensure the regular preparation of reports on the implementation of the Sustainable Development Goals.**

Note: The sections entitled “Recommended measures” represent an abridged version of selected recommendations from the Environmental Performance Review report and are provided for information purposes only. Please consult the text of the report for the full text of recommendations as adopted by the United Nations Economic Commission for Europe (ECE) Committee on Environmental Policy.



Legal, policy and institutional framework

In 2014, the Ministry of Environment and Water Resources was abolished, and the Ministry of Energy was designated as the governmental authority on environmental protection, with many other competences related to the environment allocated to the Ministry of Agriculture and some other governmental bodies. This major institutional restructuring has impacted on the development and implementation of environmental policy in the country.

The scope of issues covered by the five environment-related departments in the Ministry of Energy is quite limited, in terms of ensuring the comprehensive and systematic development of environmental policy. The subordination of the key regulatory and enforcement authority in the environmental area (i.e. the Committee of Environmental Regulation and Control) to the ministry responsible for one of the major polluting sectors limits the independence of environmental regulation and enforcement.

Environmental legislation has seen many important developments, such as the introduction of extended producer/importer responsibility, improvement of access to information and public participation procedures and measures to strengthen nature protection. Nevertheless, some advanced concepts of environmental legislation (e.g. integrated permitting, environmental audit or environmental insurance), introduced a decade ago, do not yet work properly.

The 2007 Environmental Code is the only example of an accomplished codification of environmental legislation in the post-Soviet geopolitical area. Despite criticism of a significant number of amendments introduced into the Code, this attempt at codification has been rather successful. Codes in Kazakhstan have a higher legal value than laws, which brings an undisputable value to this codification effort. As of 2018, a new environmental code is under development.

Since 2010, the policy framework has been characterized by a trend of reducing the number of strategic documents by integrating their issues into larger documents. Planning in the environmental area has clearly suffered from this trend.

In the absence of other strategic documents on environmental protection, the 2013 Concept on Transition to Green Economy has become a “rescue boat” for the environmental sector. The Concept and its Action Plan have prompted important environmental actions in economic sectors and on the ground. However, the Concept does not cover many environmental issues.

The integration of environmental requirements into sectoral policy documents has started. However, the lack of strategic environmental assessment (SEA) prevents systematic, coherent and comprehensive integration of environmental measures and requirements into sectoral policies. Key challenges for the introduction of SEA include poor understanding of the instrument and lack of training and expertise.

There is a good system of general training and advanced training on environmental issues under the auspices of the Information and Analytical Centre of Environment Protection (IACEP) under the Ministry of Energy. However, except for a single case, employees of other sectoral ministries do not receive training in the Centre.



BOX 1: TARGET 17.14 OF THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Target 17.14: Enhance policy coherence for sustainable development



Kazakhstan has some mechanisms for horizontal coordination on sustainable development issues at the national level, though the interministerial councils created to address the issues of a crosscutting and intersectoral nature are fewer in number. The Council on Sustainable Development was abolished in 2014. The Interagency Council on Water Resources Management under the Government created in 2015 has met only once. The Council on Transition to Green Economy chaired by the country's Prime Minister is the only active platform to discuss the issues of green economy and environmental protection.

Some horizontal coordination takes place in the framework of interministerial working groups created for drafting policy or legal documents, public councils created as advisory bodies to various governmental authorities and steering committees for international projects. However, there is room for improvement to ensure the regularity of meetings of existing bodies and to increase the involvement of other stakeholders along with governmental bodies, organizations and institutions. The scope of such bodies currently does not include all aspects of the 2030 Agenda.

Recommended measures:

- **Consider restoring a separate ministry which would be responsible for policy development and regulatory, control (enforcement) and implementation functions in the area of environmental protection;**
- **Revise the 2013 Concept on Transition to Green Economy to consolidate all environmental and climate change issues into one policy document;**
- **Introduce a fully-fledged SEA system;**
- **Provide capacity-building on SEA;**
- **Accede to the 2003 Protocol on SEA;**
- **Extend the schemes of training and advanced training on environmental issues to civil servants in sectoral ministries.**



Regulatory and compliance assurance mechanisms

Since 2008, significant improvements have been introduced into the permitting system. On the other hand, persistent challenges to restructuring the permitting system, the best example being the absence of issued integrated environmental permits, constitute a clear weakness that is not conducive to better environmental performance on the part of the operators. Companies do not fully understand how to follow the best available technique (BAT) path.

Since 2012, Kazakhstan started to introduce new procedural requirements for inspections driven by the overall trend of reducing the pressure on business, along with improving the planning of inspections on the basis of risk assessment. However, the apparent correlation between the reduction in the number of inspections and the lower number of identified environmental violations raises concerns about the true extent of the occurrence of environmental non-compliance in the country.

Data and information about the performance of the environmental regulatory and compliance assurance system are publicly available. However, they are scattered throughout various sources and not presented in a form that would allow for assessment and identification of trends.

The legislation includes the notion of environmental liability and environmental damage. However, in most cases in Kazakhstan, environmental damage is not remedied, despite the polluter being identified and paying for the damage done.

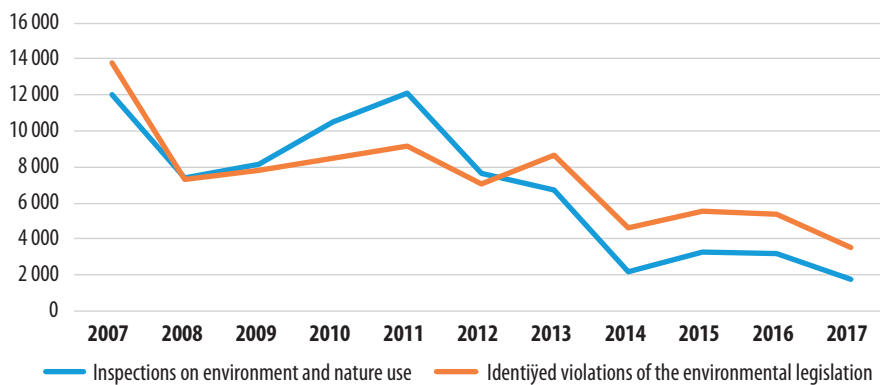
Kazakhstan has no specific legal provisions for transboundary environmental impact assessments (EIA) and the implementation of the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention). There are also inconsistencies between Kazakhstan's national legislation and the obligations arising from the Espoo Convention and the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention).

Environmental management systems are not widely used, although their use is higher in sectors that are more exposed to international markets. In 2017, a total of 140 ISO 14001 certificates were valid in Kazakhstan, which is an extremely small number, given the size of the regulated community. Incentives for the use of ISO 14001 are practically unavailable.

The concept of corporate social responsibility (CSR) has undoubtedly gained prominence in Kazakhstan in the last 10 years. However, current efforts are not sufficient if Kazakhstan wishes to have the business community more profoundly engaged in adopting behaviours that lead to sustainable development and support the attainment of the Sustainable Development Goals. Kazakhstan does not have a comprehensive policy to promote CSR.

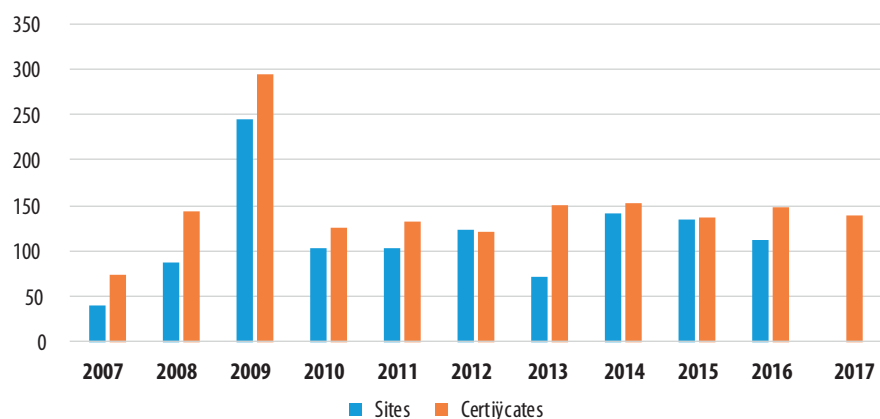


Figure 1: Environmental inspections, 2007–2017, number



Source: Ministry of Energy, 2018.

