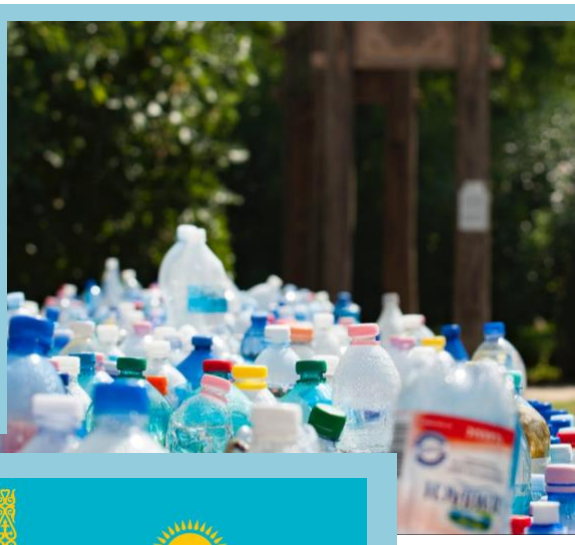
UNECE

Current state and development of the Shared Environmental Information System (SEIS)



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BACKGROUND

IMPROVED ENVIRONMENTAL MONITORING AND ASSESSMENT IN SUPPORT OF THE 2030 SUSTAINABLE DEVELOPMENT AGENDA IN SOUTH-EASTERN EUROPE, CENTRAL ASIA AND THE CAUCASUS.

Led by the United Nations Economic Commission for Europe (UNECE) and implemented together with the United Nations Environment Programme (UNEP), this project aims to strengthen the national capacities of seven target countries: Armenia, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, North Macedonia and Tajikistan. The target countries have requested support to improve environmental monitoring and assessment for the 2030 Agenda, highlighting the need to enhance the comparability of environmental statistics in the ECE region.

The project will focus on the following expected accomplishments:

- strengthened capacities of national environmental authorities and statistical agencies to collect and produce required data and application of environmental indicators in accordance with the Shared Environmental Information System (SEIS) principles and practices;
- improved accessibility and use of regularly updated and high-quality environmental indicators, within the framework of SEIS, to respond to international indicator-based reporting obligations, including monitoring progress towards the Sustainable Development Goals.

The current report intends to address some of the national gaps and needs identified for this project on SEIS establishment and on the collection and management of environmental information and data for regular reporting, such as for the 2030 Agenda. The gap analysis also intends to address the use of environmental data and information in decision-making processes and communication.

The gap analysis review will serve multiple purposes, including defining existing gaps in data collection in the target country as a basis for developing training materials and as a background paper for two national workshops with national officials and experts responsible for environmental data collection. It will also contribute to the development of national roadmaps to monitor the SDGs for each target country to support country ownership and future endorsement and implementation.

This project is funded by the United Nations Development Account (UNDA) and implemented by UNECE Environmental Monitoring and Assessment Programme[1] in cooperation with the UNEP.

[1] See http://www.unece.org/environmental-policy/environmental-monitoring-and-assessment/envema.html

INTRODUCTION

The Republic of Kazakhstan became an independent state after the fall of the Soviet Union in 1991. Kazakhstan is on the border of Eastern Europe and Asia with the greater part of the country in Asia.

Kazakhstan is the ninth largest country in the world by area. In administrative and territorial terms, the country is divided into 14 regions and 3 cities – Astana, Almaty and Shymkent – directly subordinate to the central government. The country is largely desert (44%) and semidesert (14%) with some mountain ranges and more than 48 000 lakes. The largest water bodies are the Caspian Sea, the Aral Sea and Lake Balkhash. The main rivers are the Irtish (length 1 700 km), the Ural, the Chu and the Syr Darya.[2] Among Kazakhstan's 115 protected areas, which cover 9% of the country's area, four nature reserves and one national park are designated as UNESCO World Heritage Sites.[3]

Kazakhstan's main environmental problems[4] are:

- air pollution (due to emissions related to nonferrous metals, transport and gas flaring during oil and gas production);
- irrational use, and pollution of, freshwater bodies;
- shrinking of the Aral Sea, resulting in soil salination and erosion;
- radioactive contamination as a result of atomic tests on the Semipalatinsk test site;
- inadequate waste management.

The Ministry of Energy – the central executive body of the Government of Kazakhstan – develops and implements state policy and coordinates environmental protection, natural resources management, solid waste management, the development of renewable energy sources and state-controlled development policies for the green economy.

Kazakhstan was among the first countries to adopt a strategy for developing a green economy. "The Concept of transition of the Republic of Kazakhstan to green economy" (1)[5] outlines the basis for deep systemic changes related to welfare gains, improvement in the quality of life and the inclusion of the country in the 30 most developed countries of the world – all with minimal environmental impact and natural resources degradation.

STATUS AND DEVELOPMENT OF SEIS

A Shared Environmental Information System rests on three pillars – content, infrastructure and cooperation – and this assessment considers each in turn.

SEIS PILLAR I CONTENT

Current system of collection of environmental data

At the country level, the main organizations responsible for collection, production, storage, processing and availability of environmental data are:

[2] See http://luckycamper.net/country/казахстан/все-о-казахстане/5810-географическое-положение-казахстана

[3] See https://studwood.ru/1153409/ekologiya/ploschadi_osobo_ohranyaemyh_prirodnyh_territoriy .

[4] See https://www.nur.kz/1666860-ekologicheskie-problemy-kazakhstana.html

[5] Reference materials are indicated by a number in parentheses and listed at the end of the report

- Ministry of Energy (Minenergo of Kazakhstan);
- Ministry of National Economy (MNE of Kazakhstan);
- Ministry of Agriculture (Minselkhoz of Kazakhstan).

