

# Key Indicators of the Environment and Natural Resources in the Republic of Kazakhstan

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**Abstract.** This study examines key environmental and natural resource indicators in Kazakhstan, emphasizing their role in sustainable development. The research aims to assess the effectiveness of environmental management strategies and identify critical gaps in resource utilization. The findings indicate that while Kazakhstan possesses significant natural resources, challenges such as pollution, inefficient land use, and climate change threaten ecological stability. The study highlights the need for improved environmental performance indicators, integrating factors like air and water quality, biodiversity conservation, and energy efficiency. A major gap identified is the lack of standardized methodologies for comprehensive environmental assessment, which limits effective policy implementation. The research underscores the importance of adopting integrated environmental auditing and monitoring systems to enhance decision-making processes. Comparative analysis with international environmental frameworks suggests that Kazakhstan should align its policies with global best practices to improve ecological resilience. The implications of this study emphasize the necessity for innovative approaches in environmental management, including green economy initiatives, stricter pollution control measures, and investments in renewable energy. Future research should focus on refining environmental efficiency indicators and developing sustainable resource management models to balance economic growth with ecological preservation.

**Keywords.** Natural resources, environmental efficiency, environmental performance, environmental audit

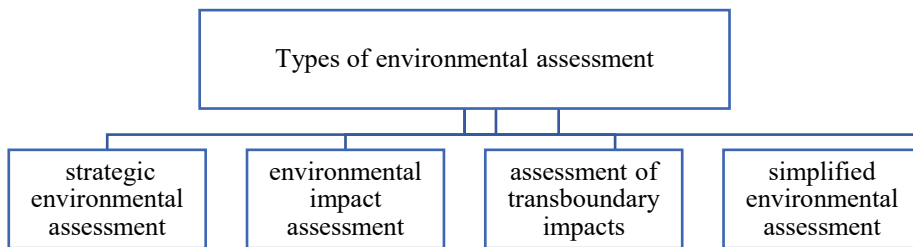
## 1 Introduction

The efficiency of natural resource use is a key factor in the sustainable development of any country. It determines the ability of a nation to ensure economic growth and social well-being with minimal impact on the environment. First of all, to assess the overall efficiency of natural resource use, it is necessary to analyze environmental efficiency. Moreover, the environmental efficiency of natural resources reflects the degree of their use taking into account the minimum impact on the environment and maximum resource savings. Within the framework of environmental assessment, environmental efficiency indicators play a special role, which assess the effectiveness of actions or processes in terms of their impact on the

environment. These indicators may include parameters such as reducing emissions of harmful substances, optimizing the use of natural resources, energy efficiency, etc. Environmental assessment and natural resource efficiency indicators play a key role in the formation of sustainable development strategies. They allow for a comprehensive analysis of the state of natural resources, the degree of their anthropogenic load, the efficiency of use, and forecasting future changes. In accordance with the Instructions for the Organization and Conduct of Environmental Assessment of the Republic of Kazakhstan, environmental assessment is the process of identifying, studying, describing and assessing possible direct and indirect significant impacts of the implementation of planned and ongoing activities or a developed document on the environment [1].

## 2 Materials and methods

The types of environmental assessment are strategic environmental assessment, environmental impact assessment, transboundary impact assessment and simplified environmental assessment.



**Fig 1.** Types of environmental assessment of natural resources

Note: Compiled on the basis of the Instructions for the Organization and Conduct of Environmental Assessment [1]

These types of environmental assessment are also used in world practice. Environmental assessment consists of 2 stages. The first stage is organizing the environmental assessment itself and the second stage is conducting the environmental assessment.