Figure 2: ISO 14001 industrial sites and certificates, 2007–2017, number



Source: ISO 14001 Surveys for 2016 and 2017.

Note: No data are available on the number of sites in 2017.

Recommended measures:

- **Raise awareness of the benefits of integrated environmental permitting;**
- **Develop new documents on BAT;**
- **Balance pollution charges with positive incentives for companies to invest in the reduction of pollution;**
- **Bring EIA legislation into line with the Espoo and Aarhus Conventions;**
- **Improve disclosure of data about the performance of the environmental compliance assurance system;**
- **Introduce incentives for companies certified under ISO 14001;**
- **Promote CSR and establish clear and quantifiable targets in this respect.**



Green economy and trade

The 2013 Concept on Transition to Green Economy (under revision in 2018) outlined the path to long-term growth based on climate-friendly technologies, energy efficiency measures and the sustainable management of natural resources. The Concept provided a foundation for mainstreaming environmental considerations into broader policy frameworks and prompted progress on several targets. Nevertheless, environmental pollution remains at a high level and there is still a lack of incentives for economic actors to reduce environmental pollution.

Despite considerable progress in reducing the administrative burden, fundamental issues remain in terms of the effectiveness of the country's environmental payment system, provision of incentives for pollution reduction and compliance with the polluter pays principle. Kazakhstan still follows fault-based concepts for monetary damages that tie liability to exceeding a predetermined limit in an emissions permit.

Kazakhstan subsidizes the use and production of fossil fuels, such as coal, gas and oil, as well as electricity, which are consumed directly by end users or as inputs to electricity generation. It is among the 15 countries with the highest subsidies in the world but is number one in subsidizing coal. The Government undertook some reform of subsidies: most of the direct support for electricity and heat consumers was eliminated, while the Government still provides indirect support by maintaining electricity and heat tariffs at low rates.

Current expenditure and investments for environmental protection as a percentage of GDP declined from 1.03 per cent in 2009 to 0.42 per cent in 2016. The changes in environmental current expenditure and investments do not reflect the rate of GDP growth. Such a low share can be a barrier to pursuing many Sustainable Development Goals and targets. Expenditure on environmental protection varies substantially among regions.

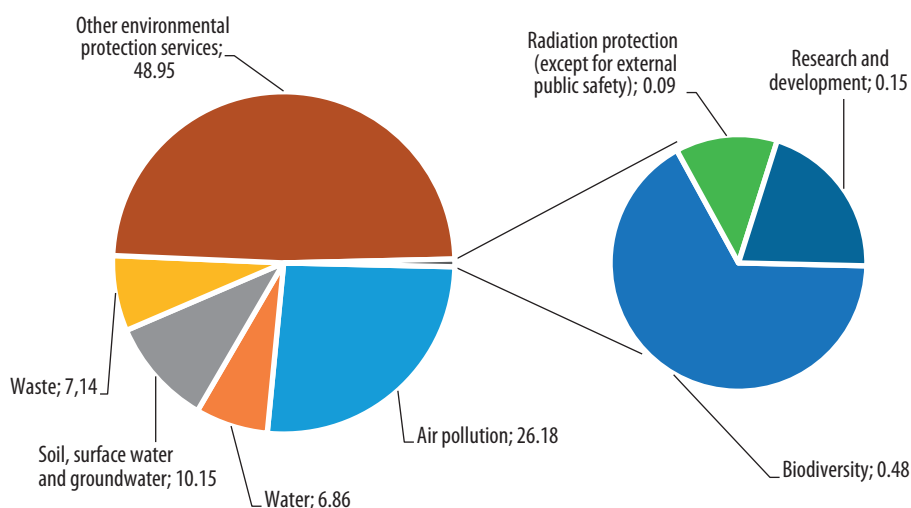
Environmental taxes and penalties collected at the local level are generally not effectively used for improving environmental conditions and promoting a green economy. Only about 30 per cent of revenues from environmental charges are spent on environmental protection measures.

Kazakhstan's public financial institutions have invested in green projects, but the share of green projects in the total portfolio remains low. Green finance mobilization is not part of the investment criteria of these financial institutions.

The efficiency and transparency of the public procurement system has improved substantially over the past 10 years. However, legal frameworks to support green public procurement are still limited.



Figure 3: Investments in environmental protection by domain, 2017, per cent



Source: Committee on Statistics, 2018.

Recommended measures:

- **Create incentives for companies to invest in pollution reduction and technology modernization;**
- **Shift from the fault-based concepts for monetary damages to the strict polluter pays model;**
- **Enhance the capacity of existing institutions for research on green economy;**
- **Add green finance to the mandates of public financial institutions;**
- **Increase the effectiveness of the use of collected environmental payments for environmental protection;**
- **Accelerate tariff reform in the district heating sector;**
- **Establish regulations to support green public procurement.**



Environmental monitoring, information, public participation and education

Good progress in the development and expansion of the monitoring infrastructure run by Kazhydromet has been made since 2008. The air quality and surface water quality monitoring networks have been expanded. There has also been a substantial increase in the online provision of environmental monitoring data and information collected by Kazhydromet.

Progress has been made in terms of the development of databases and environmental information management systems, in particular the State Cadastre on Waste and the State Pollutant Release and Transfer Register. The establishment a Unified State System for Environmental and Natural Resources Monitoring is still work in progress.

The annual national state of the environment report is regularly produced. In 2018, an online interactive version of the 2016 edition was prepared to increase outreach to the public.

Kazakhstan has a solid system for the production of environmental statistics and indicators. Opportunities remain for further improving application of the Shared Environmental Information System principles of open access to environmental data.

Since 2008, Kazakhstan has improved access to environmental information by amending its legislation and starting to put it into practice. The main challenge is to set up effective user-friendly mechanisms that will meet the public's actual needs.

The country is progressing with ensuring public participation in environmental matters. However, the effectiveness of advisory public councils in terms of ensuring adequate representation of public interests is not sufficient. Other challenges include enabling effective public participation in decision-making on projects and providing opportunities for public participation in decision-making related to genetically modified organisms (GMOs).

Access to justice on environmental matters is prominently promoted by the Supreme Court. It still has to be advanced further to cover the entire judicial system in the country. Very few judges specialize in environmental cases. Courts do not have environmental experts.

Environmental education is integrated well into preschool and overall secondary education. Recent updates of the education curricula, which now include education for sustainable development (ESD) issues to some extent, are a good foundation for further work towards achieving targets 4.7 and 12.8 of the 2030 Agenda for Sustainable Development. Integration of ESD into vocational training and higher education is still insufficient.

The weak links for advancing ESD are on the institutional side. ESD is not explicitly mentioned in the mandate of the Ministry of Education and Science, which is responsible for the overall education system. Neither is it clearly mentioned in the mandate of the Ministry of Energy, which is vested with important environment-related responsibilities. The country does not have an ESD coordination mechanism.



BOX 2: AirKz App INITIATIVE

In early 2018, Kazhydromet launched an app on urban air quality (AirKz) to make official real-time data on air quality available to the public. As of late 2018, AirKz provides information based on data collected in 46 settlements and at 84 automatic and 56 manual air quality monitoring stations.

Available in English, Kazakh and Russian, AirKz allows users to manually select desired stations or, according to geolocation data, the app will automatically determine the nearest station. Depending on the selected station, the app displays the concentrations of the main air pollutants. For each parameter, users can view the concentration level in mg/m³ and in relation to the maximum allowable concentration on a colour scale.

In addition to displaying monitoring data, AirKz includes a description of each pollutant and its effects on human health. However, it does not provide users with recommendations on what to do in the case of specific air pollution levels.

Recommended measures:

- **Strengthen the use of air quality information to raise public awareness on urban air pollution;**
- **Provide support to the further development of the AirKz app;**
- **Accelerate the development of the Unified State System for Environmental and Natural Resources Monitoring;**
- **Enhance the provision of environmental information on the websites of central and local authorities;**
- **Ensure training on public participation procedures for public authorities and other stakeholders;**
- **Improve the effectiveness of public councils;**
- **Ratify the Almaty Amendment on GMOs to the Aarhus Convention;**
- **Enhance training for judges, lawyers and other legal personnel;**
- **Establish a multi-stakeholder coordination mechanism for ESD.**



Climate change

Kazakhstan ratified the Kyoto Protocol in 2009 and the Paris Agreement in 2016. CO₂ emissions per US\$1,000 of GDP have almost halved, decreasing from 1.34 tons in 2000 to 0.73 tons in 2015.