The main organizations performing monitoring in the country are:

- State agency Kazhydromet under Minenergo (quality of atmospheric air, surface water, soil, meteorological and hydrological parameters);
- Statistics Committee (SC) under MNE (statistical data on emissions to atmospheric air, water supply and sewerage, transport, energy and household wastes);
- Committee on water resources under Minselkhoz (abstraction and use of water resources) and Forestry and wildlife committee (protected areas, preservation of forest, plant and animal resources).

Environmental data are stored in the information systems of the organizations and agencies responsible for their collection. In addition, the former Ministry of Environmental Protection established the State Fund of Environmental Information (SFEI) in November of 2009 for the purposes of centralized storage of environmental information (2).

The collection of environmental information is subject to the law, "On state statistics in the Republic of Kazakhstan". The Ministry of Energy's strategic plan provides for extending the range of environmental monitoring through the use of automated systems (3).

Production of environmental indicators

The UNECE environmental indicators are published on "Environmental monitoring and assessment indicators", the integrated platform of Minenergo and SC. The platform provides the data in Kazakh and Russian.[6] The quality and completeness of environmental information in Kazakhstan meet modern user requirements, and most environmental indicators are presented online.

Kazakhstan's reporting, evaluation and use of indicators are more advanced than the neighbouring countries of Central Asia, and may serve as a basis for knowledge and experience sharing (4).

Kazakhstan collects basic data on waste generation, but reliable measurements and the proper categorization of waste by type – household and building wastes, for example – remains problematic, as do determinations of how much of each type of waste is recycled. The accounting for industrial waste, on the other hand, is more reliable. Those involved in waste management in Kazakhstan include public authorities, private enterprises and workers in the informal sector, and any improvements in the overall waste management system will necessarily entail efforts to improve coordination among these groups.

The 36 UNECE environmental indicators published on the main page of the Statistics Committee website (20 from the main set and 16 additional) have been analyzed using the SEIS quality criteria.

The analysis reveals the following (see Annex I for detailed results):

- 40% of the indicators do not fully meet the accuracy criterion, and some indicators do not have all required data flows and sources;

[6] See http://stat.gov.kz/faces/homePage?c404=1&_afrLoop=1209146582499254#%40%3F_afrLoop%3D1209146582499254%26c404%3D1%26_adf.ctrl-state%3D1197m3l2ml

- 60% of the indicators are missing relevance information, and some indicators do not show the possibilities of wide application and geographical coverage;
- 90% of the indicators meet the punctuality and timeliness criteria, and in Excel, the indicators are updated regularly, but the interactive time series ends in 2015;
- the majority of the main set of indicators are available in user-friendly formats;
- 40% of the indicators lack metadata, visualization, narrative assessments and recommendations on use in state environmental policy;
- 70% of the indicators do not include references to the international methods of calculations and have interruptions in historical series.

In addition, the main set of indicators is missing "Water supply industry", "Population, connected to wastewater treatment" and "Wastewater treatment facilities". The "Freshwater abstraction" and "Total water use" indicators are combined; "Water supply industry and population connected to water supply industry" and "Household water use per capita" are combined; and "Population connected to wastewater treatment" and "Wastewater treatment facilities" are combined with "Polluted (non-treated) wastewaters".

The Statistics Committee of the MNE conducts an annual survey of users of statistical information.[7] In 2018, 88% of users reported a high level of confidence in state statistics.

In the 2018 mid-term UNECE SEIS review, Kazakhstan had a score of "good" performance for seven data streams, the highest number of all the Central Asian countries (5).

The absence of information over the Internet and the limited possibilities of direct contacts with specialists and organizations in Kazakhstan did not allow the evaluation of indicators using the following SEIS quality criteria:

- systematic comparison of the data used with data from another source;
- the use of data validation and revision procedures;
- the availability of the state agencies' primary data for the users.

Kazakhstan is strengthening its cooperation with OECD for implementation of a green economy. By 2016, Kazakhstan had developed 30 of the 54 UNECE green growth indicators, and by 2018, it had developed 38. The indicators are updated annually and published on the official SC website.[8] See Annex III for additional information.

Use of environmental information

In accordance with Government Decree No 589 dated 13.10.2016,[9] SFEI provides state bodies, legal entities and individuals with reliable information on the state of the environment, environmental impact, protection measures and pollution prevention and the use of natural resources. The statistical books "Environment protection and sustainable development of Kazakhstan" are published annually. The last statistical book (for 2013-2017) presents the data for 36 environmental indicators recommended by UNECE and the green growth indicators recommended by OECD (6).

[7] See http://economy.gov.kz/ru/kategorii/strategicheskiy-plan-1
[8] See http://economy.gov.kz/ru/pages/040517-statya-zelenaya-ekonomika-standarty-oesr-aday-nygmanov
[9] See http://ecogosfond.kz

A national report on the state of environment and the use of natural resources is prepared and disseminated annually (7). Its development is regulated by Government Decree No 673 dated 07.12.2016.[10] An interdepartmental working group prepares national reports annually.

SEIS PILLAR II INFRASTRUCTURE

Data collection

Kazakhstan continues to work on developing a monitoring system that includes automation, but the high start-up costs of automated systems limit their implementation on a national scale.

As of 2017, atmospheric air monitoring was carried out at 90 automated posts and 14 mobile laboratories.[11]

More complete implementation of the SEIS principles and additions to the list of environmental indicators are expected with the further automation of the systems (2).

Processing and analysis

Kazakhstan is introducing electronic portals to serve the public, state agencies and other organizations. Minenergo initiated the development of a GIS-based system for the inventory of natural resources for internal and inter-agency use (2).

