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R. Rakhimov*

Member of the Supreme Audit Chamber
Republic of Kazakhstan
Astana, Kazakhstan
E-mail: r.rakhimov@esep.gov.kz

V. Niemenmaa

PhD
Secretary General,
INTOSAI WGEA
Helsinki, Finland
E-mail: vivi.niemenmaa@vtv.fi

D. Kusherbaeva

Director of the Methodology
and Quality Control Department of the
Supreme Audit Chamber
Astana, Kazakhstan
E-mail: d.kusherbaeva@esep.gov.kz

A. Rakhmetova

Head of the Research and Forecasting
Department of the Center of research
analysis and evaluation of effectiveness
Astana, Kazakhstan
E-mail: aibota@mail.ru
ORCID: 0000-0002-8741-0373

STATE AUDIT IN THE FIELD OF ASSESSING THE EFFECTIVENESS OF THE USE OF NATURAL RESOURCES: WORLD EXPERIENCE

Abstract: *Against the background of globalization of trends in the transition to «green» technologies and the economy, the increase in related costs, the relevance of assessing the effectiveness of audit activities in the environmental sphere is also increasing. In this regard, the article examines the world experience in organizing and conducting a state audit of the efficiency of the use of natural resources. In particular, the authors consider the methodological approaches of the supreme audit institutions of foreign countries that occupy high positions in international ratings of environmental protection and the use of resource-saving technologies.*

As a result of the study, it was revealed that most of the external state audit bodies do not conduct an audit of the use of natural resources, not in the form of a separate type of audit, but as an audit of efficiency. In some cases, these audits combine elements of an efficiency audit and a compliance audit, as well as a financial audit. At the same time, in the structure of the efficiency audit elements used in the activities of the supreme audit institutions of the countries under study, «economy», «efficiency» and «efficiency» can be distinguished, with the exception of the experience of Canada, whose audit management adds «environment» and «sustainable development».

Based on the results of the analysis, the authors formulated conclusions in the context of considering the possibility of adapting the best practices of the Supreme Audit Institutions in domestic conditions in the field of assessing the effectiveness of the use of natural resources and environmental protection measures in general.

Keywords: *state audit, natural resources, audit methodology, audit criteria, audit issues, performance audit, sustainable development goals.*

■ Introduction

Against the background of the increasing challenges of the time, many countries over the past decades have taken a course towards the greening of the economy, which requires gradual improvement of production processes and the formation of fundamentally new, more effective ways to implement structural changes in the economy, including by revising the composition of government spending and generating revenue by increasing fees for industrial pollution.

The role of the state in the implementation of an effective policy to ensure «green» growth is increasing in the context of the aggravation of the current geopolitical and geo-economic situation in the world, when there is an acute need to create more balanced macroeconomic conditions, including by ensuring stable prices for natural resources and requires reliable information on cause-effect relationships between economic processes, careful use of natural resources, the state of the environment, as well as the quality of life of citizens and future generations.

In this regard, today there is a clear realization and acceptance that the «green» transformation of the economy contributes not only to a better study and understanding of the main factors that qualitatively determine the trajectory of socio-economic development of the state, but also ensures the extraction of synergistic effects from the mutual accounting of related socio-economic and environmental goals. This means that a real understanding of the available natural resources of the state and the existing economic opportunities and social consequences, comprehensive monitoring of environmental aspects of the quality of life should determine the priorities of the state economic policy of each country.

Kazakhstan, as a part of the global economy, fully supports the idea of achieving the Sustainable Development Goals (hereinafter - SDGs) and the need to implement the Concept of Inclusive Green Growth aimed at ensuring economic growth and social development without negatively affecting the quantity and quality of natural resources, but using the growth potential arising from the transition to a «green» economy (emphasis on «green» sectors as new growth engines).

In this regard, environmental protection and efficient use of natural resources in Kazakhstan is an integral part of all sectoral policies that are formed by central government agencies, territorial divisions in the regions and local executive bodies. So, for more than 15 years of work in this direction, the Environmental Code (dated 02.01.2021 № 400 - I LRK) has been adopted and updated in the country, the programs «Zhasyl El» (for 2005-2007, GDRK № 632 of 25.06.2005, for 2008-2010, GDRK № 958 of 16.10.2007) and «Zhasyl Damu» (for 2010-2014 годы, GDRK № 924 of 08.07.2014) and others have been implemented.

In addition, the implementation of the National Project «Green Kazakhstan», approved by the Decree of the President of the Republic of Kazakhstan dated May 30, 2013 № 577, was launched in the implementation of the Concept for the transition of the Republic of Kazakhstan to a «green economy», approved by the Decree of the Government of the Republic of Kazakhstan dated 12.10.2021 № 731. This confirms the thesis that Kazakhstan has set a benchmark for building an effective «green» economy with a high quality of life for the population, careful and rational use of natural resources in the interests of present and future generations, including in accordance with the international environmental obligations assumed.

It should be noted that for Kazakhstan, as an exporter of natural resources, on the one hand, the global transition to a «green» economy in accordance with the Paris Agreement and the SDGs can have a significant impact on budget replenishment, on the other – building a diversified modern economy fueled by the activities of the private sector and the growing share of renewable energy sources (hereinafter - RES) will require significant and sustainable public investment over the long term, and hence the formation of a reliable system for monitoring and controlling the ratio of budget spending and the extraction of positive socio-economic effects.

It is no coincidence that within the framework of the implementation of the Strategy «Kazakhstan – 2050», focused on the formation of a sustainable and efficient model of the economy, including through the country's transition to a «green» path of development, as well as in accordance with paragraph 13 of Article 12 of Law № 392-V «On State Audit and Financial Control» adopted on November 12 2015 (with amendments and additions dated January 01, 2023) the competence of the Supreme Audit Institutions in the Republic of Kazakhstan (hereinafter – the SAI) – the Supreme Audit Chamber of the Republic of Kazakhstan (hereinafter – the SAC RK), along with others, includes the performance audit in the field of environmental protection. In this regard, the environmental performance audit in Kazakhstan should be viewed through the prism of achieving the goals specified in the Concept for the Transition to a «green» Economy, global SDGs and should be aimed at a comprehensive assessment of the quality of life in Kazakhstan, including through the assessment of sectoral policies and their intersectoral impact on the efficiency of the use of national resources.