The achievement by Kazakhstan of its unconditional intended nationally determined contribution (INDC) target to reach a reduction of 15 per cent of greenhouse gas (GHG) emissions by 2030 compared with 1990 would make a strong contribution to global progress towards Sustainable Development Goal 13 (Take urgent action to combat climate change and its impacts). The mitigation scenarios developed for Kazakhstan show that only with current and additional measures would Kazakhstan be able to achieve the unconditional target.

The country is one of the most carbon-intensive economies in the world, with the energy sector being the major CO₂ emitter (82.4 per cent of GHG emissions, on average, for the period 1990–2015). However, Kazakhstan has high potential to decrease its footprint as a global GHG emitter. A shift from coal and oil to gas and renewable energy sources would decrease GHG emissions.

Kazakhstan's Emissions Trading System (KazETS) was introduced in 2013–2014. In 2016–2017, KazETS was suspended to allow for improvements in the monitoring, reporting and verification system to be introduced. The interruption of KazETS was not beneficial in terms of stimulating large emitters to undertake consistent emissions reductions. One important consideration in the new phase of KazETS is to allow any KazETS revenues in the future to be reinvested in further GHG mitigation instead of being absorbed into the state budget, as is currently the case.

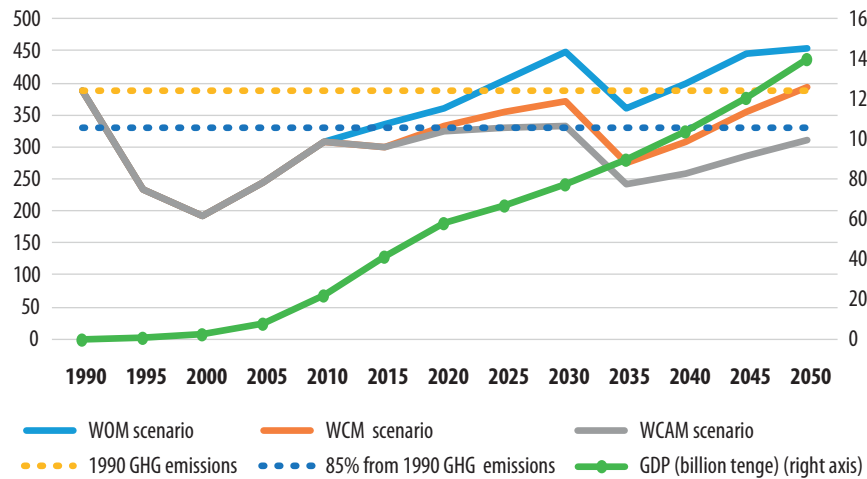
As of 2018, KazETS covers all major companies in the energy, oil and gas sectors, and the mining, metallurgical, chemicals and processing industries. It does not include other sectors contributing to GHG emissions, such as urban areas, housing and waste management.

As of 2018, Kazakhstan does not have legislation to specifically address climate change, nor a specific policy document on this issue. While climate change is of a cross-sectoral nature, it is still perceived to be a separate topic that must be managed by a specific authority designated as being in charge of climate change issues. This is echoed in the lack of integration of climate change concerns into various policy documents and the limited coordination on climate change issues.

Kazakhstan lacks a disaster risk reduction strategy in line with the Sendai Framework for Disaster Risk Reduction 2015–2030. Taking into account the recurrence of extreme weather events in Kazakhstan and the current and future climate conditions, a disaster risk reduction strategy would support Kazakhstan in the implementation of targets 1.5, 11.b and 13.1 of the 2030 Agenda for Sustainable Development.

Taraz City in Zhambyl Oblast joined the Covenant of Mayors in 2013 and developed its Sustainable Energy and Climate Action Plan. Eight other Kazakh cities signed the Covenant in 2013–2014 but have not submitted their respective action plans.



Figure 4: GHG emissions projections

Source: Seventh National Communication to the UNFCCC, 2017.

Note: WOM = scenario with no measures. WCM = scenario with current measures.

WCAM = scenario with current and additional measures.

Recommended measures:

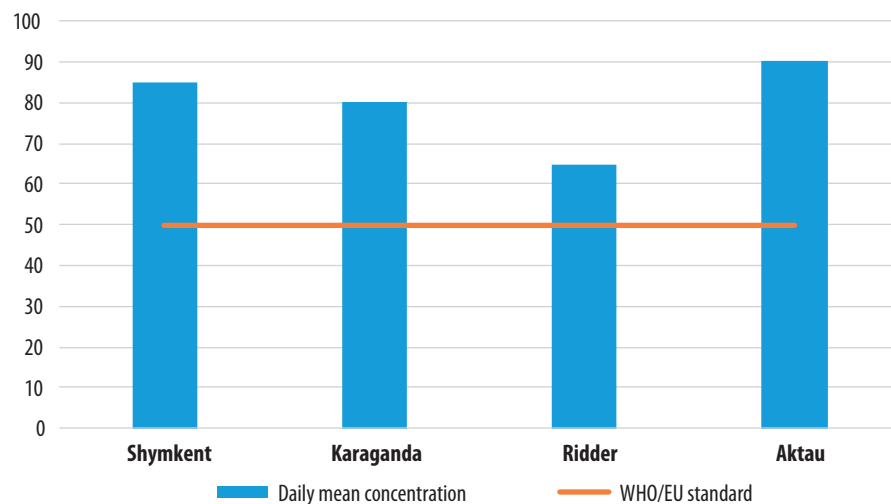
- **Develop and adopt a national adaptation plan;**
- **Ensure that climate change concerns are prominently integrated into sectoral policies;**
- **Promote the elaboration of local adaptation plans;**
- **Develop and adopt a national disaster risk reduction strategy;**
- **Address emissions from non-KazETS sectors with concrete actions and indicators;**
- **Introduce carbon taxation for sectors such as housing and commercial;**
- **Incentivize the penetration of renewable energies as a partial alternative to coal;**
- **Promote the implementation of the Covenant of Mayors.**



Air protection

The annual mean concentration of PM_{10} is higher in many cities in Kazakhstan than the European Union (EU) and World Health Organization (WHO) standards. The daily mean concentration of PM_{10} in many cities in Kazakhstan in 2017 is also higher than the EU and WHO standards. Further, the daily mean concentration of $PM_{2.5}$ in many cities in Kazakhstan in 2017 is higher than the WHO standard. This makes the 2030 Agenda's target 11.6 on the adverse per capita environmental impact of cities, and target 3.9 on reduction of the number of deaths and illnesses from air pollution, particularly relevant for Kazakhstan.

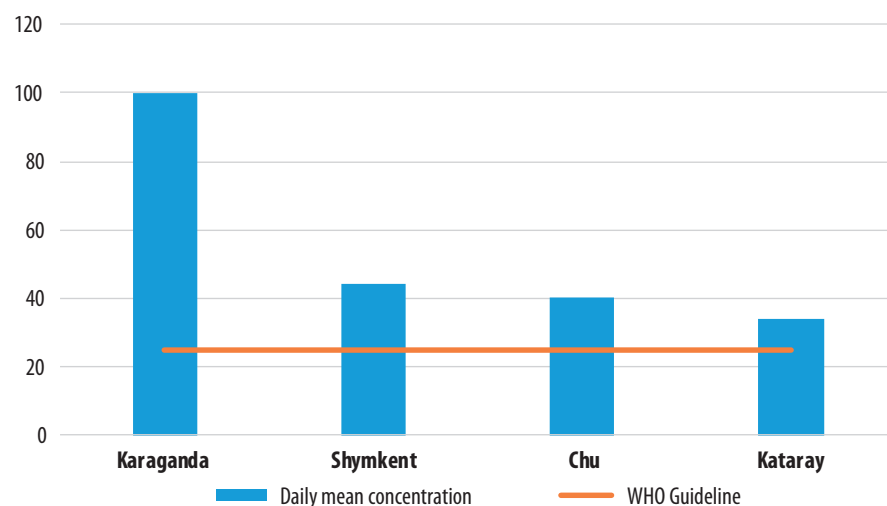
Figure 5: Daily mean concentration of PM_{10} in selected cities, 2017, $\mu g/m^3$



Source: Kazhydromet, 2017.