Dissemination of environmental information

Eighteen of the 36 UNECE environmental indicators used by Kazakhstan are published and accessible on "Environmental monitoring and assessment indicators", an integrated interactive platform.

The physical size of the country and the importance of local environmental issues suggest that state agencies and civil society institutions should make maximum use of the Internet to disseminate local environmental information (2).

Based on the UNECE environmental indicators, Minenergo – with the support of UNEP – prepared an interactive electronic version of the last national report on the state of the environment and use of natural resources.[12]

SEIS PILLAR III COOPERATION

Basis and practice of inter-agency exchange of environmental information

Kazakhstan has established information-sharing mechanisms including SFEI maintenance and regular preparation of national reports on the state of environment and the use of natural resources.

[10] See https://online.zakon.kz/Document/?doc_id=38198035#pos=0;0
[11] See https://kazhydromet.kz/ru/p/monitoring-sostoania-okruzausej-sredy
[12] See http://newecodoklad.ecogosfond.kz/

At the national level, Kazakhstan is strengthening institutional cooperation based on the August 2012 joint order signed by the Agency of Statistics and the Ministry of Environmental Protection providing for the exchange of data and information between these organizations.[13]

Inter-agency working groups and memorandums of understanding have also been established to formalize such cooperation and fulfil commitments related to the public availability of the main set of UNECE environmental indicators used in the country.

Environmental and statistical agencies have been sharing environmental data. The distribution of authorities and the system of internal reporting obligations (both statistical and environmental) are performing well.

Some gaps are related to incomplete reporting or accounting and calculation difficulties with some environmental topics and indicators such as solid household and industrial non-hazardous waste and greenhouse gases (2).

Inter-sectoral exchange: producers vs. users of information

The main users of environmental information are the Government of Kazakhstan, environmental authorities, natural resource users, scientific institutions, higher education institutions, non-governmental local and international environmental organizations, the mass media and the general public.

The most popular kinds of information are the official annual analyses of the state of the environment; topical reviews (waste, biodiversity, energy); reports to international organizations; analyses of the state of the environment of cities, regions and river basins; and annual materials on protected areas, waste, forests and land resources (2).

The growing network and capabilities of the Aarhus Centre increase public environmental awareness and make the available information more accessible (4).

International exchange and reporting

Kazakhstan is a party to 267 international conventions and agreements on environmental protection, and is involved in a number of international and regional processes.

Most of the reports on international conventions are available in Kazakh and Russian. Some of the reports are duplicated on local websites, and the other reports are available through links on the relevant international websites (2).

Kazakhstan is a member of the Interstate Ecological Council of the CIS, which contributes to the establishment of an interstate environmental monitoring system for the collection, assessment, forecast and exchange of environmental information.

SEIS PRINCIPLES AND CONCLUSIONS

Kazakhstan has achieved progress in establishing and implementing the SEIS elements of content, infrastructure and cooperation. With the support of the UN and the European Union, Kazakhstan takes

[13] See http://online.zakon.kz/

an active part in the processes related to the UNECE indicators and projects related to SEIS. The country is the leader in the production and dissemination of environmental information in the region.

The analysis carried out by the Zoï Environment Network (2) rates as positive the implementation of the following SEIS principles:

- "information is managed as close as possible to its source";
- "information is readily available to easily fulfil reporting obligations."

The following SEIS principles are implemented at a satisfactory level:

- "information is collected once and shared with others for many purposes" (the information is provided partially, upon request, on a paid basis);
- "information is easily accessible to all users";
- "information is accessible to enable comparisons at the appropriate geographical scale and the participation of citizens" (the information is provided upon request, on a paid basis);
- "Information is fully available to the general public and at national level in the relevant national language(s)." (limited scope of information in Kazakh).

The development of SEIS at the national level is facilitated by the following (4):

- the gradual introduction of electronic management, processing and exchange of official digital documents, open data policies and data portals at the national level;
- general IT progress, development of institutional and project websites, growth of Internet accessibility and of the number of Internet users;
- digitization of source information such as inventories of flora, fauna and soil, forests, historic hydrological and climatic series.

Achieving success in creating SEIS also contributes to the production, availability and open exchange of regionally important environmental information as well as participation in regional assessments and environmental information exchange processes.

SDG MONITORING AND REPORTING FRAMEWORK

Country approach to Sustainable Development Goal (SDG) reporting

For Kazakhstan, the introduction of the SDG indicators and calculation methods enables systemic adaptation of strategic planning and monitoring to international standards and global development goals, and is consistent with the country's "Strategy 2050".[14]

National and sectoral plans already cover 61% of the SDGs objectives.

Kazakhstan was selected by the United Nations Development Group (UNDG) as one of 50 countries to hold national consultations on the post-2015 global sustainable development agenda. The UNDG compiled the 50 country contributions into a report, "The Future We Want", which focused on the following issues (8):

- loss of environmental and natural resources;
- effective use of natural resources;

[14] See http://www.mfa.kz/ru/bern/content-view/strategia-kazahstan-2050-12

- waste disposal and recycling;
- reduction of carbon emissions.

The creation of an international centre for green technologies and investment projects with the assistance of the UN is a substantive contribution of Kazakhstan to international efforts for SDG implementation.[15]

In July 2019, at the High-level Political Forum on Sustainable Development in New York, Kazakhstan is expected to present the first Voluntary National Review on "Empowering People and Ensuring Integration and Equality" to achieve SDGs 4, 8, 10, 13, 16, 17.[16]

A specially created interdepartmental working group on the implementation of indicators for SDG monitoring is developing a system of indicators that includes both global and national indicators, taking into account the priorities of Kazakhstan.[17]

The Statistics Committee plays a key role in creating a monitoring system for the SDGs, and coordinates and closely cooperates with all producers and users of data in the collection and dissemination of relevant data.