- 1) Strategic environmental assessment is the process of identifying, studying, describing and assessing, on the basis of relevant studies, possible significant impacts of implementing state programs in the sectors listed in paragraph 3 of Article 52 of the Environmental Code, territorial development programs and master plans for populated areas;
- 2) Environmental impact assessment is the process of identifying, studying, describing and assessing, on the basis of relevant studies, possible significant impacts on the environment during the implementation of the planned activity, which includes the stages provided for in Article 67 of the Environmental Code;
- 3) Transboundary impact assessment is the process of identifying, studying, describing and assessing, on the basis of relevant studies, possible significant negative impacts in an area under the jurisdiction of one state (the affected party), from a source that is associated with the implementation of the plan, program or planned activity and is physically located under the jurisdiction of another state (the party of origin);
- 4) Simplified environmental assessment - a type of environmental assessment that is carried out for planned and ongoing activities that are not subject, in accordance with the Code, to mandatory environmental impact assessment, when developing draft emission standards for facilities of categories I and II, as well as when developing the

"Environmental Protection" section as part of the design documentation for planned activities and when preparing an environmental impact declaration [2].

Environmental auditing plays an important role in environmental assessment, as environmental assessment and environmental auditing are two important tools used to assess and manage the impact of human activity on the environment. Although they have common goals, they differ in their nature, process and objectives. Environmental assessment can be used to identify environmental aspects that should be considered in the environmental audit process. Environmental auditing, in turn, can be used to evaluate the effectiveness of measures developed on the basis of environmental assessment and to improve environmental performance in general. Environmental audit is an independent verification of the economic and other activities of audited entities (individuals and legal entities) that impact the environment, aimed at identifying and assessing environmental risks, establishing their compliance with environmental protection standards and regulations, environmental requirements, including the correctness of reporting on the use and reproduction of natural resources, compliance of the environmental management system with established standards and the development of recommendations for improving the level of environmental safety of their activities [3].

Environmental assessment, environmental audit and environmental performance indicators are complementary tools for sustainable management of natural resources. Their use in combination ensures transparency, responsibility and efficiency in the implementation of environmental strategies. One of the main tasks of effective environmental assessment is the selection of environmental performance indicators. These indicators define key aspects of environmental impact and assessment criteria. The basis for this task is the Green Economy indicators, which are currently widely used in world practice. Target indicators, standards and measures of the green economy are reflected in legislative acts and program documents, taking into account changes and additions in terms of the implementation of the main directions of the Concept. Achieving objectivity in environmental assessment directly depends on the reliability of the data provided. Inaccurate or incomplete data can distort the assessment results and lead to incorrect decisions on natural resource management [4].

Environmental performance indicators play a key role in assessing the state of natural resources. They are necessary for conducting a comprehensive environmental assessment in order to get a complete and reliable picture. This will allow making optimal decisions on natural resource management and ensuring the sustainable development of the planet.

The national report on the state of the environment and the use of natural resources of the Republic of Kazakhstan as of January 1, 2023 provides an assessment of 10 important points on the state of the environment and the use of natural resources [5]. The indicators are formed in accordance with the "Methodology for the formation of environmental statistics indicators" approved by the Order of the acting Chairman of the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan No. 223 dated December 25, 2015 [6].

**Table 1.** Indicators of the environment and natural resources

| № | Component of the environment (natural resources) | Indicators of the environment (natural resources)   | Responsible government agency for data generation   |
|---|--|---|---|
| 1 | Atmospheric air                                  | 1.1 Emissions of pollutants into the atmospheric air<br>1.2 Air quality in urban areas<br>1.3 Consumption of ozone-depleting substances | Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan. |
| 2 | Climate change                                   | 2.1 Air temperature   | RSE "Kazhydromet"   |