Note: Daily mean values: WHO Air Quality Guideline: $50 \mu g/m^3$; EU Air Quality Standard: $50 \mu g/m^3$.

Figure 6: Daily mean concentration of $PM_{2.5}$ for selected stations, 2017, $\mu g/m^3$



Source: Kazhydromet, 2017.

Note: WHO Air Quality Guideline: $25 \mu g/m^3$ (daily mean value). No daily EU Air Quality Standard for $PM_{2.5}$.

In 2016, 40 per cent of the emissions of SO₂ and 60 per cent of the emissions of NO_x from stationary sources in the country were caused by the electrical power plants. Reduction of the high emissions of SO₂, NO_x and particulates from power plants can be achieved by a change of fuel from coal to natural gas, in combination with combustion improvement and selective catalytic reduction to remove NO_x, or by installing adequate desulphurization and dedusting equipment.

At present, emission limit standards for large combustion plants in Kazakhstan are far less stringent than in the EU. Furthermore, existing emission limit standards in Kazakhstan are different for existing plants and new plants. They are quite relaxed for existing plants not undergoing any modernization, more stringent for existing plants that undergo modernization and most stringent for new plants. Existing plants continue to apply for and receive new permits with the lowest emission limit standards.

The transport sector in Kazakhstan causes almost 40 per cent of the CO emissions, 17 per cent of the NO_x emissions, 20 per cent of the non-methane volatile organic compound (NMVOC) emissions and an estimated 35 per cent of the emissions of particulate matter (PM_{2.5}). Measures to upgrade domestic refineries to produce cleaner fuels have been taken. However, the transport fleet is aged (70 per cent of private cars are 10 years old or older).

Besides the industrial and car emissions, during the long heating season, emissions from private households have a considerable impact on the air pollution levels in the cities. Coal is used for space heating – up to 30 per cent in cities, but especially in rural areas, where it accounts for more than 70 per cent. Improvement of energy efficiency in the residential sector would have a strong influence on air quality.

Kazakhstan has no national policy on air protection, nor does it have specific air quality programmes. The general policy directions of air quality assessment and air quality management may be identified from other policy documents. There is also no specific national air quality legal framework.

Recommended measures:

- **Revise the legislation on emission standards for large combustion plants;**
 - **Strengthen the national legislation to specifically address air protection;**
 - **Introduce economic incentives to facilitate the renewal of the car fleet;**
 - **Ensure the deployment of intelligent transportation systems;**
 - **Ensure that effective and reliable public transport systems are working;**
 - **Promote active (non-motorized) mobility in cities;**
 - **Stimulate measures for energy efficiency in residential and commercial buildings.**
-



Water management

The policy framework has clear targets in the water sector with regard to increasing water efficiency and water reuse and recycling, and expanding coverage of the population by water supply and sanitation systems. These national targets make Kazakhstan generally well prepared to achieve Sustainable Development Goal 6, but adequate investment is indispensable for achieving actual progress on the targets.

Kazakhstan has significantly progressed in operationalizing river basin management. Basin inspections and basin councils have been established and basin agreements have been concluded. At the same time, insufficient staffing, poor technical equipment and weak organizational and institutional potential of basin inspections does not allow them to completely fulfil their tasks.

Kazakhstan pays increasing attention to the need to adapt to climate change impacts in the water sector. The main measures for adaptation currently undertaken include the construction of new reservoirs for seasonal regulation, introduction of drip irrigation systems and conduct of soil conservation measures.

The total volume of crude industrial wastewater decreased. Nevertheless, a significant amount of wastewater from industrial enterprises, including thermal power plants (TPPs), comes directly to municipal wastewater treatment facilities that are not intended for the treatment of industrial wastewater.

One of the priority goals is to provide urban and rural settlements with safe drinking water. Access to sanitation is also an important goal, though it features less prominently in the policy documents than does water supply. Water supply in rural areas is still worse than in cities, despite the progress made.

The process to define the borders of water protection zones and belts for all water bodies is not completed yet. There is often failure to comply with water protection zone regimes. There are instances of illicit allocation of land for construction within water protection zones.

The weak links of the current architecture in the water sector are in the institutional domain. There is insufficient cooperation among various institutions that are in charge of different water infrastructure, as well as inadequate sharing and exchange of information. The advisory Interagency Council on Water Resources Management, created by the Government in 2015 to strengthen interministerial coordination, does not meet regularly.



BOX 3: TRANSBOUNDARY WATER COOPERATION

Kazakhstan has been very active in international cooperation on water issues in the past decade. It remained a “stability factor” in the regional cooperation among Central Asian countries in the framework of the International Fund for saving the Aral Sea (IFAS) and took an active role in activities under the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention). Landmark achievements include the conclusion of two new bilateral agreements with the Russian Federation (2010 and 2016) and a new bilateral agreement on water quality with China (2011).

With regard to the Sustainable Development Goals’ indicator 6.5.2 (Proportion of transboundary basin area with an operational arrangement for water cooperation), for Kazakhstan, the value is 73 per cent. All surface waters shared by Kazakhstan are covered by transboundary water agreements but none of the 15 transboundary aquifers shared by Kazakhstan is covered. This demonstrates room for efforts to increase the proportion of transboundary basin area with an operational arrangement on the way to 2030. A specific issue remains the lack of trilateral (China, Kazakhstan, Russian Federation) basin-wide cooperation on the Irtysh River.

Recommended measures:

- **Enhance staff resources, training of staff and equipment of basin inspections;**
- **Ensure regular meetings of the Interagency Council on Water Resources Management;**
- **Ensure compliance with requirements banning the discharge of industrial wastewater into municipal sewerage;**
- **Ensure pretreatment of industrial wastewater by enterprises;**
- **Pay stronger attention to water supply and sanitation in rural areas;**
- **Strictly control compliance with the regime of economic activities in water protection zones.**



Waste and chemicals management



The collected amount of municipal solid waste (MSW) has decreased since 2011, but this was not caused by fewer services being provided. Rather, this reflects the actual decrease of MSW generation as it correlates with the development of the real wage index in Kazakhstan. The growth of real income would cause a further increase in the generation of MSW in the future.

The lack of modern disposal capacities is the key problem for modernization of municipal waste management and the main challenge for Kazakhstan to reduce the adverse per capita environmental impact of cities (target 11.6 of the 2030 Agenda for Sustainable Development). A typical disposal site in the country does not have impermeable layers for protection of groundwater and has no control of leachate, and scavenging for recyclables occurs frequently.

Central governmental authorities define strategies and goals on waste management, but implementation is fully on the shoulders of municipalities and the private sector. Development of modern controlled landfilling is an expensive project and municipalities cannot afford allocation of the investment from their own budget. Without a cost-based gate fee, the private sector is not interested in investing in landfill development.

Kazakhstan aims to increase the share of recycling. MSW sorting plants were developed in eight regions with an estimated total annual capacity of 1 million tons of MSW. However, the output of recyclables from these MSW sorting plants is very small. Waste fees do not provide sufficient funds for the operation of sorting plants.

Kazakhstan started to implement extended producer/importer responsibility. This important development is not yet covered by appropriate changes in waste reporting and statistics.

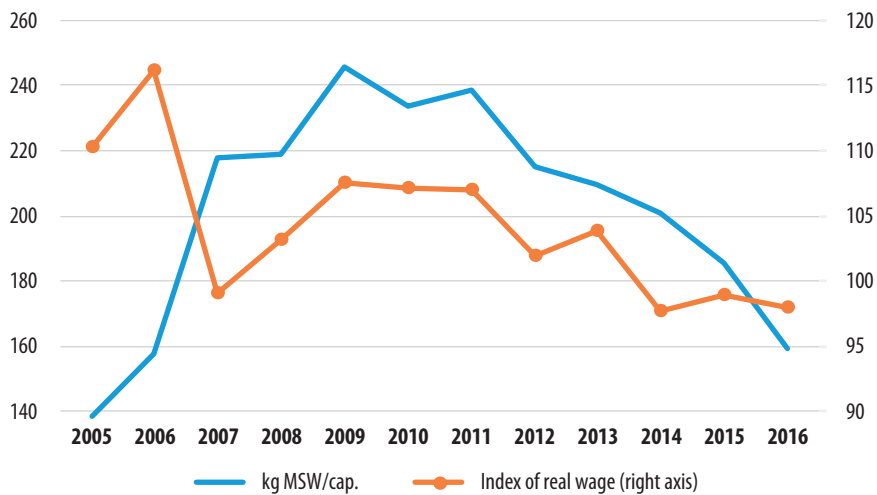
Waste from the energy sector remains a critical issue. Approximately 4 tons of ash and slag is produced for every 10 tons of coal burned. To date, more than 300 million tons of waste have been accumulated in ash dumps.