Based on the global list of UN indicators, the SC in 2018 developed the first draft of a system of indicators to monitor the achievement of the SDGs in Kazakhstan, taking into account national development priorities. The project consisted of 257 indicators, including:

- 175 global indicators adopted without change;
- 34 global indicators adopted with minor changes;
- 35 alternative national indicators;
- 13 additional national indicators.[18]

In the same time frame, an assessment related to the availability of data for the global SDG indicators showed that out of 231 global SDG indicators:

- 74 (32%) were produced;
- 32 (14%) were not produced, but there were basic data for the calculation;
- 125 (54%) were absent.

Overview of the readiness of UNECE indicators for SDGs monitoring and reporting

According to this UNDA assessment, 33 global environmental indicators from the SDG set can be used to monitor SDG attainment in Kazakhstan (See Annex II).

Of these 33 indicators:

- 6 national indicators are fully consistent with the SDGs global indicators without changes;
- 7 national indicators have been developed with minor changes;
- 7 alternative national indicators have been developed;

[15] See http://egov.kz/cms/ru)
[16] See http://economy.gov.kz)
[17] See http://egov.kz/cms/ru/articles/development_goals
[18] See http://stat.gov.kz/faces/wcnav_externalId/mainR_SDG_goals?_afrLoop=5320245882757042#%40%3F_afrLoop%3D5320245882757042%26_adf.ctrl-state%3Dkjc5yj39a_42).

- 5 additional national indicators have been developed.

National indicators have not been developed for 15 global SDG indicators, but metadata are available for 11 of these.

One global indicator, 14.5.1 “Coverage of protected areas in relation to marine areas”, is missing from the list of national indicators.[19]

The analysis shows that the UNECE environmental indicators were used for all four groups of national indicators developed. They include monitoring data for the period from 2010 (for some indicators) through 2017, and are supplemented with metadata and references to the data sources and to the government agencies responsible for generating the indicators. The exceptions are four alternative national indicators related to waste management (12.4.2.1; 12.4.2.2; 12.5.1.1; 12.5.1.2) for which data sources are not specified and metadata are absent (See Annex II).

Among the UNECE environmental indicators that Kazakhstan does not use to develop national SDG indicators are “Polluted (non-treated) wastewaters” for the global SDG indicator 6.3.1 “Proportion of wastewater safely treated”; “Renewable freshwater resources” and “Freshwater abstraction” for the global SDG indicator 6.4.2 “Level of water stress: freshwater withdrawal as a proportion of available freshwater resources” as well as a number of other global SDG indicators.

The list of national environmental indicators is presented in Kazakh and Russian.

[19] For this global indicator, an alternative national indicator “The share of the state reserve zone of the northern part of the Caspian Sea, lake ecosystems of the total share of protected areas” has been adopted as relevant for Kazakhstan.

GAPS AND SUGGESTED ACTIONS

The table below summarizes the gaps in Kazakhstan's environmental information, and suggests actions for moving forward. The country needs to take the lead on the longer-term actions, some of which may require long-term support from the international community. The short-term actions can and should occur quickly, supported in some cases by international partners through the UNDA project.

Gaps	Long-term actions not directly associated with the UNDA Project	Short-term actions which can be taken by UNDA Project partners
Absence of some indicators in the main set of environmental indicators	Expand the use of the UNECE environmental indicator set	Methodological assistance to expand the application of UNECE environmental indicators
Incomplete reporting or difficulties with waste indicator accounting	Develop an effective system of accounting and reporting for the waste indicators	
Not all requirements met for all indicators – not all required data flows defined; sources of data not indicated; no additional information; the possibilities of wide application not shown; geographical coverage insufficient; no metadata, visualization tools, narrative analysis, or recommendations on use for environmental policy	Ensure full compliance with the requirements of the SEIS indicator criteria	Operational and methodological assistance to ensure the quality of SEIS environmental indicators
Automated systems for measurement of fine particle content in emissions and atmospheric air not implemented	Develop and implement the automated systems and modern methods for measurement of fine particle content in emissions and atmospheric air	
Insufficient level of implementation of modern, international methods of analysis, calculations and recommendations in environmental monitoring	Increase the level of implementation of modern, international methods of analysis, calculations and recommendations in environmental monitoring	Training to maintain the required level of expertise and the use of international standards in the implementation of environmental monitoring
Not all UNECE environmental indicators developed for interactive use	Provide interactive access to the UNECE environmental indicators	

Incomplete required data sets for a number of the UNECE environmental indicators	Increase the number of data sets for the UNECE environmental indicators	Methodological assistance to ensure the compliance of national indicators with the UNECE environmental indicator set and methodology
Environmental indicators not fully used in the preparation of reports on conventions and intergovernmental agreements	Increase the use of environmental indicators for reporting on conventions and intergovernmental agreements	
National indicators not yet developed for separate global SDG environmental indicators	Use the UNECE environmental indicators for development of undeveloped nationalized SDG indicators	
“Coverage of protected areas in relation to marine areas”, global SDG indicator 14.5.1, missing from the list of national indicators	Include the global SDG indicator 14.5.1, “Coverage of protected areas in relation to marine areas”, on the list of national indicators	

CONCLUSIONS

Kazakhstan is the leading Central Asia country in terms of the quality and completeness of environmental information produced. Its advanced approaches to reporting, assessments and indicators can serve as a platform for sharing knowledge and experience.

In the short term, the UNDA project may be able to support Kazakhstan through advice and operational and methodological guidance on the development of the national environmental information system, and on monitoring, indicators and environmental assessment and reporting. This support may include training on the best international and European practices for the staff of the responsible organizations.