Despite the fact that the efficiency audit in the field of environmental protection measures has not been carried out in Kazakhstan so far, its importance at the present stage is significantly increasing against the background of aggravation of environmental problems such as: global anthropogenic warming; depletion of the earth's ozone layer; reduction of biological diversity; crisis of freshwater, food and energy resources; pollution and depletion soils; industrial use of toxic substances and heavy metals; destruction of the forest cover of the Earth and others.

■ Literature review

Such scientists as D. Pierce, A. Markandya, E. Barbier, D. Meadows, J. Jacobs, D. Korten, B. Faller, G. Daly, S.P. Hawken, M. Bookchin, R. Carson, R. Costanza, G.H. Brunlandt, T.C. Khachaturov, S.N. Bobylev, P.A. Kiryushina, Y.V. Lebedev, O.V. Kudryavtseva and others devoted to the study of the «green» economy in the context of the implementation of the Sustainable Development Goals.

Their works were devoted to the study of financing and budgeting mechanisms, as well as to the assessment of the effectiveness of public spending, such scientists as J. Stiglitz, A. Atkinson, V. Oiken, J. Buchanan, K. Arrow, and others. Among the Kazakh and Russian scientists who have studied the issues of efficiency audit, it is necessary to single out such authors as: O.N. Oksikbayev, A.B. Zeynelgabdin, Z.P. Zagoskina, A.A. Nurumov, S.A. Agapsov, A.G. Andreev, V.V. Burtseva, A.N. Saunin and others.

At the same time, despite the depth of the research conducted, the theoretical concepts and methodological provisions still do not sufficiently elaborate the issues that determine the specifics of the state audit in the field of environmental protection and the transition to a «green» economy (including in the field of green financing), its place in the system of strategic management of socio-economic processes, and, in the context of improving the efficiency of the use of budgetary resources, which requires the study of the identified issues and problems within the framework of this study.

■ Methodology and methods

The most significant aspects of the methodology of the state audit of the effectiveness of environmental protection measures, developed on the basis of generalization of the world experience of its implementation, are reflected in the instructional materials prepared by the International Organization of the Supreme Audit Institutions of state audit INTOSAI. The key ones are: GUID 5200 - covers environmental issues in the context of performance audit and was developed taking into account industry needs; GUID 5201 - examines environmental issues in the context of the specifics of financial audit and how environmental issues affect financial reporting; GUID 5202 - highlights the origins of sustainable development, its goals, indicators and strategies at the national and regional levels.

General scientific methods of statistical and comparative analysis, synthesis and generalization, concretization and analogy were used in the work.

■ Results and discussions

The end of the XX century was marked with a clear awareness by the world community of the importance of environmental problems and their significant negative impact on the quality of human life. A sign of the universal importance of environmental quality is the creation of state bodies on environmental protection and the efficiency of the use of natural resources, which directly initiated the activities of the SAI of various countries in the field of auditing the effectiveness of environmental agencies and the effectiveness of environmental policy implementation.

In 1992, the INTOSAI international platform contributed to the creation of the INTOSAI Working Group of Environmental Auditing - WGEA, which jointly supports environmental audit and develops its methodology by providing research and recommendations. At the same time, the first publications of the WGEA INTOSAI on environmental audit appeared in 1998 and concerned, first of all, the accounting of natural resources and the cooperation of the SAI in the audit of international environmental agreements. As a result, the first joint audits between two or more SAIs appeared. By the end of the 1990s, regional environmental working groups were established in Africa, South America, Asia, Europe, Arab countries and the Pacific [1].

In a later period, in 2004, WGEA published guidance materials on auditing waste management and water issues. These were also found to be the highest environmental priorities for developing countries. Typically, waste has been a good topic for SAIs to do their first audits on. Whereas waste and water guidance were updated later, new areas received attention, namely biodiversity and sustainable development in 2007. This also meant that environment had broadened to include a larger number of issues that involve more departments.

According to the results of the analysis of the practice of the Supreme Audit Institutions (SAI) of foreign countries and according to experts in this subject area, the application of environmental audit in the public and quasi-public sector occurs in the form of an efficiency audit. As a rule, such an audit is carried out in the context of international cooperation, especially within the framework of the WGEA.

According to the WGEA survey, in 2018-2020, 89% of the respondents conducted an environmental performance audit, 57% - an environmental compliance audit and 37% - an environmental financial audit. In addition, some SAIs (10%) had also conducted prior audits on environmental matters (Figure 1).

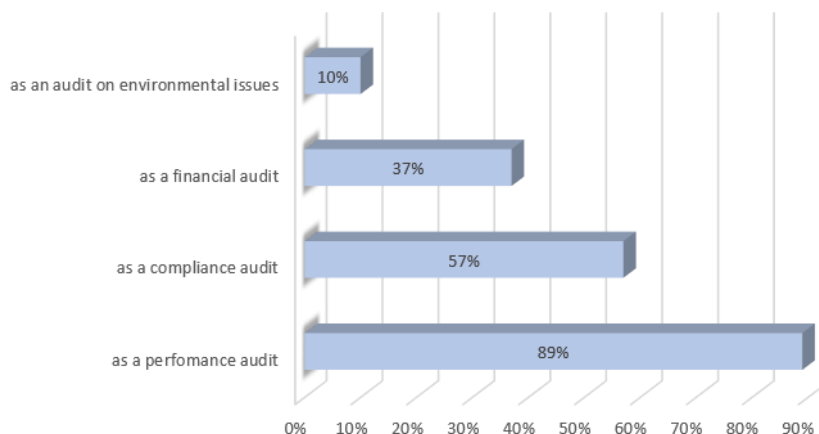


Figure 1. Types of environmental audits SAs conduct
Note: compiled by the author based on [1]

The presented data show that most environmental audits combine compliance audit and efficiency audit. Sometimes the types of financial audit and performance audit are also combined. About a third of respondents also mentioned the release of other products or special reports.