|   |                 |   |  |
|---|-----------------|---|--|
|   |                 | 2.2 Atmospheric precipitation<br>2.3 Greenhouse gas emissions<br>2.4 Natural and man-made emergencies   |  |
| 3 | Water resources | 3.1 Surface water resources<br>3.1.1 Quality of surface water resources<br>3.1.2 State of water quality of transboundary rivers of the Republic of Kazakhstan<br>3.2 Groundwater<br>3.3 Protection and use of water resources<br>3.3.1 Fresh water intake<br>3.3.2 Water consumption<br>3.3.3 Water losses<br>3.3.4 Reuse of fresh water<br>3.3.5 Quality of water for domestic and drinking purposes<br>3.3.6 Hydraulic structures and their condition | Water Resources Committee of the MENR RK, Ministry of Ecology and Natural Resources of the RK, RSE "Kazhydromet", Bureau of National Statistics ASPR RK.   |
| 4 | Biodiversity    | 4.1 Specially protected natural areas<br>4.2 Forests and other wooded lands<br>4.3 Flora<br>4.4 Fauna and endangered species, and protected species<br>4.5 Fisheries  | Committee on Land Resources Management of the Ministry of Agriculture of the Republic of Kazakhstan, Committee on Forestry and Fauna of the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan. |
| 5 | Land resources  | 5.1.1 Distribution of land by category<br>5.1.2 Distribution of land by type of ownership<br>5.1.3 Distribution of land by natural zones<br>5.2 Quality of land<br>5.2.1 Soil characteristics<br>5.3 Land degradation<br>5.3.1 Soil erosion<br>5.3.2 Disturbed lands<br>5.3.3 Combating desertification<br>5.4 Land pollution<br>5.5 Land monitoring  | Land Resources Management Committee of the Ministry of Agriculture of the Republic of Kazakhstan.  |
| 6 | Agriculture     | 6.1.1 Consumption of mineral and organic fertilizers<br>6.1.2 Use of pesticides<br>6.2.1 Veterinary situation   | Bureau of National Statistics ASPR RK, Ministry of Agriculture of the Republic of Kazakhstan, Bureau of National Statistics ASPR RK  |
| 7 | Energy          | 7.1 Energy saving and increasing energy efficiency,<br>7.2 Electricity production,<br>7.3 Electricity consumption   | Bureau of National Statistics ASPR RK  |
| 8 | Transport       | 8.1 Passenger turnover  | Bureau of National Statistics ASPR RK  |

|   |       |   |  |
|---|-------|---|--|
| 9 | Waste | Share of recycled and disposed of solid municipal waste<br>Number of landfills registered in the state cadastre | Information review based on the results of maintaining the state waste cadastre for 2022 EIS OOS |
|---|-------|---|--|

Note – compiled by the authors based on data from [5]

Moreover, in accordance with the Concept of the Transition of the Republic of Kazakhstan to a "Green Economy" adopted in 2013, measures for the transition to a "green economy" are implemented in 8 areas: sustainable use of water resources, development of sustainable and highly productive agriculture, energy conservation and increased energy efficiency, development of electric power industry, waste management system, reduction of air pollution and preservation and effective management of ecosystems, formation of an environmental culture. The target indicators, standards and activities of the "green" economy are reflected in legislative acts and program documents of the republic and are guidelines for all levels of government and all sectors of civil society [4]. Having reviewed these indicators, we identified seven main indicators of environmental efficiency of natural resource assessment (table 2).

**Table 2.** Definition of environmental efficiency indicators

| № | Environmental efficiency indicators                     | Definition of the environmental efficiency indicator of natural resource assessment  |
|---|---|--|
| 1 | Emissions of pollutants into the atmosphere             | This indicator indicates the degree of existing and expected anthropogenic impact of emissions of harmful substances on the environment, and also allows determining the degree of achievement of target values. This indicator makes it possible not only to determine the degree of anthropogenic load on the atmospheric air as a whole, but also allows assessing the impact on the environment from stationary and mobile sources, including by types of economic activity (in particular: energy, transport, industry, agriculture and waste management activities, etc.). |
| 2 | Number of hazardous natural phenomena                   | This indicator defines severe and extreme meteorological and climatic phenomena. Natural hazards become disasters when people die and their livelihoods are destroyed  |
| 3 | Costs of eliminating emergencies and their consequences | A natural or man-made emergency is an event that occurs as a result of an accident, fire, harmful effects of hazardous production factors, an accident, a natural hazard, a catastrophe, a natural or other disaster that may result in or have resulted in human casualties, harm to human health or the environment, material damage and disruption of human living conditions.  |
| 4 | Permissible standards for environmental pollution       | The mass concentration indicators of a pollutant are determined by averaging the corresponding emission indicators during one calendar day of normal (scheduled) operation of a stationary emission source under the most unfavorable operating conditions from the point of view of air protection.   |
| 5 | Investments in fixed capital                            | Investments in fixed capital aimed at environmental protection and rational use of natural resources include costs of new construction, expansion, reconstruction and modernization of facilities (including costs of modernization of a facility carried out during major repairs), leading to an increase in the initial cost of the facility.   |

|   |                                |               |   |
|---|--------------------------------|---------------|---|
| 6 | Research and development (R&D) | and costs     | These are the costs of research and development, taking into account the work performed by third-party subcontractors (i.e. internal and external costs), including both current and capital costs (investments in fixed assets). |
| 7 | Energy (improving efficiency)  | saving energy | Implementation of organizational, technical, technological, economic and other measures aimed at reducing the volume of energy resources used   |