The analysis of the main set of UNECE environmental indicators using the SEIS quality criteria in Kazakhstan considers 36 indicators out of 49 that are on the integrated platform, and finds that in the development and implementation of environmental indicators, improvements in such quality criteria as accuracy, relevance, clarity and comparability are necessary.

Kazakhstan has established the legal framework and mechanisms for inter-agency information sharing, including the regular preparation of national reports on the state of the environment and the use of natural resources.

Kazakhstan has made progress in establishing and implementing SEIS. The evaluation finds that the implementation of all seven SEIS principles is positive or satisfactory. Advances in the creation of SEIS are based on the production, availability and open exchange of regionally important environmental information, as well as actual participation in regional assessments and the exchange of environmental information.

The 2018 draft SDG monitoring system consisted of 257 indicators – 175 global indicators adopted without changes, 34 global indicators adopted with minor changes, 35 alternative national indicators proposed in place of global indicators, and 13 additional national indicators. For all four groups of national indicators, UNECE environmental indicators were used.

Kazakhstan is cooperating with the OECD on the transition to a green economy through increased welfare and better quality of life while minimizing the impact on the environment and the degradation of natural resources. In 2018, 38 out of 54 OECD green growth indicators were developed in the country. Currently, the SC project, “Introduction of Green Growth Indicators and Preparation of the Report on Green Growth in Kazakhstan”, together with the OECD, is working to expand the green growth indicators.

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ANNEX I EVALUATION OF SELECTED UNECE INDICATORS AGAINST THE CRITERIA OF THE SEIS ASSESSMENT FRAMEWORK

Core indicators

Indicators (no. of data flows)	Accuracy	Relevance	Timeliness & punctu-ality	Accessi-bility	Clarity	Comparabi lity	Inst / org arrange-ments
Air emissions (14)	+/-	+/-	+	+	+	+/-	
Air quality (4)	+	+/-	+	+	+	+/-	
OSD consumption (8)	+	+	+	+	+	+	
Air temperature (1)	+	+/-	+	+	-/+	+	
Precipitation (1)	+	+/-	+	+	+/-	+	
GHG emissions (2)	+	+	+/-	+	+	+	
Renewable water res (1)	+	+	+	+	+	+/-	
Water abstraction (3)	+/-	+	+	+	+	+/-	
Water use (4)	+/-	+	+	+	+/-	+/-	
Water supply (1)	n/d	n/d	n/d	n/d	n/d	n/d	
BOD and NH_4 in rivers (2)	+	+/-	+	+	+/-	+/-	
Nutrients in freshwater (5)	+	+/-	+	+	+	-/+	
Pop. connected to WWT (1)	n/d	n/d	n/d	n/d	n/d	n/d	
WWT facilities (1)	n/d	n/d	n/d	n/d	n/d	n/d	
Polluted waste water (2)	+	+/-	+	+	-/+	+/-	
Protected areas (1)	+	+	+	+	+	+/-	
Forests and woodland (1)	+/-	+/-	+	+	-/+	-/+	
Threatened and protect. species (2)	+/-	+/-	-/+	+	+	-/+	
Land uptake (2)	+/-	+/-	+	+	-/+	-/+	
Final energy consumption (2)	+	+	+	+	+	+	
Primary energy supply (2)	+/-	+/-	+	+	+	+	
Waste generation (2)	+	+	+	+	+	+/-	

Hazardous waste management (6)	+/-	+/-	+	+	-/+	+/-
Additional indicators						
Household water use per capita (3)	+	+	+/-	+	+	+/-
Water losses (3)	-/+	+/-	+/-	+	-/+	+/-
Reuse and rec. of freshwater (2)	-/+	-/+	+/-	+	-/+	+/-
Drinking water quality (4)	+/-	-/+	+/-	+	-/+	+/-
Nutrients in coastal seawaters (2)	-/+	-/+	+/-	+	-/+	+/-
Trends in the number and distribution of selected species (4)	+/-	+/-	+/-	+	-/+	+/-
Area affected by soil erosion (2)	+	-/+	+	+	-/+	+/-
Fertilizer consumption (4)	+	+	+/-	+	+	+/-
Pesticide consumption (3)	+/-	+/-	+/-	+	-/+	+/-
Energy intensity (3)	-/+	-/+	+/-	+/-	+	+/-
Renewable energy consumption (2)	-	-	+/-	+/-	+	+/-
Passenger transport (3)	+	+	+/-	+	+	+/-
Freight transport (3)	+/-	+/-	+/-	+	-/+	+/-
Composition of road motor vehicle fleet by fuel type (5)	-/+	-	+/-	+	-/+	+/-
Age of road motor vehicle fleet (5)	-/+	-	+/-	+	-/+	+/-
Waste reuse and recycling (3)	+/-	+/-	+/-	+	-/+	+/-

THE APPLIED RATING SCALE

+	all is well
+/-	not all is well
- / +	all is not that well
-	all is not well

Explanations of the criteria and further analysis are provided in Annex III.

All the indicators are available on a single platform "Ecological indicators for monitoring and environmental assessment" of the Ministry of National Economy of the Republic of Kazakhstan and the Committee on Statistics: http://stat.gov.kz/faces/homePage/ecolog?_adf.ctrl-state=lapabcdfk_58&_afrLoop=1873999154126416#%40%3F_afrLoop%3D1873999154126416%26_adf.ctrl-state%3D7zwyxm49l_155.

ANNEX II STATUS AND ASSESSMENT OF SDG ENVIRONMENTAL INDICATORS

SDG indicators	National indicators of Kazakhstan	National indicators monitoring data	UNECE Indicators
SDG target 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil			
2.4.1 Proportion of agricultural area under productive and sustainable agriculture	No data		F1. Irrigation (indicator is not currently developed); F2. Fertilizer consumption; F3. Gross nitrogen balance (indicator is not currently developed).
SDG target 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination			
3.9.1 Mortality rate attributed to household and ambient air pollution	No data		A1. Emissions of pollutants into the atmospheric air; A2. Ambient air quality in urban areas.