Considering that the INTOSAI standard (ISSAI 300) defines an efficiency audit as an independent, objective and prior verification of whether state-owned enterprises, systems, operations, programs, activities or organizations are operating in accordance with the principles of economy, efficiency and effectiveness, and whether there are opportunities for improvement, the state environmental audit can be defined as independent, objective and reliable verification of whether state-owned enterprises, systems, operations, programs, activities or organizations are operating, participating in the implementation of the state policy and the concept of the country’s transition to a «green» economy, in accordance with the principles of economy, efficiency and effectiveness, and are there opportunities for improvement [2]. The GUID 5200 on Environmental performance audit also notes that SAs do not require a special mandate to conduct an environmental audit, and many SAs conduct it with a general permit to conduct an efficiency audit or compliance audit [3].

It is noteworthy that the structure of the key elements of the efficiency audit used in the activities of the SAs of foreign countries is approximately the same, with the exception of the experience of the SAI Canada, which, in addition to «economy», «efficiency» and «effectiveness», adds «environment» and «sustainable development» (Table 1).

Table 1. Comparison of the key elements of the performance audit according to ISSAI 300 and the activities of the SAI of foreign countries

	ISSAI 300	SAI Canada	European Court of Auditors
Economy	Minimising the costs of resources. The resources used should be available in due time, in and of appropriate quantity and quality and at the best price	Getting the right inputs, such as goods, services and human resources, at the lowest cost	Resources used by the audited entity in the pursuit of its activities shall be made available in due time, in appropriate quantity and quality and at the best price
Efficiency	Getting the most from the available resources. It is concerned with the relationship between resources employed and outputs delivered in terms of quantity, quality and timing	Getting the most from available resources, in terms of quantity, quality and timing of outputs or outcomes	The best relationship between the resources employed, the activities undertaken and the achievement of objectives
Effectiveness	Meeting the objectives set and achieving the intended results.	Meeting the objectives set and achieving the intended results.	The extent to which the objectives pursued are achieved through the activities undertaken

	ISSAI 300	SAI Canada	European Court of Auditors
Environment and sustainable development	-	Sustainable development strategies or management of sustainable development and environmental issues.	-
<i>Source: compiled on the basis of [1]</i>			

As can be seen from the table, with the exception of the SAI Canada, in none of the considered SAI, the law on SAI did not mention environmental audit.

In particular, the law of Canada «Auditor General Act» establishes the Commissioner for Environment and Sustainable Development Law, providing objective, independent analysis and recommendations regarding the efforts of the federal Government to protect the environment, mitigate the effects of climate change and promote sustainable development [4].

According to experts, in 2023-2025, WGEA INTOSAI will focus its work on two thematic hubs: climate and biodiversity, as well as the green economy, and in 2026-2028, the main topics may be water resources and pollution issues.

The specific features of environmental performance audit should include:

- the long-term nature of environmental problems and, consequently, difficulties in determining the immediate consequences of actions;
- environmental phenomena are complex systems - the intersection of certain «tipping points» or thresholds can mean points of no return when further developments will already be irreversible;
- transboundary nature of environmental problems - environmental problems cannot be solved by only one country (pollution of a border river or reservoir, greenhouse gases are truly global in nature, since it does not matter where they are emitted into the atmosphere);
- despite the fact that environmental topics have a significant indirect impact on the economy (the question of pollinators and how important these small insects are for ecosystems, food production and, consequently, for the economy), they cannot always be monetized

Let's consider the specifics of the methodology for conducting an audit of efficiency in ecology and effective use of natural resources in the context of individual countries. Canada. The goal of Canada's environmental policy is to create conditions that improve the quality of life of Canadians. Among the tasks of the Ministry of Environment of Canada are: monitoring the state of the environment, creating a legislative framework and implementing environmental protection policy, which in Canada has its own unique history and form. It is noteworthy that when the government changes in the country, this does not entail corresponding changes in the implementation of environmental policy.

Canada, together with other countries, has agreed to implement the 2030 Agenda by adopting policies and implementing actions at the national level for the implementation of the UN SDGs. Considering that 41.2% (6,7,11,13,14,15,17) of the SDGs from their total number relate to issues of environmental protection and climate conservation, within the framework of international agreements on the environment and sustainable development, as well as according to the Law «Auditor General Act», the SAI Canada audits and makes recommendations regarding the efforts of the federal government to protect the environment, mitigating the effects of climate change and promoting sustainable development.

In accordance with the Law of Canada «On sustainable development» in the process of implementing state strategic programs, the country's public authorities use a systematic approach based on taking into account the totality of socio-economic and environmental problems of the country's residents. The application of such an integrated approach to the public administration system allows us to consider and solve existing environmental problems in an integrated manner (not in isolation from the activities of ministries and departments related to the activities, and not on a residual basis).

Office of the Auditor General conducts an efficiency audit, during which the management of state programs is checked in terms of budget savings and the impact of expenditures on the environment, as well as whether measures are being taken to determine their effectiveness in the field of environmental protection and sustainable development (Table 2).