Note - compiled by the authors based on data from [7-8]

### 3 Results

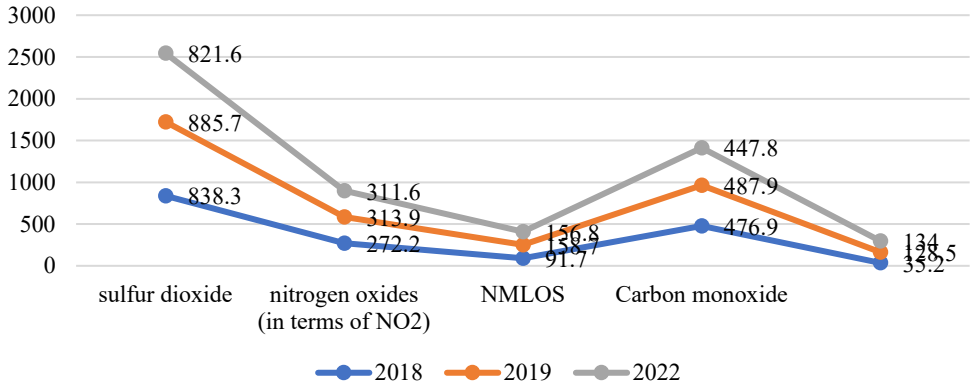
One of the main indicators of environmental performance is emissions of pollutants into the atmosphere. In general, the indicator of emissions of pollutants into the air indicates the degree of existing and expected anthropogenic impact of emissions of harmful substances on the environment and allows to determine the degree of achievement of target values. The Stockholm Convention on Persistent Organic Pollutants defines the corresponding limit values and reporting requirements at the global level. The indicator indicates the degree of existing and expected pressure of emissions of harmful substances on the environment and also allows to determine the degree of achievement of target values (if any) [9]. Moreover, in the documents of the Intergovernmental Panel on Climate Change, this indicator is defined as a negative impact on human health and ecosystems. In international practice, data collection and calculations of this indicator are carried out using 3 methods: measurement, calculation and expert assessment. The methodology for collecting data on atmospheric emissions is covered by the requirements of the CLRTAP (Convention on Long-Range Transboundary Air Pollution) and its 8 protocols [10].

The best guide for estimating emissions by calculations is the one issued in 2009. EMEP / EEA Air Pollutant Emission Inventory Reference Guide, which covers all relevant sectors of human activity and offers methodologies at several different levels of complexity [11]. The responsible state body for the formation of data on air pollutant emissions is the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan. Information is formed based on the results of national statistical monitoring in form 2-TP air (annual). The indicators are formed in accordance with the "Methodology for the formation of environmental statistics indicators" approved by the Order of the Acting Chairman of the Statistics Committee of the MNE RK No. 223 dated December 25, 2015.

The next indicator determines the costs of environmental protection. To form this indicator, data from annual nationwide statistical observations on current costs of enterprises on environmental protection activities and on investments of enterprises in environmental protection activities are used.

It should be noted that environmental protection costs are classified in accordance with the departmental classifier of activities and costs for environmental protection and resource management (KDZOOSiUR), developed and approved in accordance with the legislation of the Republic of Kazakhstan on technical regulation and on the basis of international classifiers: "The Classification of Environmental Protection Activities and Expenditure" (CEPA 2000) [12], "Classification of Resource Management Activities" (CReMA 2008) and "Classification of environmental activities" (CEA 2011). This classifier is intended to classify types of activities that characterize environmental protection [13].

Dynamics of emissions of the main specific pollutants Emissions of the main pollutants for 2018-2022.