3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene	National indicator corresponds to the global indicator (per 100 000 thousand population)	2010	2011	2012	2013	2014	2015	2016	2017	C5. Water supply industry and population connected to water supply industry; C6. Connection of population to public water supply; C9. Drinking water quality; C14. Population connected to wastewater treatment
	- Total:	0,59	0,80	0,43	0.44	0,37	0,54	0,70	0,90	
	- men:	0,53	0,83	0,40	0,48	0,21	0,58	0,57	0,53	
	- women:	0,67	0,77	0,46	0,39	0,57	0,49	0,86	1,40	
	- urban population:	0,72	0,91	0,48	0,51	0,36	0,52	0,69	0,82	
	- men:	0,74	1,04	0,53	0,62	0,24	0,62	0,46	0,58	
	- women:	0,70	0,77	0,42	0,39	0,50	0 39	0,97	1,14	
	- rural population:	0,47	0,70	0,38	0,37	0,38	0,56	0,71	0,98	
	- men:	0,34	0,64	0,29	0,36	0,18	0,55	0,67	0,49	
	- women:	0,64	0,77	0,50	0,39	0,65	0,58	0,76	1,67	
3.9.3 Mortality from unintentional poisoning	National indicator corresponds to the global indicator (per 100 000 thousand population)	2010	2011	2012	2013	2014	2015	2016	2017	F4. Pesticide consumption
		7,12	5,94	5,81	4,60	4,32	3,71	3,10	2,89	
	- Total:	8,64	7,29	7,12	5,50	4,70	3,98	3,05	3,05	
	- men:	5,29	4,32	4,22	3,49	3,83	3,37	3,16	2,68	
	- women:	10,54	8,67	8,79	6,81	6,23	5,23	4, 37	3,96	
	- urban population:	13,28	11,30	11,00	8,67	7,25	6,01	4,55	4,44	
	- men:	7,46	5,69	6, 28	4,69	5,02	4,26	4,15	3,37	
	- women:	3,94	3,41	3,03	2, 53	2,53	2,29	1,90	1,88	
	- rural population:	4,57	3,76	3,70	2,72	2,45	2,17	1,71	1,81	
	- men:	3,14	2,95	2,16	2,29	2,64	2,47	2,17	1,98	

	- women:.		
SDG target 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all			
6.1.1 Proportion of population using safely managed drinking water services	6.1.1.1. The share of population provided with tap water (in %) 6.1.1.2. The proportion of the total area equipped with water supply (in %) - running water in the house: 6.1.1.3. Specific weight of the total area not equipped with water supply (in %): - running water outside the house (well, column or other source of water supply): 6.1.1.4.The quality of drinking water of centralized water supply facilities (the proportion of tap water samples, inconsistent standards) (in %) - on sanitary and chemical indicators: - on microbiological indicators:	2010 2011 2012 2013 2014 2015 2016 2017 82,5 87,7 87,7 89,6 90,4 90,9 91,4 92,0 - - 37,2 57,2 60,1 62,6 63,5 63,5 - - 35,0 35,9 35,9 36,2 36,4 36,0 2,4 1,7 2,0 1,5 2,2 2,0 3,3 3,4 1,7 1,3 1,5 1,2 1,5 2,0 2,6 2,4	C5. Water supply industry and population connected to water supply industry; C6. Connection of population to public water supply; C9. Drinking water quality.

	The quality of drinking water facilities decentralized water supply (the proportion of tap water samples inconsistent the standards) - on sanitary and chemical indicators: - on microbiological indicators:									
		-	-	10,4	19,6	20,9	19,5	19,2	19,2	
		-	-	14,5	19,8	20,4	19,3	18,2	18,0	
SDG target 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations										
6.2.1 Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water	6.2.1. The proportion of the total area equipped with a bath or shower in (%)	2012	2013	2014	2015	2016	2017			C4. Household water use per capita; C5. Water supply industry and population connected to water supply industry; C14. Population connected to wastewater treatment.
		40,5	39,3	40,0	41,1	42,4	42,1			
SDG target 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally										
6.3.1 Proportion of wastewater safely treated	No data									C16. Polluted (non-treated) wastewaters
6.3.2 Proportion of bodies of water with good ambient water quality	6.3.2.1. Number of reservoirs with good water quality (units)^	2010	2011	2012	2013	2014	2015	2016	2017	C10. BOD and concentration of ammonium in rivers; C11. Nutrients in freshwater
		13	16	23	25	18	10	10	6	
	6.3.2.2. Complex Water Quality Index; the degree of contamination (in %) - regulatory clean:	14,9	17,8	21,5	23,0	16,2	9,3	7,4	4,4	
	- moderately polluted:	62,1	58,9	45,8	47,7	44,1	59,3	54,8	70,1	

	- contaminated: - dirty: - very dirty: - highly contaminated: - extremely highly contaminated:	13,8 4,6 3,4 - 1,2	14,4 5,6 1,1 - 2,2	24,3 5,5 1,9 - 0,9	15,6 5,5 8,2 - -	25,2 9,9 2,7 - 1,8	- - - 30,5 0,9	- - - 37,0 0,7	- - - 23,4 2,2	
SDG target 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity									
6.4.1 Change in water use efficiency over time	No data								C3. Total water use; C4. Household water use per capita; C7. Water losses.
6.4.2 Level of Water Stress: freshwater withdrawal as a proportion of available freshwater resources	No data								C1. Renewable freshwater resources; C2. Freshwater abstraction.
SDG target.6 6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes									
6.6.1 Change in the extent of water-related ecosystems over time	No data								D1. Protected areas; D2. Biosphere reserves and wetlands of international importance. (indicator is not currently developed)
SDG target 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services									
7.1.1 Proportion of population with access to electricity	7.1.1.1. The proportion of the total area equipped with electricity (in %):	2012 98,4	2013 100	2014 100	2015 100	2016 100	2017 100		G5. Final electricity consumption (indicator is not currently developed).
SDG target 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix									