Table 2. Examples and methodology of performance audit in the field of environmental protection and efficient use of natural resources in the SAI Canada

1. Performance audit of the transportation of dangerous goods	
Goal	To determine the extent to which Transport Canada and the National Energy Board have implemented the auditors' previous recommendations regarding their compliance and enforcement responsibilities to ensure the safe transportation of dangerous goods.
Questions	<ol style="list-style-type: none"> 1. Has the Ministry of transport of Canada implemented control measures for the transportation of dangerous goods in the context of all modes of transport? 2. Has the Ministry implemented the auditors' previous recommendations on compliance with the requirements to ensure the safe transportation of dangerous goods? 3. Does the Ministry of transport Canada follow up and take enforcement action (if necessary) on identified nonconformities in accordance with regulatory requirements and departmental procedures to ensure that regulatory authorities take corrective action?
Criteria	<ul style="list-style-type: none"> - development and implementation of a national risk-based inspection planning process; - proper documentation of compliance monitoring and follow-up activities; - addressing gaps in the guidance on compliance monitoring and follow-up; - clarification of requirements for the review and approval of emergency assistance plans; - development of guidelines for the revision of emergency assistance plans; - development and implementation of a plan and deadlines for completing reviews of the emergency assistance plan; - clarification of the functions and responsibilities for monitoring compliance with the rules for the carriage of dangerous goods; - assessment and satisfaction of information and data management needs to ensure that these needs meet the needs for the implementation of critical business processes.
Recommendations	<ul style="list-style-type: none"> - Transport Canada should strengthen its data collection processes from its partners to better determine the national level of compliance with regulatory requirements for the transport of dangerous goods; - Transport Canada requires an emergency assistance plan for companies transporting or importing certain dangerous goods that pose a high risk to public safety; - The energy regulatory authority of Canada should make sure that it has documented its analysis of the companies' perceptions of how the conditions for pipeline approval were met; - The Ministry of transport Canada should finalize the approval of interim emergency assistance plans, having completed the necessary investigations and having developed national guidelines and criteria for assessing firefighting capabilities for plans involving flammable liquids, to ensure that the approvals of all future plans are completed within the time frame set by it.
2. Performance audit of river basin protection measures	
Goal	to determine whether the Ministry of ecology and climate change, as well as the Ministry of agriculture and food industry of Canada, have applied a coordinated and risk-oriented approach to reduce the impact of excess nutrients on the health of ecosystems selected by auditors of Canadian river basins
Questions	<ul style="list-style-type: none"> - What is the impact of excess nutrients contained in Canadian river basins on the health of the entire ecosystem? - Has a coordinated risk-based approach been applied to reduce the impact of excess nutrients on the ecosystem health of some Canadian reservoirs? - What are the problems associated with nutrients contained in Canadian river basins, including those crossing interprovincial borders or international borders?
Criteria	<ul style="list-style-type: none"> - Determination of the degree of cooperation of authorized ministries in the development and implementation of risk-based systems and practices to prevent excessive nutrient content from agricultural sources in reservoirs and reduce the load on nutrients in Canadian reservoirs selected for audit purposes; - Frequency of monitoring by the Ministry of environmental protection and climate change in order to reduce the frequency of excessive consumption of nutrients; - Availability and timely transmission by authorized ministries of information on the results of their work to other interested parties in order to inform about decisions taken to reduce the impact of nutrients from agricultural sources on Canadian reservoirs covered by the audit.

2. Performance audit of river basin protection measures

Recommendations	<ul style="list-style-type: none"> - The Ministry of environmental protection and the Ministry of agriculture and food industry of Canada need to exchange a formal and systematic way of providing information on nutrient management and current and new risks arising in each catchment. Such an exchange of views would make it possible to identify areas of common interest that could benefit from coordinating the scientific efforts of ministries and ensure that significant risks are identified and eliminated; - The Ministry of environmental protection and the Ministry of agriculture and food industry of Canada should establish an official mechanism for coordinating scientific activities in Volastok (Saint-Jean River). Such a mechanism would allow ministries to deepen their understanding of issues related to river water quality and facilitate coordination of related activities.; - It is necessary to create a steering committee for the coordination of scientific activities at the national level, which would include both ministries. Such a committee can provide a platform for discussing research and monitoring activities and how which of these activities could best help to understand the problems of nutrient abundance and water quality nationwide, as well as find solutions.
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Source: compiled on the basis of [5]

Norway. The high quality of life in Norway is also due to the special attention of the state to such components of vital values for a person and his future as climate and ecology. Of particular importance in the context of respect for the environment is the reduction of carbon dioxide emissions into the atmosphere and the reduction of dependence on carbon.

The main factor affecting the quality of life, according to Norwegians, is the rational consumption of resources and energy efficiency. For example, in 2011, two neighboring countries, Norway and Sweden, adopted a law on certificates for electricity produced by their RES or so-called e-certificates, the main purpose of which was to stimulate the production of more clean electricity through the formation of a common Norwegian–Swedish certificate market. It is important to note that the Norwegian International Climate and Forests Initiative is Norway’s largest international initiative. In the 2000s, awareness of the importance of forests in terms of climate has increased.

Riksrevisjonen (Office of the Auditor General) as the SAI Norway, acting as the regulatory body of the country, carries out control and audit of state bodies. At the same time, the SAI is the only institution that can provide the Storting with a comprehensive and independent audit of the state. Based on the results of the Riksrevisjonen audits and related consultations, the Government and public administration are changing the way they conduct their work, which, according to feedback from the audited organizations, reflects the relevance and usefulness of the audit results as tools for making concrete improvements in the lives of Norwegians [6].

There are examples of Riksrevisjonen’s auditing activities in the field of environmental protection (Table 3).

Table 3. Examples and methodology of performance audit in the field of environmental protection and efficient use of natural resources in the SAI Norway

1. Performance audit of the implementation of Norway’s international climate and forests initiative	
Goal	Assessment of Norway’s efforts to create an effective tool for reducing greenhouse gas emissions from deforestation and forest degradation in developing countries. The study covers an analysis of the progress and results achieved to date in the REDD+ countries, which were supported by the Norwegian International Climate and Forests Initiative
Questions	<ul style="list-style-type: none"> - What are the results of the initiative under the UN Convention on climate change to create a mechanism to reduce greenhouse gas emissions from deforestation and forest degradation in developing countries? - How has the Ministry of climate and environmental protection of Norway managed the International Climate and Forests Initiative contributed to the achievement of the Storting goals for this initiative? - It examines whether the Ministry has promoted good governance, follow-up and training regarding Norway’s contribution, as well as how the Ministry has dealt with the risk of fraud.
Criteria	<ul style="list-style-type: none"> - Implementation of the goals of the Norwegian International Climate and Forests Initiative; - Impact of emissions on deforestation and forest degradation in developing countries; - Economic efficiency from reducing greenhouse gas emissions; - The degree of conservation of forest cover; - The level of sustainable development and poverty eradication; - Quality of management of Norway’s international climate and forests initiative; - Implementation of the principles of the assistance policy as a guideline in the management of the initiative; - Requirements regarding grant management; - Risk level