**Fig 2.** Emissions of the main pollutants for 2018-2022

In 2022, the following specific pollutants entered the air basin of the republic: lead and its compounds in the amount of 213.4 tons, manganese and its compounds - 73.9 tons, copper oxide - 103.1 tons, sulfuric acid - 382.2 tons, chlorine - 53.8 tons, mercury - 264 kilograms. The actual emission of these substances did not exceed the volume of established maximum permissible emissions (MPE) [14].

The number of hazardous natural phenomena is an important indicator of the effectiveness of natural resource management. An increase in their frequency and intensity may signal the ineffectiveness of existing strategies and the need to introduce new measures to improve the management of natural resources and reduce the risks associated with climate change. Over the past decade, the impact of hazardous hydrometeorological weather phenomena on economic development has reached significant proportions and introduces noticeable instability into the functioning of individual regional industries and the economic system as a whole, disrupting normal, dynamic development and threatening life safety. Even small deviations from expected weather conditions can significantly affect the performance of economic sectors. The economic consequences of the increase in daily variability of weather conditions significantly exceed the already huge amounts of losses that occur each year due to natural disasters [1].

The modern consumer is interested in high-quality information about the expected weather. The meteorological information received by the consumer must be used correctly, which will allow obtaining the maximum effect: the greatest benefit or the least losses. The introduction of effective methods for using meteorological information and, above all, weather forecasts can significantly reduce costs in the country's economy due to the influence of weather conditions. Health as a factor of national security and a strategic goal of social development has a wide range of management mechanisms, including environmental ones, the importance of which has grown significantly over the past decades [15].

The causes of environmental hazards to individual and public health are primarily associated with an increase in anthropogenic loads on the environment. As a result, the problems of global pollution of the environment and the resulting climate change are exacerbated, natural resources are depleted, and the number of man-made disasters increases. Environmental pollution occurs when there are unfavorable changes in the environment that have a negative impact on plants and animals. Therefore, environmental pollution negatively affects the environment. The indicator of permissible standards of environmental pollution

plays an important role and becomes not only an urgent task, but also a necessity that determines the health and well-being of the population, contributes to the preservation of biodiversity and sustainable development of the country.

## **4 Discussion**

To improve the efficiency of natural resource use, it is necessary to carry out measures to improve their efficiency, introduce new technologies and production methods, implement rational management of natural resources, and promote the development of environmentally friendly technologies. This will preserve natural resources for future generations and reduce the negative impact on the environment. It is necessary to develop and implement new technologies and innovative approaches that will allow for the efficient use of resources with minimal impact on the environment.

One of such indicators is investment aimed at environmental protection by type of environmental protection activity. Investments in fixed capital aimed at environmental protection and rational use of natural resources include costs of new construction, expansion, reconstruction and modernization of facilities (including costs of modernization of the facility carried out during major repairs), leading to an increase in the initial cost of the facility.