Radioactive waste is one of the priorities and receives appropriate attention. The decommissioning of BN-350, a sodium-cooled fast reactor located at Aktau Nuclear Power Plant, started in 1999 and ended in 2010. During decommissioning, 3,000 spent fuel assemblies were packed into 60 containers and transported to a temporary storage site developed near Baykal-1. The final decision on the fate of this radioactive waste has not yet been made.

Persistent organic pollutants (POPs) waste includes obsolete pesticides, equipment containing POPs and industrial use of POPs, including production of capacitors. As there is no suitable facility for destruction of polychlorinated biphenyls (PCBs) in Kazakhstan, more than 230 tons of PCB oils and equipment were exported to France. It is estimated that about 220 tons of capacitors requiring disposal remain in Kazakhstan.

Medical waste management has improved. In 2017, more than 20 organizations provided services in the treatment of medical wastes, located in all oblasts. The number of special installations for the destruction of medical waste has grown from 91 in 2011 to 158 in 2017. But this is still insufficient to satisfy needs. The most problematic sites are small hospitals in towns and rural areas. The regional approach to medical waste management is lacking.

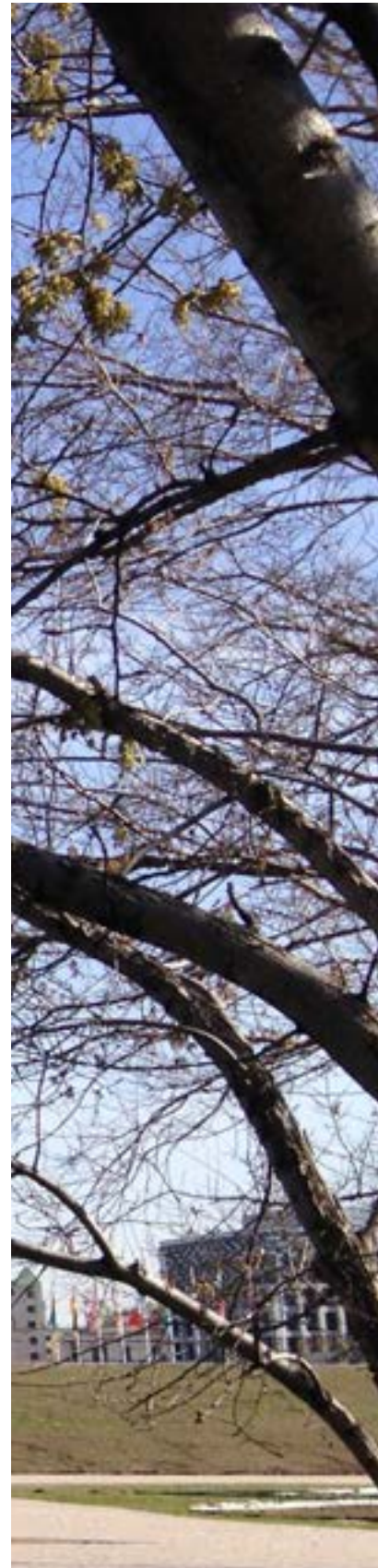
Figure 7: Correlation between regularly collected waste and index of real wage



Source: Committee on Statistics, 2018.

Recommended measures:

- Introduce the weighing of waste for all waste treatment and disposal facilities;
- Enforce collection of quantitative statistics on waste streams;
- Progress towards cost-based financing of municipal waste management;
- Improve reporting on recyclables;
- Ensure that existing sorting capacities are fully utilized;
- Review options and decide on the final disposal of radioactive waste;
- Develop regional waste management plans for medical waste.



Biodiversity and protected areas



Populations of globally threatened key ungulate mammal species free-ranging in Kazakhstan are either stable or constantly growing in numbers.

This is the case for the critically endangered (CR) saiga antelope and European mink, vulnerable (VU) Bukhara deer, goitered gazelle, Siberian musk deer, snow leopard and Menzbier's marmot, as well as the near threatened (NT) Asiatic wild ass and five local subspecies of the argali sheep.

One of the reasons for the success in conservation of several key mammal species is that protected rare and endangered animal species are not hunted in Kazakhstan.

Simultaneously, applied anti-poaching measures are quite effective. However, the saiga antelope is still listed as a game species, while the moratorium on its hunting is valid only until the end of 2019.



Kazakhstan conducts intensive afforestation works aimed at mitigating the adverse effects of the shrinking Aral Sea and increasing the forest cover share from the current 4.7 per cent to 5 per cent of the country by 2030.

Most recently, the Government started to encourage private land users to undertake afforestation initiatives. Progress towards sustainable forest management (indicator 15.2.1 under target 15.2 of the 2030 Agenda for Sustainable Development) over recent years is obvious. Nevertheless, the achievement of 5 per cent forest cover would require the trebling of efforts and related expenditure in the coming years.



Kazakhstan has established an extensive network of protected areas, encompassing 243,750 km².

However, the current share of protected areas in the country's overall territory (8.94 per cent) is well below the globally recommended levels. The existing network adequately covers neither all main natural ecosystem types representative of Kazakhstan, nor habitats of all important threatened wildlife species. The most effective protected areas (having legal entity status and their own personnel) account for only 2.58 per cent of the country's territory.

By the designation of the large state preserved zone (662,630 ha) in the northern part of the Caspian Sea, the coverage of protected areas in relation to marine areas in Kazakhstan is well above the level expected in target 14.5 of the 2030 Agenda (By 2020, conserve at least 10 per cent of coastal and marine areas). However, little information about this state preserved zone and the effectiveness of the protective regime is available.



Kazakhstan aims to develop a functional ecological network (including the recent designation of the first ecological corridors linking protected areas). Since 2008, Kazakhstan has designated an additional eight new Ramsar sites and successfully nominated its first two "natural" sites inscribed by UNESCO on the World Heritage List.

The Government has not endorsed the 1999 National Strategy and Action Plan on Conservation and Sustainable Use of Biological Diversity (NBSAP).

As a result, Kazakhstan has no policy instruments in force with a special focus on biodiversity conservation and/or protected area network development, and these issues are not integrated into sectoral policies.

Table 2: Protected area (PA) coverage of main ecosystems, per cent

Zonal ecosystems	Coverage by PAs of all categories	Coverage by PAs with legal entity status
Forests (afforested area)	4.89	1.46
Forest steppe	5.82	2.58
Arid steppe	1.07	1.05
Dry steppe	4.26	3.96
Desert steppe	1.44	1.27
Northern deserts	2.74	1.99
Middle and southern deserts	24.03	0.69
Mountain areas	10.09	5.49
River valleys	2.37	0.00
Lakes	4.32	0.04
Caspian Sea	6.15	0.00

Source: Committee on Forestry and Fauna, 2018.



Recommended measures:

- Ensure continuity of long-term state biodiversity monitoring and research programmes;
- Adopt and implement the national biodiversity strategy and action plan;
- Designate new protected areas to cover all main ecosystem types;
- Raise the legal protective status of state nature sanctuaries (“zakazniks”);
- Support oblast authorities for the designation of ecological corridors.

Energy and environment

Kazakhstan has significant fossil fuel resources. It is a world leader in uranium production and ranks tenth in world coal production and twentieth in oil production.

Energy intensity is much higher in Kazakhstan than in developed countries, but steps are being taken by the Government to reduce energy intensity. By 2017, the energy intensity of Kazakhstan's GDP, expressed in toe per US\$1,000 in 2000 prices, had decreased by 18.18 per cent from the 2008 level.