1. Performance audit of the implementation of Norway's international climate and forests initiative	
Recommendations	<ul style="list-style-type: none"> - Further development of initiatives within the framework of work related to the UN Framework Convention on Climate Change and within the framework of bilateral partnerships; - Strengthening the Ministry's basic information regarding the consideration of social and environmental guarantees in connection with results-based payments; - Strengthening the monitoring of Norway's contribution to REDD+ through the systematic collection and processing of data on the progress and results of the Norwegian International Climate and Forests Initiative. - Ensures responsible and active monitoring of risks and the use of response measures in case of inconsistencies and reports of suspected fraud.
2. Performance audit of the authorities' work to improve the energy efficiency of buildings	
Goal	To find out to what extent the central government's energy efficiency tools help to achieve a reduction in energy consumption in buildings, as well as possible reasons why these measures may have a limited impact
Questions	<ul style="list-style-type: none"> - How do the authorities ensure compliance with the requirements of building codes for energy efficiency? - Do economic instruments for improving energy efficiency lead to a reduction in energy consumption in buildings? - What is the significance of information and advisory measures of the central government for improving the energy efficiency of buildings? - What extent do the Ministry of oil and energy and the Government fulfill their responsibilities to coordinate energy efficiency improvement tools in buildings?
Criteria	<ul style="list-style-type: none"> - Assessment of the achievement of the energy efficiency goal – Energy efficiency and limiting energy consumption is a key element of the government's energy policy. - Compliance with the requirements for devices to improve the energy efficiency of buildings – Energy requirements according to the Building Code of Norway are the most important tool for improving energy efficiency in new buildings and in terms of major reconstruction of existing buildings. - The impact of economic instruments on energy efficiency measures; - Responsibility of ministries for coordinating the use of tools in the creation of energy-efficient buildings
Recommendations	<ul style="list-style-type: none"> - To consider whether Enova grant schemes lead to an actual reduction in energy consumption in buildings, and to improve reporting on this issue together with the Ministry of local government and modernization, the Ministry of oil and energy; - Review the content of Enova housing programs and the basic scheme of Housing Bank lending; - To intensify the information campaign on energy efficiency, especially for households, cooperatives and co-owners; - To Continue efforts to strengthen coordination between government agencies; - It is especially important to step up their efforts to gain knowledge about whether changes are required in the Rules of the Building Code, since work is underway to change the current regulations
<i>Source: compiled by the author on the basis of [6]</i>	

New Zealand, known for its natural beauty (clean lakes and forested mountains), has been facing an increasing number of environmental problems in recent years (report «Environment Aotearoa for 2019»). According to the report, New Zealand has faced numerous environmental problems, including: water pollution, reduced biological diversity, as well as urban growth and the spread of dairy farming, which also negatively affects the environment.

Controller and Auditor General as a SAI New Zealand is an official of Parliament. This means that it is independent of the government and cannot be controlled by a political party in power. The Auditor General has two business units - the Office of the Auditor General and Audit New Zealand [7].

There are examples of audit activities of the SAI New Zealand in the field of environmental protection (Table 4).

Table 4. Examples and methodology of performance audit in the field of environmental protection and efficient use of natural resources in New Zealand

1. Performance audit of the freshwater management process	
Goal	identify the causes of poor freshwater quality and freshwater quality management process
Questions	<ul style="list-style-type: none"> - How do the regional indicators and trends of freshwater quality of the four regional councils compare? - What is the impact of freshwater quality data on the formation of a national understanding of freshwater quality?

1. Performance audit of the freshwater management process	
Criteria	<ul style="list-style-type: none"> - Quality of management of fresh water supply systems; - Objectivity and reliability of data on the results of monitoring of freshwater distribution networks
Recommendations	<ul style="list-style-type: none"> - The New Zealand Ministry of environment and statistics needs to lead the work with regional councils and relevant land and freshwater management agencies to support better informed and coordinated freshwater management by developing a consistent approach to monitoring, analyzing and reporting on the status and trends of freshwater quality; - Regional councils (Waikato, Taranaki, Horizons and Southland) need to support and inform the wider community about freshwater quality issues in a timely manner, ensuring that the information they provide to their communities is clear, complete, relevant, consistent, accessible and understandable
2. Performance audit of monitoring the use of water for the irrigation system	
Goal	To evaluate the efficiency of the use of fresh water for the needs of the irrigation system in six regions of New Zealand
Questions	<ul style="list-style-type: none"> - To what extent does the management of irrigation systems comply with the current legislative framework? - How do public organizations manage New Zealand's water resources? - How is the process of monitoring and measuring fresh water for the needs of the irrigation system? - Is water accounting used to collect qualitative data? - What is the effectiveness of the data collected from water meters? - Is there an effective analysis of water use data with the provision of useful information to society?
Criteria	<ul style="list-style-type: none"> - Efficiency of implementation of the water metering system in six regions; - Water meter data quality; - Behavior related to the consumption of fresh water
Recommendations	<ul style="list-style-type: none"> - The Ministry of the environment should review the part of resource management (measurement and reporting of water intake) that allows manual data collection and annual provision of data, as well as work with councils that control water accounting, to ensure that people and organizations with water permits regularly submit accurate data using automated processes.; - The Ministry of the environment should assess the benefits of water accounting in order to understand how this has changed the access of individuals and legal entities to water; - Organizations that manage fresh water need to balance many needs, including the growing population and its impact on food production, recreation and nature conservation.
Source: compiled by the author on the basis of [7]	

USA. A high level of industrial production leads to environmental pollution, the indicator of which increases as the volume of output increases. The main environmental problems of the USA are considered: 1) air pollution – a huge amount of toxic compounds are dumped into the atmosphere. There are standards for the content of elements harmful to human health in them, but it is not always possible to clean the air waste of production to the desired concentration. (there is a high concentration of sulfur, lead, mercury, chromium, zinc in the air, which contributes to the development of diseases); 2) an increase in the volume of solid household waste; an increase in the greenhouse effect – not only industrial enterprises, but also the population increases the volume of garbage (large megacities take thousands of tons of solid waste to landfills every day, a small part of which is recycled).