7.2.1 1 Renewable energy share in the total final energy consumption	7.2.1.1. The share of electricity of the energy generated from renewable sources in the total energy production (in %)	2010 2011 2012 2013 2014 2015 2016 2017 - 9,1 8,4 8,1 8,7 10,3 12,7 11,3	G1. Final energy consumption; G4. Renewable energy consumption.
SDG target 7.3 By 2030 double the global rate of improvement in energy efficiency			
7.3.1 Energy intensity measured in terms of primary energy and GDP	7.3.1.1 GDP energy intensity (toe per 1000 dollars USA in prices of 2000)	2010 2011 2012 2013 2014 2015 2016 2017 - 1,78 1,62 1,69 1,52 1,53 1,54 1,53	G3. Energy intensity
SDG target 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all			
9.1. 2 Passenger and freight volumes, by mode of transport	National indicator corresponds to the global indicator: - transported freight by all modes of transport (million tons): - transported passengers by all modes of transport (million people): - transported freight by road and city electric transport (million tons): - transported freight by air (million tons): - transported passengers by air (million people): - performance indicators of pipeline transport (million tons): - performance indicators of sea and coastal transport (million tons):	2010 2011 2012 2013 2014 2015 2016 2017 2439 2975 3232 3508 3750 3734 3729 3916 13186 16647 18485 20004 21281 21839 22333 22720 1972 2476 2718 2983 3129 3174 3181 3901 28870 31555 21954 23874 19082 17178 18016 22450 3379 4131 4512 4986 5435 5923 6022 7352 194,0 214,1 106,9 225,9 225,0 214,6 205,8 232,8 4,7 4,6 4,0 4,0 3,6 2,5 2,6 2,1	H1. Passenger transport demand; H2. Freight transport demand.

SDG target 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities			
9.4.1 CO2 emission per unit of value added	No data		B3. Greenhouse gas emissions.
SDG target 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries			
11.3.1 Ratio of land consumption rate to population growth rate	No data		E1. Land uptake; E2. Area affected by soil erosion.
SDG 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			
11.6.1 1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban waste generated, by cities	No data		I3. Waste reuse and recycling: I4. Final waste disposal.
11.6.2 Annual mean levels of fine particulate matter (i.e. PM2.5 and PM10) in cities (population weighted)	The average annual concentration of suspended particles PM 2.5 and PM 10 in atmospheric air in cities where observations are made (in terms of population)	2014 2015 2016 2017 The data presented are the average annual concentrations of fine particles: with a diameter of 2.5 microns in 35 cities and towns; with a diameter of 10 microns in 49 cities and towns.	A2. Ambient air quality in urban areas.
SDG target 12.2 By 2030, achieve the sustainable management and efficient use of natural resources			
12.2.1 Material footprint, material footprint per capita,	No data		C2. Freshwater abstraction; D3. Forests and other wooded land; E1. Land uptake.

and material footprint per GDP								
12.2.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	No data							C3. Total water use; G1. Final energy consumption; G5. Final electricity consumption (indicator is not currently developed)
SDG target 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment								
12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment	12.4.2.1. Hazardous waste generation (million tons / year): 12.4.2.2. Total waste of all hazard levels (in thousands of tons at the end of the year) of which according to the danger lists: - red: - amber: - green:	2012 355,9 101,0 1181478 8420027	2013 382,2 97,6 1836233 7952978	2014 337,4 94,5 1916840 7826038	2015 251,6 90,8 1988088 7739798	2016 151,4 91,0 1522979 1382482	2017 126,9 86,3 1258696 1646076	I2. Management of hazardous waste; I3. Waste reuse and recycling.
SDG target 12.5 By 2030 substantially reduce waste generation through prevention, reduction, recycling and reuse								
12.5.1 National recycling rate, tons of material recycled	12.5.1.1 The share of recycling and disposal of industrial waste to their generation (in %): 12.5.1.2. The share of recycling and disposal of municipal solid waste to their generation (in %):	2014 18,00 2.05	2015 23,12 1,80	2016 26,80 2,60	2017 30,91 9,05			I2. Management of hazardous waste; I3. Waste reuse and recycling; I4. Final waste disposal.

SDG target 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution					
14.1.1 Index of coastal eutrophication and floating plastic debris density	No data				C12. Nutrients in coastal seawaters.
SDG target 14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information					
14.5.1 1 Coverage of protected areas in relation to marine areas	The indicator is not in the list of national indicators.				D1. Protected areas
SDG target 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements					
15.1.1 Forest area as a proportion of total land area	National indicator corresponds to the global indicator (in %):	2015 4,6	2016 4,6	2017 4,7	D3. Forests and other wooded land.
15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	National indicator corresponds to the global indicator (in %):	2015 2,4	2016 2,4	2017 2,4	D1.Protected areas.
SDG target 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally					
15.2.1 Progress towards sustainable forest management	15.2.1.1. National indicator corresponds to the global indicator (annual planting volume in million hectares)	2015 60,2	2016 57,0	2017 57,4	D3. Forests and other wooded land.