Around 87 per cent of the installed power capacity comes from TPPs that use fossil fuels. While TPPs combust mainly coal, the sector is gradually switching to gas consumption. The capacity of gas turbines has increased by more than 700 MW in the period 2008–2017.

Kazakhstan has set targets for the development of renewable energy. The share of renewable energy should reach 3 per cent in 2020 and 50 per cent in 2050. The recent developments show Kazakhstan's good intention to develop renewable energy: in 2017, wind and solar sources together provided 0.43 per cent of generated electricity, a 13 per cent increase from 2016. However, a clear roadmap to achieve the renewable energy targets is not available.

Energy efficiency has become one of the national policy priorities. A recent achievement is the decline in the market share of incandescent light bulbs, from 74 per cent to 18 per cent of the total number of bulbs between 2012 and 2016. However, there are many other energy saving measures and energy efficiency technologies that could improve energy efficiency in the energy, industry, transport and residential sectors.

The extraction of fossil fuels continues to have impacts on the environment. For underground coal mines, the environmental-impact-related problems are mine water drainage, methane emissions and fugitive dust. For surface mines, the main environmental problems are large-scale land use, overburden removal and disposal, disturbance of hydrology, acid mine drainage and fugitive dust. The overburden is dumped in piles around the mines, which are exposed to weather conditions that lead to environmental hazards.

The volume of flared gases from oil extraction declined from 3.1 billion m³ in 2006 to 1 billion m³ in 2016, due to the prohibition of gas flaring introduced in 2004. Companies have constructed gas refinery plants to use gas for their internal energy needs and/or proceeded to conduct gas injection into soil. However, a huge amount of gas is still flared.

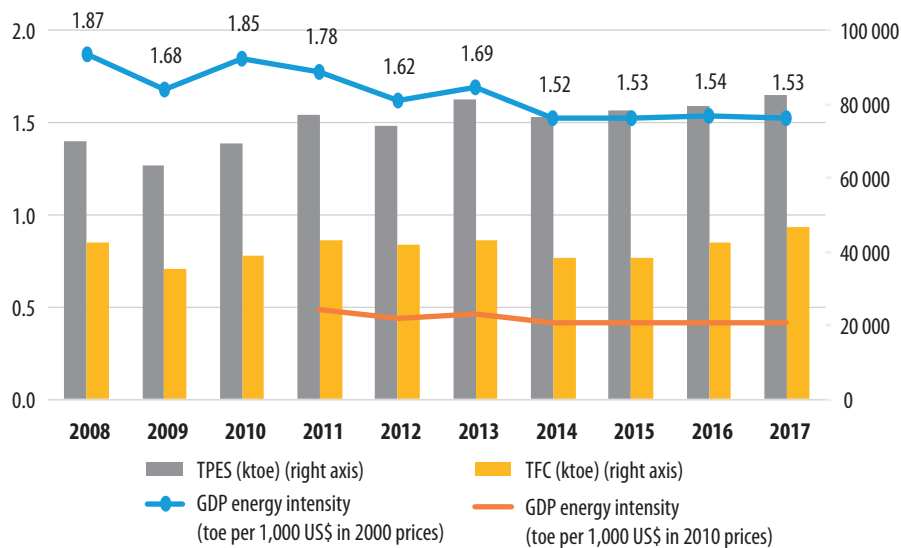
Oil and gas industries continue to threaten the Caspian Sea basin, which holds 90 per cent of the world's sturgeons and the endemic Caspian seals. Since 2008, there have been several cases of accidental contamination. With oil and gas production expected to increase in the coming years, the risk of oil spills and other leakages would increase. A particularly alarming point is that oil and gas operations have been developed in protected areas in West Kazakhstan, endangering the fauna and flora.



Table 3: Developments in power generation, 2009, 2017

	2009		2017	
	Billion kWh	%	Billion kWh	%
Steam turbines	67.1	85.60	82.425	80.50
Gas turbines	4.5	5.74	8.373	8.17
Hydropower	6.8	8.66	11.158	10.90
Wind	0	0.00	0.338	0.34
Solar	0	0.00	0.090	0.09
Total	78.4	100.00	102.384	100.00

Source: Ministry of Energy, 2018.

Figure 8: Energy intensity, 2008–2017

Source: Committee on Statistics, 2018.

Recommended measures:

- Implement more efficient and environmentally friendly ways to use coal;
- Implement gradual modernization and technology upgrades at coal-fired TPPs;
- Encourage the use of energy contracting models;
- Promote energy audits of public buildings;
- Increase the energy efficiency of existing buildings;
- Take steps to meet the national renewable energy targets.



Industry and environment

In 2017, the total share of industry in GDP was 26.8 per cent. The mining and quarrying industry accounted for 13.3 per cent of GDP and manufacturing industry for 11.2 per cent. The Government's objectives are to ensure Kazakhstan's industry becomes more competitive and diverse and sufficiently integrates innovations into production processes.

Industry accounted for 50.5 per cent of all energy consumption in 2016. Energy use in industry grew by 19.3 per cent in the period 2008–2016. All industrial enterprises, with the exception of some new projects, have significant capacities for energy savings.

Despite the fact that industrial air emissions have been decreasing since 2008, they are responsible for significant air pollution, notably in urban centres such as Termitau, Karaganda, Pavlodar and Aktobe. Many of the largest enterprises are investing in new technologies to reduce air emissions and installing automated systems for emissions monitoring, though these are not widespread. Technological developments are lagging behind in small and medium-sized enterprises (SMEs).

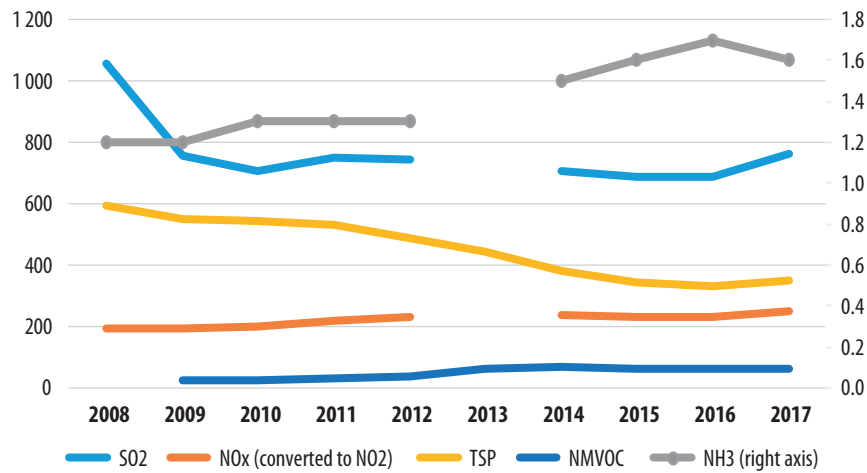
Most industrial enterprises do not have wastewater treatment facilities on their premises or do not carry out preliminary treatment. Industrial wastewater is often discharged directly into rivers or urban sewerage systems.

The Government has made efforts to set up a policy and legal framework for the transition to a green economy. However, there is a lack of mechanisms, such as financial incentives, to facilitate the introduction of green technologies in all industry branches. Another barrier to the shift to green technologies concerns the generally limited access of SMEs to financing.

Domestic expenditure on research and development (R&D) has been on the rise and reached almost 69 billion tenge in 2017, accounting for 0.13 per cent of GDP. Nevertheless, this is low compared with OECD Member countries, where the share was 2.35 per cent of GDP in 2016. This makes Kazakhstan less prepared to achieve progress on target 9.5 of the 2030 Agenda for Sustainable Development referring to innovation.