Environmental audit originated in the USA in the mid-70s due to high rates of environmental accidents and catastrophes, as well as a significant increase in environmental costs at chemical industry enterprises. By the mid-80s, the audit direction was gradually formed as an internal administrative management tool to strengthen control over the environmental activities of companies. Later, the US Environmental Protection Agency developed the concept of environmental audit for federal agencies.

In this regard, one of the areas of modern activity of the General Audit Office of USA (GAO) is the state audit of the effectiveness of the implementation of policies in the field of careful use of natural resources and environmental protection from anthropogenic influence [8].

There are examples of audit activities of the SAI USA in the field of environmental protection (Table 5).

Table 5. Examples and methodology of performance audit in the field of environmental protection and efficient use of natural resources in the USA

1. Performance audit of the national air quality monitoring system	
Goal	evaluate the effectiveness of the national air quality monitoring system

1. Performance audit of the national air quality monitoring system	
Questions	<ul style="list-style-type: none"> - What is the role of the national atmospheric air quality monitoring system in air quality management and how the EPA and state and local agencies manage the system? - What are the challenges faced by the EPA and individual state and local agencies in managing the national environmental monitoring system, air quality monitoring system, and degree that limit the capabilities of the EPA? - What exactly limits the effectiveness of the EPA and individual state and local agencies in meeting the needs for air quality information and hinders the solution of existing problems? - What is the overall effectiveness of air quality monitoring measures in terms of meeting air quality needs?
Criteria	<ul style="list-style-type: none"> - Emerging problems with air quality; - Effectiveness of national monitoring of atmospheric air quality; - The state of new and alternative air quality monitoring technologies, namely satellite remote sensing technologies and low-cost sensors; - Asset management, strategic planning and risk management in the field of air quality.
Recommendations	<ul style="list-style-type: none"> - The Assistant Administrator of the EPA Air and Radiation Department, in consultation with state and local agencies, should develop, publish and implement an asset management framework to consistently support the national air quality monitoring system. Such a framework can be designed for success taking into account the key characteristics of effective asset management described in our report, such as identifying the resources needed to maintain a monitoring system, using quality data to manage infrastructure risks, and directing resources to assets that provide the most value; - Assistant Administrator of the Air and Radiation Department of the Environmental Protection Agency. In consultation with state and local agencies and other relevant federal agencies, should develop and publish an air quality monitoring modernization plan to better meet the additional information needs of air quality managers, researchers and the public. Such a plan could address the ongoing challenges of modernizing the national air quality monitoring system by reviewing best practices, including setting priorities and roles, assessing risks to success, identifying resources needed to achieve goals, and measuring and evaluating progress
2. Performance audit of measures for the safe disposal of spent nuclear fuel in the energy industry	
Goal	to determine the effectiveness of actions that are necessary to solve the issue of spent nuclear fuel storage
Questions	<ul style="list-style-type: none"> - What is the financial responsibility of the federal Government and fiscal authorities in the field of spent nuclear fuel exposure? - What are the amounts of damages that DOE has paid to the owners of commercial nuclear reactors for storing spent nuclear fuel at their reactor sites? - What is the assessment of the reliability of the data of the Nuclear Waste Fund? - How effective are the measures taken by DOE in the field of safe disposal of nuclear waste?
Criteria	<ul style="list-style-type: none"> - Compliance of nuclear waste storage practices with regulations for the nuclear industry, including reactors and waste operations; - Reliability of storage and disposal of the country's spent nuclear fuel, as well as processing and disposal of nuclear waste for defense purposes; - The effectiveness of tariff formation for the storage of nuclear waste, as well as regulation in the nuclear field in general; - The risk to human health and the environment of high-level, transuranic and low-level waste; - The effectiveness of monitoring the treatment and disposal of radioactive waste of the national nuclear weapons program, as well as the placement, construction and operation of a future geological repository for the disposal of nuclear waste
Recommendations	<ul style="list-style-type: none"> - Congress should consider amending the Nuclear Waste Management Policy Act to authorize a new consensual process for the placement, development and construction of integrated temporary storage facilities and permanent storage disposal for commercial spent nuclear fuel; - Congress should consider instructing the Ministry of Energy to develop and implement an integrated waste management strategy consistent with any amendments to the Nuclear Waste Policy Act, which includes plans for the transportation, temporary storage and permanent disposal of spent nuclear fuel; - The Minister of Energy should instruct the Nuclear Energy Department to continue its efforts to engage the public and complete the draft placement process on the basis of consent.
Source: compiled by the author on the basis of data [8-11]	

Finland. Eco-friendliness is one of the main brands in Finland. Reverent attitude to the environment and the annual growth in the implementation of «green» projects for the introduction of «green» technologies in this country is gaining momentum, which is due not only to the established standards of the European Union, but the mentality of the population based on sincere concern for their native country and its nature.

So in recent years, comprehensive work has been carried out: rivers and lakes have been cleaned, an extensive network of protected natural areas has been created, air quality near industrial zones has been improved [12].

Finland is among the 3 leaders of the international rating in terms of ecology (3rd place – index 76.5) [13].

Almost all industries today are focused on renewable energy sources, as fossil fuel reserves are limited, and the extraction, processing and disposal of industrial waste are fraught with significant environmental and financial losses. In this regard, the role of the Finnish VOA in assessing the effectiveness of the activities of state bodies in the field of environmental protection is also increasing.

National Audit Office (NAOF) as a SAI Finland conducts an audit of the effectiveness of environmental protection activities of state bodies, among which the powers and responsibility for the implementation of measures to ensure a prosperous environmental situation in the country are divided [14].

Let's consider the main areas of audit activity of the SAI Finland in the field of environmental protection (Table 6).