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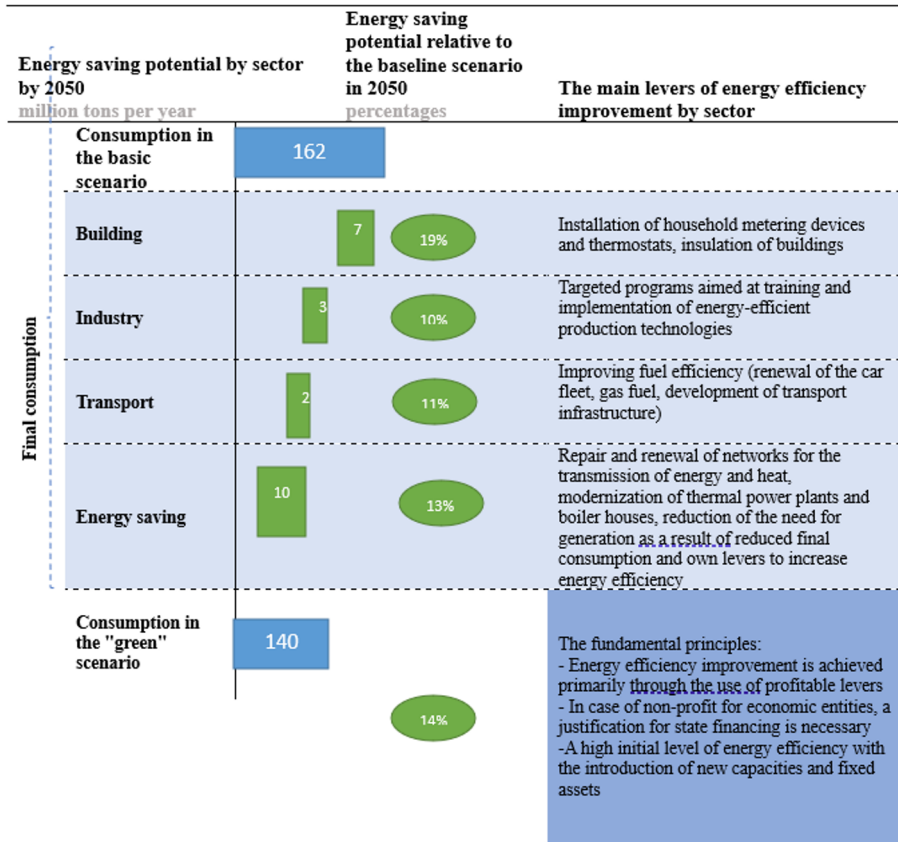
The volume of R&D expenditure is growing worldwide as countries recognize the importance of innovation for economic growth and competitiveness. However, the rate of growth varies across countries and regions. R&D expenditure is an important indicator of investment in the future. It helps governments, businesses and research institutions make informed decisions to encourage innovation, stimulate economic growth and solve global problems. Volume of expenditure on research and development (R&D). Total R&D expenditure is the cost of performing scientific research and development, taking into account the work performed by third-party subcontractors (i.e. internal and external costs), including both current and capital expenditure (investments in fixed assets).

Scientific research is applied, fundamental, strategic scientific research carried out by entities within the framework of research, development and technological work, using appropriate scientific methods and means in order to achieve the results of scientific and (or) scientific and technical activities. R&D expenditure in business - the amount of R&D expenditure of organizations in the business sector, which includes all organizations and enterprises whose main activity is related to the production of goods or services for sale, including those owned by the state; private non-profit organizations servicing the above-mentioned organizations (this includes: concerns, joint-stock companies, intersectoral scientific and technical complexes, organizations in agriculture and forestry, construction, transport, communications, finance and lending (except for the National Bank of the Republic of Kazakhstan)), trade, household and public services).

Research and development activities should become a key factor in the development of clusters. This will be achieved through the development of new-generation higher education institutions, engineering education, talent search and attraction, and coordination of R&D with cluster areas [16].



Energy consumption is an important aspect of the innovative efficiency of natural resources. It is associated with the development and implementation of new technologies and methods that allow for more rational use of energy, reducing its consumption and reducing the impact on the environment. According to the Concept of Development of the Sphere of Energy Saving and Improving Energy Efficiency of the Republic of Kazakhstan for 2023-2029 [17]. Energy saving can be achieved by increasing the energy efficiency of industrial processes, using alternative energy sources, improving energy management at enterprises and in everyday life. The energy intensity of the industrial sector will decrease by 10%. This will be possible due to economic incentives for enterprises under projects.



**Fig 3.** Potential for increasing energy efficiency by sector by 2050

The most important aspect of the implementation of energy efficient technologies and measures is financial security, which will be achieved by creating an Energy Efficiency Fund, the capitalization of which can be carried out through special systems of deductions from all enterprises or as credit lines of international financial organizations. The Fund's resources will be directed to programs to support energy efficiency projects (subsidies, grants, or loans). At the same time, the opportunities that "green" bonds and "green" taxonomy provide in the medium and long term for long-term and large-scale investment measures will be taken into account.