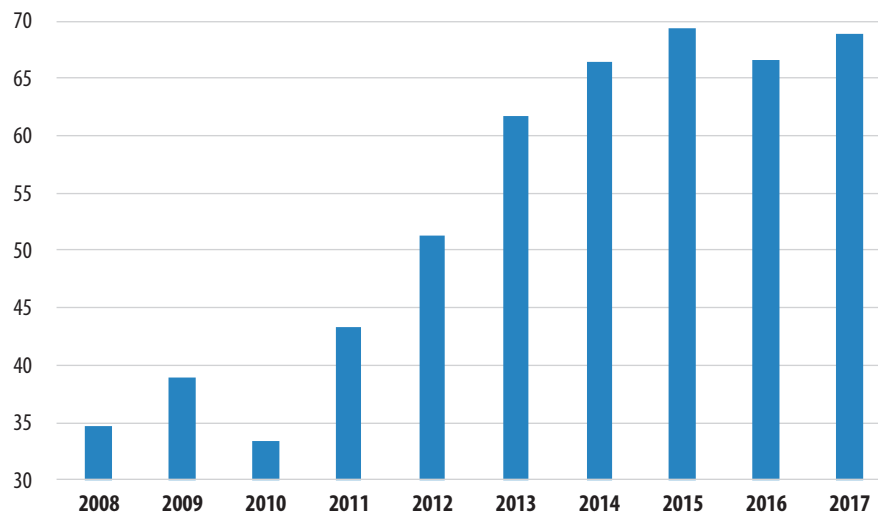
During recent years, measures to prevent major industrial accidents and reduce risks have been strengthened. These measures relate mainly to supervision over compliance with industrial safety requirements, accident investigations and emergency training at hazardous facilities. As a party to the Convention on the Transboundary Effects of Industrial Accidents, the country still has to identify hazardous activities that could cause a transboundary effect in the event of an accident and notify potentially affected countries.



Figure 9: Industrial air emissions, 2008–2017, 1,000 tons

Source: Committee on Statistics, 2018.

Note: Full data not available for the year 2013.

Figure 10: Domestic expenditure on R&D, 2008–2017, billion tenge

Source: Committee on Statistics, 2018.

Recommended measures:

- Promote inclusive and sustainable industrialization;
- Create financial incentives for industries to move towards green technology;
- Increase financial resources for R&D on low carbon development and green technology;
- Strengthen implementation of the Convention on the Transboundary Effects of Industrial Accidents.



Agriculture and environment

Despite huge agricultural potential, the country has remained a net agricultural importer. Agriculture is the smallest major sector of the economy, accounting for less than 5 per cent of GDP. In recent years, the Government has made efforts to increase the performance of the sector.

The Government's crop diversification policy aims to reduce the area planted in wheat and increase the area planted in "priority" crops, including forage crops, oilseed crops, barley and corn. Higher subsidies are offered for "priority" crops.

In the period 2008–2017, the decline in the area of cotton cultivation was 43,000 ha or 24 per cent. This has important environmental effects in terms of water saving.

The use of fertilizers is at a very low level. On average, in the period 2011–2015, about 110,000 tons of mineral fertilizers were applied annually in active substance content, whereas the annual requirement of Kazakh agriculture for mineral fertilizers is 1 million tons in active substance. The low consumption level is caused by the high costs of mineral fertilizers (due to low domestic production), despite the subsidies that the Government provides to farmers.

The use of pesticides is also low, although, between 2008 and 2017, it more than tripled, from 0.2 kg/ha to 0.63 kg/ha. The very low pesticide consumption is determined by its high costs and the land ownership structure, by which smallholders and households use practically no pesticides, but enterprises use them exclusively.

Organic agriculture is recognized by the Government as one of the most promising agricultural subsectors. Although the 2015 Law on Organic Production is in place, the by-laws for setting the national standards, certification and labelling of organic products are not yet adopted.

Agriculture is by far the biggest user of water resources. Approximately two thirds of both the abstracted and used waters is used by agriculture, mostly (70–100 per cent, depending on the year) for irrigation. About 11–15 per cent of the abstracted water is lost during transport, mostly due to the obsolete irrigation infrastructure and methods. The other main reason for losses is the low cost of water supply. In addition, current tariffs provide a uniform rate regardless of the change in consumption amount.

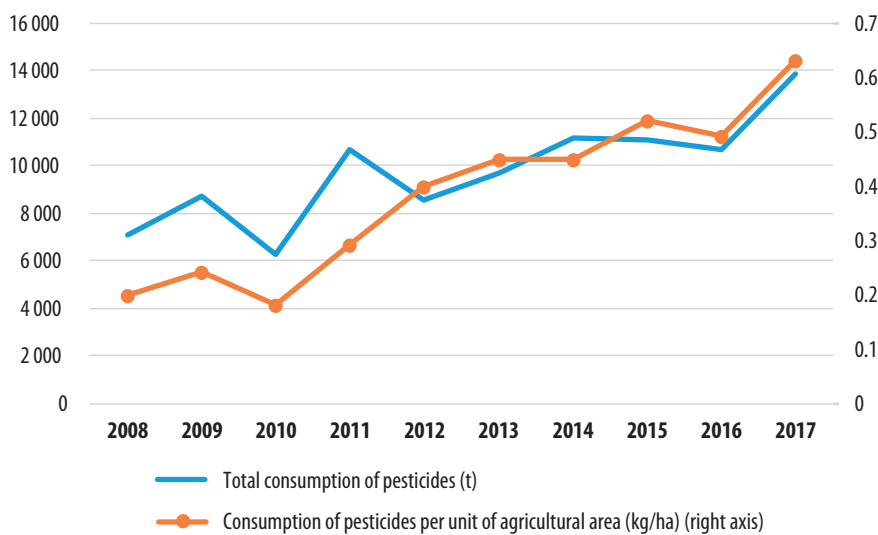
Since 2010, there has been large growth in the use of water-saving technologies, which have increased from 2–3 per cent to 13–15 per cent of the irrigated area. Sprinkling technology is the most popular, being used on around 100,000 ha, and drip irrigation is used on about 80,000 ha.

Conservation agriculture techniques (minimal soil disturbance, permanent soil cover and crop rotation) are rapidly spreading. It is estimated that 3 million ha of cultivated land is under no-tillage cultivation and 9 million ha of land is under minimal-tillage cultivation, while 5 million ha remains under conventional tillage.



Agriculture is the second biggest emitter of GHGs after the energy sector, although its GHG emissions are about 11 times lower than those of the energy sector. On the adaptation side, there are several positive trends. However, the lack of a coordinated and systemic approach hinders the country's ability to increase its resilience to the effects of climate change as required for the implementation of target 2.4 of the 2030 Agenda for Sustainable Development.

Figure 11: Use of pesticides, 2008–2017



Source: Committee on Statistics, 2018.

Recommended measures:

- **Adopt an adequate tariff methodology for establishing cost recovery irrigation tariffs;**
- **Promote sustainable irrigation techniques;**
- **Ensure systemic provision of extension services to farmers;**
- **Adopt by-laws on organic agriculture;**
- **Take steps to enhance agriculture's adaptation to the impacts of climate change.**



Health and environment

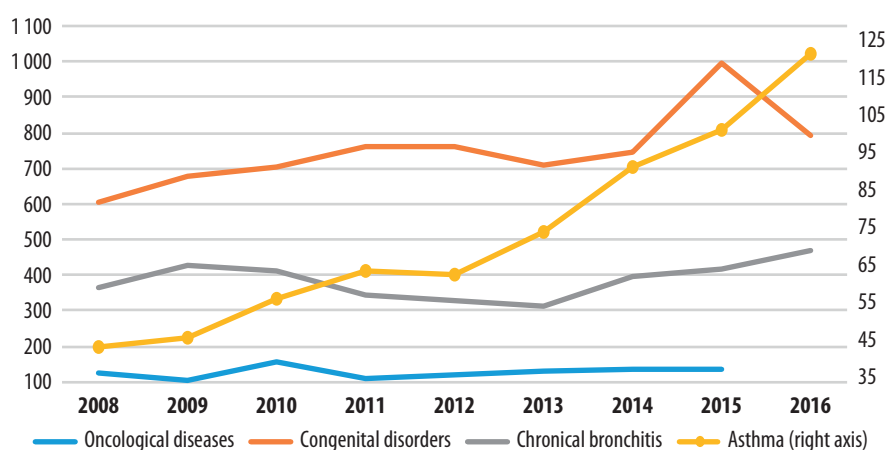
Since 2008, Kazakhstan has achieved progress in increasing life expectancy and decreasing infant and maternal mortality. Mortality and morbidity from communicable diseases has been reduced. But the country faced a large and growing burden of non-communicable diseases.

Since 2008, morbidity from non-communicable diseases, which could potentially be linked to environmental quality, has been increasing in children, who are generally more sensitive to environmental hazards than adults. In 2016, 2.6 times more children in comparison with 2009 were diagnosed to have asthma. Total morbidity from cancer in children increased by 60 per cent in the period 2009–2016. Chronic bronchitis remains at a high rate. The rate of congenital disorders is growing: from 604.1 per 100,000 population in 2008 to 999.0 per 100,000 population in 2015.