Table 6. Examples and methodology of performance audit in the field of environmental protection and efficient use of natural resources in Finland

1. Performance audit of environmental protection	
Goal	Evaluation of the effectiveness of measures to identify, prevent and eliminate adverse effects on public health in the environment
Questions	<ul style="list-style-type: none"> - Are the environmental protection bodies properly organized? - Are the responsibilities of the authorities at different levels of environmental protection distributed on the basis of expert knowledge and are their tasks clearly defined? - Has the allocation of environmental protection resources been carried out between different tasks based on needs analysis (for example, taking into account risks)? - Is the control over environmental protection of the central government properly implemented and to what extent is it targeted? - Does multi-channel environmental monitoring work? - How do information systems support the organization of environmental protection? - How does food control affect the quality of life of the population? - Does state control over food, chemicals, smoking affect the health, safety and well-being of the population? - Is compliance with legal requirements in the field of environmental protection ensured in the regions? - Is there a synergetic effect and are they used in the fight against the shadow economy and monitoring the standard of living of the population?
Criteria	<ul style="list-style-type: none"> - Cooperation between municipalities should improve the organization of supervision, for example, specialization; - Management should be responsible and methodical; - Legislation in this area should be uniform and support the activities of the authorities; - Management should be based on planning and be purposeful, taking into account risks; - Management should be parallel and transparent; - Management should develop controls and improve efficiency, monitor their use and ensure the quality of control.
Recommendations	<ul style="list-style-type: none"> - The organization and responsibility for environmental protection should be closely linked to the policy of reforming the municipal structure and the central and regional government of the state. The government should take the initiative in this matter, and the responsible ministries (the Ministry of social affairs, the Ministry of economy and employment) should actively support this goal; - Regardless of the reform of local self-government, the government should study the management relationship of the central department of environmental Protection and the need for regional administration; - Responsible ministries and central departments should cooperate to ensure that risks in various areas of environmental protection are assessed in a commensurate manner and operations are carried out on this basis.

2. Performance audit of measures to combat oil spills on ships in the Gulf of Finland	
Goal	Assessment of the effectiveness of management and responsibility for marine oil spills in the Gulf of Finland
Questions	<ul style="list-style-type: none"> - Is the oil damage control system in the Gulf of Finland effective? - Are investments made on the basis of performance comparisons in the case of change protection systems, on the one hand, and preventive equipment, on the other hand? - Do municipalities have the capacity to handle waste generated as a result of oil accidents on ships – maintenance? - Are all the costs of oil spill prevention and compensation covered to receive compensation? - Is the oil damage control system in the Gulf of Finland effective?
Criteria	<ul style="list-style-type: none"> - Due to the measures taken earlier, there will be no emergency situation with oil; - Risk management is organized; - If an accident occurs, damage can be prevented quickly and economically; - The consequences of damage can be eliminated in such a way as to minimize financial damage and environmental damage; - The principles of «causing risk» and «polluter pays» work when covering the costs of maintaining control and paying compensation.
Recommendations	<ol style="list-style-type: none"> 1. The Ministry of environment should continue to assess the possibility of expanding the financial base of the Oil Protection Fund and the prospect associated with risks. The acceptability of the payment should also be assessed by representatives of citizens; 2. The Ministry of environment, together with the Oil Protection Fund, should develop a financing strategy for the fund. In addition, in order to ensure the effective functioning of the fund, the Ministry must manage operations by concluding an agreement with the fund on the fulfillment of obligations; 4. The national plan of action in case of an oil spill at sea should be substantially refined, for example, by determining the priorities of objects to be protected and criteria for termination of control
Source: compiled by the author based on [14 -15]	

Conclusion

As a result of the analysis of the best world practice of conducting a state environmental audit of efficiency in the field of ecology and efficient use of natural resources, we have formulated the following conclusions:

- Conducting a state audit in the field of environmental protection will not require amendments and additions to the current regulatory legal acts of the Republic of Kazakhstan, as world experience shows that a mandate to conduct an efficiency audit is sufficient for this. An exception to the generally accepted rules in countries with developed economies is the experience of the SAI Canada, where the institution of the Commissioner for Environment and Sustainable Development is legally enshrined. In emerging market countries, it is possible to have a special mandate to conduct an environmental audit due to the comparative novelty of the laws on supreme audit institutions.

- Since sustainable development concerns the rights of future generations, it also helps to expand the time horizon of the auditor’s assessments. In this regard, taking into account the cross-sectoral nature of the SDGs, it is possible to include an assessment of the achievement of individual SDGs related to environmental measures in the Environmental Performance Audit Program. Considering that more than 80% of the SDGs are decomposed into strategic planning system documents, the latter, in terms of solving environmental problems, should be more fully and effectively integrated into key decision-making processes, such as strategic documents, tactical management programs, budget preparation and departmental integration system.

- The most illustrative cases of the experience of the SAIs of foreign countries clearly show that all issues related to the assessment of the efficiency of the use of natural resources and the state of the environment directly affect their health and quality of life, which makes the use of survey tools for target focus groups and head of audit objects mandatory. In modern conditions of improving the system of state audit, the implementation of the principle of «human-centricity» is very relevant and timely.

- The issues and criteria for evaluating the effectiveness of preventive measures, namely the effectiveness of monitoring natural resources (air, water and land quality), as well as changes in climatic conditions of human activity in domestic conditions, are of particular importance in the framework of the audit program formation. For example, on the one hand, the international climate regime calls for decarbonization. On the other hand, many international changes in the field of sustainability reporting and

climate disclosure affect not only private sector companies, but also state-owned companies. Monitoring is also important from the point of view of choosing the topic and object of the audit. In many SAIs, choosing an audit topic is a process combining top-down and bottom-up processes. As a rule, top management provides some recommendations and makes final decisions, but within this framework, individual auditors also usually have the opportunity to propose audit topics based on their experience and knowledge. The SAI Kazakhstan may consider initiating systematic monitoring or verification of changes in the field of environmental policy, preferably along with other policy areas, which will also contribute to the justification of the choice of the audit topic and the objects of the upcoming audit.