SDG target 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation neutral world					
15.3.1 Proportion of land that is degraded over total land area	No data				E2 Area affected by soil erosion.
SDG target 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development					
15.4.1 Coverage by protected areas of important sites for mountain biodiversity	15.4.1.1.Площадь горных лесов (в тыс. га):	2015 5663,6	2016 5663,6	2017 5699,2	D1 Protected areas.
SDG target 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species					
15.5.1 Red List Index	15.5.1.1 The list of rare and endangered species of plants and animals included (units): - plant species: - animal species:.	2015 387 224	2016 387 224	2017 387 224	D4 Threatened and protected species.
SDG target 15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species					
15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species	No data				D6 Invasive alien species (indicator is not currently developed/
SDG targe15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts					

15.9.1 1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020	No data	D4. Threatened and protected species.

A source of information:
http://stat.gov.kz/faces/wcnav_externalId/mainR_SDG_goals?_afrLoop=514754994585498O#%40%3F_afrLoop%3D514754994585498O%26_adf.ctrl-state%3Dbf87slix6_213

Table colour key:

- blue - national indicators, fully consistent with the global SDG indicators
- black - national indicators corresponding to the global SDG indicators with minor changes
- green - alternative national indicators
- brown - additional national indicators
- red - not developed national indicators for global SDG indicators

ANNEX III SUPPLEMENTARY INFORMATION

Зеленая экономика в Казахстане

Казахстан одной из первых стран в мире, на государственном уровне принял стратегический документ «Концепция по переходу Республики Казахстан к «зеленой» экономике». Документ утвержден Указом Президента Республики Казахстан от 30 мая 2013 года № 577. Данная Концепция закладывает основы для глубоких системных преобразований с целью перехода к «зеленой» экономике посредством повышения благосостояния, качества жизни населения Казахстана и вхождения страны в число 30-ти наиболее развитых стран мира при минимизации нагрузки на окружающую среду и деградации природных ресурсов.

Концепция призвана обеспечить более гармоничное согласование компонентов экономики, общества и природы в рамках парадигмы устойчивого развития. Целевыепоказатели, нормы и мероприятия «зеленой» экономики включаются в законодательные акты и программные документы и являются ориентирами для всех уровней власти и всех секторов гражданского общества.

В Концепции рассматриваются семь ключевых направлений:

- Развитие возобновляемых источников энергии;
- Энергосбережение и энергоэффективность;
- Развитие устойчивого и эффективного органического сельского хозяйства;
- Управление отходами;
- Рациональное использование водных ресурсов;
- Развитие «зеленого» транспорта;
- Сохранение и эффективное управление экосистемами.

Ожидается, что внедрение зеленых технологий позволит повысить энергоэффективность экономики Казахстана на 40-60% и сократить потребление воды на 50%[20].

Реализация Концепции планируется в три этапа:

первый этап - 2013–2020 гг. – оптимизация использования ресурсов и повышение эффективности природоохранной деятельности, а также создание «зеленой» инфраструктуры;

второй этап - 2020–2030 гг. – рациональное использование природных ресурсов, внедрение возобновляемой энергетики на базе высоких технологий;
третий этап - 2030–2050 гг. – переход национальной экономики на принципы «третьей промышленной революции», в основу которой положено использование природных ресурсов в случае их возобновляемости[21].

[20] https://sk.kz/upload/iblock/3f5/3f5f8e2087688517bcc667eeebc82630.pdf
[21] https://www.greenkaz.org

Основными приоритетными задачами по переходу к «зеленой» экономике, стоящими перед страной, являются[22]:

1) повышение эффективности использования ресурсов (водных, земельных, биологических и др.) и управления ими;
2) модернизация существующей и строительство новой инфраструктуры;
3) повышение благополучия населения и качества окружающей среды через рентабельные пути смягчения давления на окружающую среду;
4) повышение национальной безопасности, в том числе водной безопасности.

В международном сотрудничестве Казахстан присоединился к Декларации ОЭСР по «зеленому» росту. Проведен политический диалог между Правительством Республики Казахстан и ОЭСР, направленный на сохранение и восстановление экосистемы, рациональное использование природных ресурсов за счет внедрения ресурсо- водно-, энергосберегающих и альтернативных технологий, и мобилизации зеленых финансов. К 2016 году из 54 показателей «зеленого» роста ОЭСР, Казахстаном разработаны 30 показателей; Использованиепоказателей направлено на обеспечение комплексного охвата важнейших характеристик «зеленого» роста[23].

В 2018 году Комитетом по статистике разработано уже 38 показателей ОЭСР. Показатели на ежегодной основе обновляются и публикуются на официальном сайте Комитета.

Постановлением Правительства от 30 июля 2018 года №472 подписано Соглашение между Правительством Республики Казахстан и ОЭСР о реализации проекта "Внедрение показателей «зеленого» роста и подготовка Доклада по» зеленому» росту в Казахстане". В рамках Соглашения, ОЭСР окажет поддержку Казахстану в подготовки национального Доклада, основанного на страновых показателях «зеленого» роста..

Казахстан также предпринимает шаги на пути к «зеленой» экономике, начав инициативу «Зеленый мост», направленную на продвижение « зеленой» экономики в Европе и Азиатско-Тихоокеанском регионе[24].

«Зеленая экономика» является одним из важных инструментов обеспечения устойчивого развития страны. Переход к «зеленой экономике» позволит Казахстану обеспечить достижение поставленной цели по вхождению в число 30-ти наиболее развитых стран мира.

[22] https://strategy2050.kz/static/files/Concept_Rus.pdf

[23] http://economy.gov.kz/ru/pages/040517-statya-zelenaya-ekonomika-standarty-oesr-aday-nygmanov

[24] https://www.greenkaz.org/index.php/informatsiya/zelenaya-economika