Several studies report the negative health impact of unsound chemicals management: high levels of lead were registered in children's blood in some oblasts of Kazakhstan, there were incidents of poisoning at workplaces, and children's toys were withdrawn due to their hazardous chemicals content. The mandates of different agencies in the context of sound chemicals management are not clearly defined. Chemical legislation is not in line with the best international practice. Improvement of chemicals management is critical for the achievement by Kazakhstan of target 3.9 of the 2030 Agenda for Sustainable Development.

Kazakhstan produces chrysotile asbestos and asbestos-containing materials. The average production in the period 2008–2017 was 216,020 t/y. Around 5,000 people are employed by the company engaged in extraction, ore treatment and asbestos production. However, Kazakhstan does not register mesothelioma as a separate nosology. Neither a national asbestos profile nor a plan for the prevention of asbestos-related diseases has been approved.

Figure 12: Morbidity from non-communicable diseases (newly diagnosed cases) in children (0–14), 2008–2016, per 100,000 population

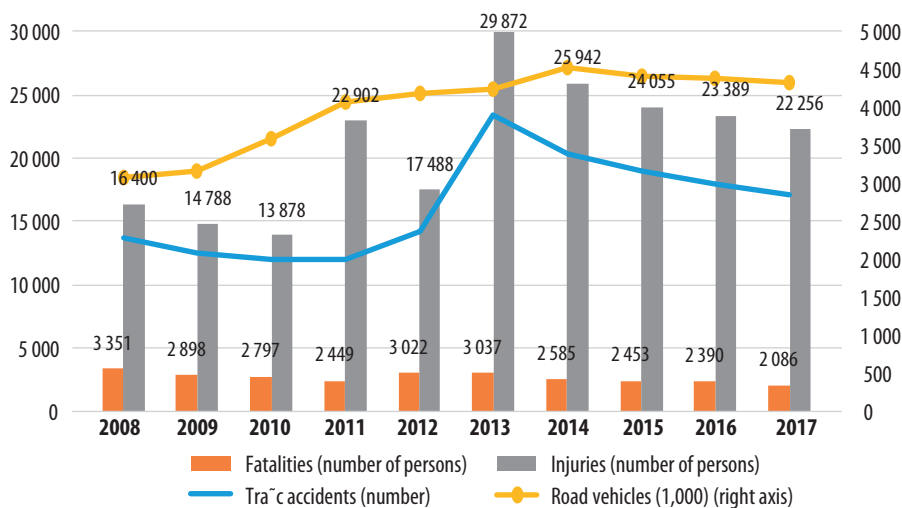


Source: Ministry of Health, 2008–2017.

In 2017, Kazakhstan reported 2,086 deaths from road traffic accidents. The number of fatalities is decreasing compared with the growth in vehicle numbers. However, the WHO-estimated rate of road mortality in Kazakhstan (24 fatalities per 100,000 population) is much higher than in other countries in the WHO-Europe Region, to which Kazakhstan belongs. Stronger enforcement of road safety measures is needed to achieve target 3.6 of the 2030 Agenda for Sustainable Development.

Medical institutions are a significant consumer of energy, and the reduction of their energy consumption is a policy priority. However, actions to improve the energy efficiency of the health sector are not funded through the national programmes. In the majority of cases, the replacement of equipment is done through international projects or using hospitals' own budgets.

Figure 13: Road traffic accidents, 2008–2017



Source: Committee on Statistics, 2018.

Recommended measures:

- Apply the “health in all policies” approach;
- Fully implement health risk assessment in decision-making processes;
- Develop a fully-fledged chemicals management system;
- Establish the national institutional framework on chemical safety;
- Advocate for non-hazardous alternatives to hazardous chemicals;
- Raise attention to child-friendly and healthy indoor environments;
- Develop the national asbestos profile.

PHOTO CREDITS

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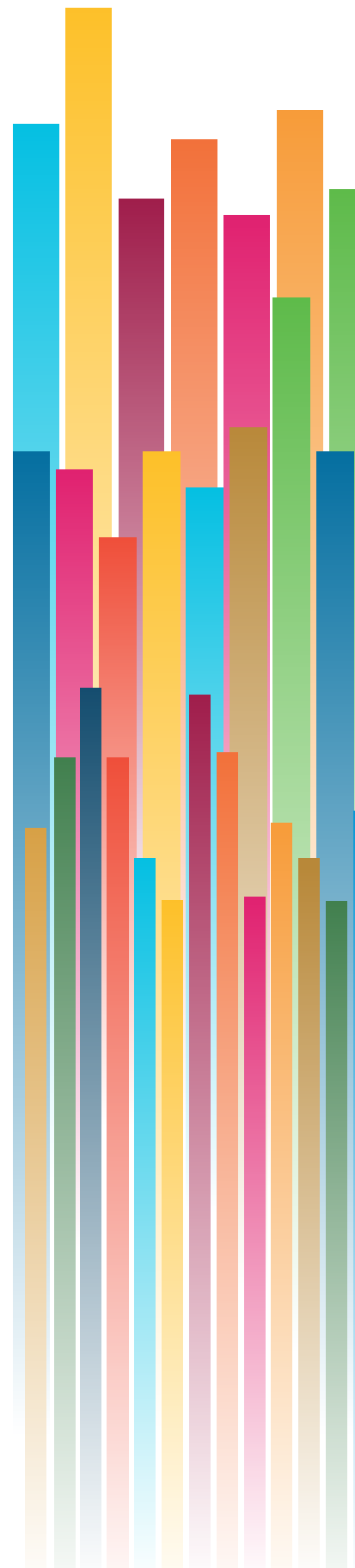


The top 10 environmental achievements in the period 2008–2018

- 
- Commencement of the shift to gas and development of the country's gas infrastructure;
 - Stabilization of the populations of many globally-threatened fauna species;
 - Intensive afforestation works, in particular those to mitigate the adverse effects of the Aral Sea disaster;
 - Implementation of river basin management;
 - Conclusion of new transboundary water agreements;
 - High attention given to radioactive waste;
 - Nearly universal access to energy services;
 - Decrease in infant and maternal mortality;
 - Green economy made a policy priority;
 - Institutional framework set up for implementation and monitoring of the Sustainable Development Goals.

The top 10 environmental priorities for the forthcoming 5–10 years

- Ensure independence of and strengthen inspections in the environmental area;
- Raise the effectiveness of environmental permitting and reform the environmental payments system to stimulate behavioural changes;
- Tighten emission limit standards for large combustion plants and ensure their modernization;
- Support the growth of renewable energy and implement energy efficiency measures;
- Significantly extend the protected area network;
- Improve water use efficiency in agriculture;
- Expand water supply and sanitation with stronger efforts in rural areas;
- Develop modern waste disposal sites and introduce sound chemicals management;
- Address the growing burden of non-communicable diseases;
- Ensure effective public participation in decision-making on the environment.



Kazakhstan

Environmental Performance Reviews

Third Review - Highlights

The United Nations Economic Commission for Europe Environmental Performance Review Programme assesses progress made by individual countries in reconciling their economic and social development with environmental protection, as well as in meeting international commitments on environment and sustainable development.

The third Environmental Performance Review of Kazakhstan examines the progress made by the country in the management of its environment since the country was reviewed in 2008 for the second time. The third review covers policymaking, implementation and the financing of environmental policies, as well as efforts in the area of greening the economy. Furthermore, it addresses air protection, biodiversity and protected areas, as well as water, waste and chemicals management. It also examines the efforts of Kazakhstan to integrate environmental considerations into its policies in the energy, industry, agriculture and health sectors. The review makes suggestions for strengthening efforts towards a comprehensive and systemic response to sustainable development challenges and implementation of the 2030 Agenda for Sustainable Development.

The Highlights of the third Environmental Performance Review of Kazakhstan draw attention to the key findings of the review to inform and guide policymakers and representatives of civil society, as well as the international community, in their efforts to improve environmental management and to further promote sustainable development in Kazakhstan.

Printed Environmental Performance Reviews may be obtained from the United Nations Department of Public Information at:

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