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ГОСУДАРСТВЕННЫЙ АУДИТ В СФЕРЕ ОЦЕНКИ ЭФФЕКТИВНОСТИ ИСПОЛЬЗОВАНИЯ ПРИРОДНЫХ РЕСУРСОВ: МИРОВОЙ ОПЫТ

Р. Рахимов*

Член Высшей аудиторской палаты РК
г. Астана, Казахстан
E-mail: r.rakhimov@esep.gov.kz

V. Niemenmaa

PhD
Генеральный секретарь
Рабочая группа ИНТОСАИ
по экологическому аудиту
г. Хельсинки, Финляндия
E-mail: vivi.niemenmaa@vtv.fi

Д. Кушербаева

Директор департамента методологии
и контроля качества
Высшей аудиторской палаты РК
г. Астана, Казахстан
E-mail: d.kusherbaeva@esep.gov.kz

A. Rakhmetova

Д.э.н., профессор
ТОО «Центр исследований, анализа и
оценки эффективности»
г. Астана, Казахстан
E-mail: aibota@mail.ru
ORCID:0000-0002-8741-0373

Аннотация. На фоне глобализации тенденций по переходу к «зеленым» технологиям и экономике, возрастания ответственности расходов, повышается и актуальность оценки эффективности аудиторской деятельности в природоохранной сфере. В этой связи в статье изучен мировой опыт по организации и проведению государственного аудита эффективности использования природных ресурсов. В частности, авторами рассмотрены методологические подходы высших органов аудита зарубежных стран, занимающих высокие позиции в международных рейтингах охраны окружающей среды и использования ресурсосберегающих технологий.

В результате исследования выявлено, что большинство органов внешнего государственного аудита не проводят аудит использования природных ресурсов не в форме отдельного вида аудита, а в качестве аудита эффективности. В отдельных случаях эти аудиты сочетают в себе элементы аудита эффективности и аудита соответствия, а также финансового аудита. При этом в структуре элементов аудита эффективности, применяемых в деятельности высших органов аудита исследуемых стран можно выделить «экономичности», «эффективности» и «действенности», за исключением опыта Канады, ревизионное управление которой добавляет «окружающую среду» и «устойчивое развитие».

По результатам проведенного анализа, авторами сформулированы выводы в контексте рассмотрения возможности адаптации лучшей передовой практики высших органов аудита в отечественных условиях в сфере оценки эффективности использования природных ресурсов и природоохранных мероприятий в целом.

Ключевые слова: государственный аудит, природные ресурсы, методология аудита, критерии аудита, аудиторские вопросы, аудит эффективности, цели устойчивого развития.

ТАБИҒИ РЕСУРСТАРДЫ ПАЙДАЛАНУ ТИІМДІЛІГІН БАҒАЛАУ САЛАСЫНДАҒЫ МЕМЛЕКЕТТІК АУДИТ: ӘЛЕМДІК ТӘЖІРИБЕ

Р. Рахимов*

ҚР Жоғары аудиторлық
палатасының мүшесі
Астана қ., Қазақстан
E-mail: r.rakhimov@esep.gov.kz

V. Niemenmaa

PhD
Бас хатшы
Экологиялық аудит бойынша
ИНТОСАИ жұмыс тобы
Хельсинки қ., Финляндия
E-mail: vivi.niemenmaa@vtv.fi

Д. Көшербаева

Әдіснама және сапа бақылауы
департаментінің директоры
Высшей аудиторской палаты РК
Астана қ., Қазақстан
E-mail: d.kusherbaeva@esep.gov.kz

A. Rakhmetova

Э.ғ.д., профессор
«Зерттеулер, талдау және тиімділікті бағалау орталығы» ЖШС
Астана қ., Қазақстан
E-mail: aibota@mail.ru
ORCID: 0000-0002-8741-0373

Аңдатпа: «Жасыл» технологиялар мен экономикаға көшу тенденцияларының жаһандануы, тиісті шығындардың өсуі аясында табиғатты қорғау саласындағы аудиторлық қызметтің тиімділігін бағалаудың өзектілігі де артып келеді. Осыған байланысты мақалада табиғи ресурстарды пайдалану тиімділігіне мемлекеттік аудитті ұйымдастыру және жүргізу бойынша әлемдік тәжірибе зерделенді. Атап айтқанда, авторлар қоршаған ортаны қорғаудың және ресурс үнемдеуші технологияларды пайдаланудың Халықаралық рейтингтерінде жоғары орын алатын шет елдердің жоғары аудит органдарының әдіснамалық тәсілдерін қарастырды.

Зерттеу нәтижесінде сыртқы мемлекеттік аудит органдарының көпшілігі аудиттің жекелеген түрі түрінде емес, тиімділік аудиті ретінде табиғи ресурстарды пайдалану аудитін жүргізбейтіні анықталды. Кейбір жағдайларда бұл аудиттер тиімділік аудиті мен сәйкестік аудитінің, сондай-ақ қаржылық аудиттің элементтерін біріктіреді. Бұл ретте зерттелетін елдердің жоғары аудит органдарының қызметінде қолданылатын тиімділік аудиті элементтерінің құрылымында тексеру басқармасы «қоршаған ортаны» және «тұрақты дамуды» қосатын Канада тәжірибесін қоспағанда, «үнемділік», «тиімділік» және «әсерлік» деп бөліп көрсетуге болады.

Жүргізілген талдау нәтижелері бойынша авторлар табиғи ресурстарды және тұтастай алғанда табиғатты қорғау іс-шараларын пайдалану тиімділігін бағалау саласында отандық жағдайларда жоғары аудит органдарының озық озық тәжірибесін бейімдеу мүмкіндігін қарастыру контекстінде қорытындылар тұжырымдады.

Түйін сөздер: мемлекеттік аудит, Табиғи ресурстар, аудит әдістемесі, аудит критерийлері, аудиторлық мәселелер, тиімділік аудиті, тұрақты даму мақсаттары.