## 5 Conclusion

In this context, environmental indicators of the efficiency of natural resources are of particular importance. They allow us to assess how efficiently and sustainably natural resources are used, as well as what innovations can contribute to their conservation and rational use. An analysis of environmental efficiency as components of the assessment of the overall efficiency of national resources was conducted

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## References

- [1] Order of the Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan. On approval of the Instructions for the organization and conduct of environmental assessment. 2021:280. <https://adilet.zan.kz/rus/docs/V2100023809>
- [2] Code of the Republic of Kazakhstan. Environmental Code of the Republic of Kazakhstan (with amendments and additions as of 09.09.2024) 2021:400-VI . [https://online.zakon.kz/Document/?doc\\_id=39768520](https://online.zakon.kz/Document/?doc_id=39768520)
- [3] Instructions for the organization and conduct of environmental assessment [https://unece.org/sites/default/files/202107/frPartyVI.8g\\_30.06.2021\\_annex3\\_rus.pdf](https://unece.org/sites/default/files/202107/frPartyVI.8g_30.06.2021_annex3_rus.pdf)
- [4] Decree of the President of the Republic of Kazakhstan. On the Concept of transition of the Republic of Kazakhstan to a "green economy". 2013:577. <https://adilet.zan.kz/rus/docs/U1300000577>
- [5] National report on the state of the environment and on the use of natural resources of the Republic of Kazakhstan for 2021. <https://www.gov.kz/memleket/entities/ecogeo/documents/details/383692?lang=ru>
- [6] National report on the state of the environment and on the use of natural resources of the Republic of Kazakhstan for 2019. [https://www.gov.kz/uploads/2020/12/10/8f8485357948b22f412a8cd03102637c\\_origin\\_al.9436509.pdf](https://www.gov.kz/uploads/2020/12/10/8f8485357948b22f412a8cd03102637c_origin_al.9436509.pdf)
- [7] Resolution of the Government of the Republic of Kazakhstan. On the draft Decree of the President of the Republic of Kazakhstan "On Approval of the Concept of Effective Management of Natural Resources and the use of Revenues from the raw materials sector of the Republic of Kazakhstan" 2015:1003. <https://adilet.zan.kz/rus/docs/P1300001003>
- [8] Bureau of National Statistics Agencies for Strategic Planning and Reforms of the Republic of Kazakhstan <https://stat.gov.kz/ru/>
- [9] United Nations Economic Commission for Europe <http://www.unece.org/env/lrtap/welcome.html>
- [10] Ambient (outdoor) air pollution [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health?gad\\_source=1&gclid=EAIaIQobChMkIf3hcviiAMVoxiiAx099SC1EAAAYASAAEgIzc\\_D\\_BwE](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health?gad_source=1&gclid=EAIaIQobChMkIf3hcviiAMVoxiiAx099SC1EAAAYASAAEgIzc_D_BwE)
- [11] Fifth revised edition. United Nations Economic Commission for Europe. (2009). <https://www.eea.europa.eu/ru/publications/emep-eea/download>
- [12] Classification of Environmental Protection Activities and Expenditure, 2000 (CEPA 2000) [https://op.europa.eu/en/web/eu-vocabularies/dataset/resource?uri=http://publications.europa.eu/resource/dataset/cepa\\_2000](https://op.europa.eu/en/web/eu-vocabularies/dataset/resource?uri=http://publications.europa.eu/resource/dataset/cepa_2000)

- [13] Order of the Chairman of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan. Registered with the Ministry of Justice of the Republic of Kazakhstan on November 14, 2016 No. 14417. On approval of the Methodology for the formation of primary indicators necessary for the construction of an environmental account in the System of National Accounts. 2016:238. <https://adilet.zan.kz/rus/docs/V1600014417>.
- [14] On the state of atmospheric air protection in the Republic of Kazakhstan <https://stat.gov.kz/api/iblock/element/68016/file/ru/>
- [15] Protection of public health <https://www.gov.kz/memleket/entities/zhetysu-healthcare/activities/18984>
- [16] Resolution of the Government of the Republic of Kazakhstan. "On approval of the Main Provisions of the General Scheme of Organization of the Territory of the Republic of Kazakhstan". 2017:256. <https://adilet.zan.kz/rus/docs/P1700000256>
- [17] Resolution of the Government of the Republic of Kazakhstan. On approval of the Concept of development of the sphere of energy saving and energy efficiency improvement of the Republic of Kazakhstan for 2023-2029. 2023:264. <https://adilet.zan.kz/rus/docs/P2300000264>