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ОЦІНКА ІНФОРМАЦІЙНОГО ЗАБЕЗПЕЧЕННЯ УКРАЇНИ У ГАЛУЗІ ЕКОЛОГІЇ В КОНТЕКСТІ МІЖНАРОДНИХ ВИМОГ

Актуальність. Оскільки, згідно стратегії державної екологічної політики України на період до 2030 року однією із першопричин екологічних проблем України є неефективна система державного управління у сфері охорони навколишнього природного середовища, моніторингу його стану, регулювання використання природних ресурсів та забезпечення екологічної безпеки, питання удосконалення інформаційного забезпечення країни є особливо актуальним.

Мета та завдання. Дослідження полягає у розгляді проблем оброблення та представлення екологічної інформації в контексті міжнародної діяльності України та визначенні реальних можливостей країни у сфері надання екологічно цінних даних згідно європейських вимог.

Результати. У дослідженні приведені основні міжнародні проекти, які направлені на удосконалення статистичного забезпечення у галузі екології, в яких бере участь Україна протягом останніх років, представлений аналіз істотних результатів країни по завершенню одного із проектів. Також розглянуті основні вимоги діючого проекту до надання екологічної інформації. Приведена забезпеченість надання Україною статистичної інформації по екологічним індикаторам Європейської економічної комісії ООН в межах проекту та фактична наявність цих показників у статистичній документації України. Розглянуто один із варіантів удосконалення інформаційного забезпечення України у галузі екології.

Висновки. Обґрунтовано, що не зважаючи на участь країни в міжнародних проектах, які направлені на удосконалення статистичного забезпечення у галузі екології, Україна не вкладає необхідну кількість зусиль для отримання істотних результатів у даному напрямку. Проаналізовано, що на кінець дії одного із проектів в галузі управління даними та інформацією про стан навколишнього середовища і їх спільного використання Україна з усіх країн-учасниць, внесла чи не найменший внесок в розвиток інформаційного забезпечення, а в межах діючого проекту частину показників Україна не надає, не зважаючи на наявність необхідних даних у відкритих джерелах екологічної інформації.

Ключові слова: управління, статистика, екологічний індикатор, статистичні спостереження.

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ASSESSMENT OF INFORMATION SUPPORT OF UKRAINE IN THE CONTEXT OF INTERNATIONAL REQUIREMENTS

Topicality. Since, according to the strategy of the state environmental policy of Ukraine for the period till 2030, one of the root causes of Ukraine's environmental problems is an inefficient system of public administration in the field of environmental protection, monitoring of its state, regulation of the use of natural resources and ensuring environmental safety, the question of improving information support of the country is especially relevant.

Aim and tasks are to address the problems of processing and presenting environmental information in the context of Ukraine's international activity and to identify the country's real capabilities in providing environmentally valuable data in accordance with European requirements.

Research results. The study outlines major international projects aimed at improving statistical support in the field of ecology, in which Ukraine has been participating in recent years, presents an analysis of the country's significant results upon completion of one of the projects. The main requirements of the current project for providing environmental information are also considered. Provision has been made of providing Ukraine with statistical information on environmental indicators of the United Nations Economic Commission for Europe within the framework of the project and the actual availability of these indicators in the statistical documentation of Ukraine. One of the ways improve information support of Ukraine in the field of ecology is considered.

Conclusion. It is justified that, despite the countries' participation in international projects aimed at improving statistical support in the field of ecology, Ukraine does not make the necessary efforts to obtain significant results in this area. It is analyzed that at the end of one of the projects in the field of data and information management on the state of the environment and their shared use, Ukraine from all the participating countries made almost the smallest contribution to the development of information support, and within the current project part of the indicators Ukraine does not provide despite the availability of necessary environmental information data in open sources.

Keywords: management, statistics, environmental indicator, statistical observations.

Problem statement and its connection with important scientific and practical tasks. At any level of environmentally-oriented public economic governance, objective and well-defined management decisions require complete and reliable statistical information. Performing a variety of functions to collect, systematize and analyze information that characterizes the economic and social development of society, statistics play the role of the main supplier of accurate and indisputable facts for management needs in any field of activity of the country.

Analysis of recent publications on the problem. Problems of statistical research are considered by leading scientists of the National Academy of Statistics, Accounting and Auditing.

Allocation of previously unsolved parts of the general problem. Despite the fact that Ukraine sufficiently actively addresses the problems of statistical support, the issue of environmental statistics is given the least attention; at the moment, environmental information support is one of the priorities when considering the international practice.

Formulation of research objectives (problem statement). The main objectives of this study are to address the problems of processing and presenting environmental information in the context of Ukraine's international activities.

An outline of the main results and their justification. As most environmental issues are global in nature, international statistical observations play a particular role at the moment. Since 2010, the European Union (EU) has been developing regional cooperation in the Eastern Partnership countries - Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine. This cooperation aims to strengthen their capacity in data management and dissemination of environmental information. The European Union funded this cooperation under the project "Towards a Common Environmental Information System (SEIS) in the European Neighborhood", implemented by the European Environment Agency (EANS). The project supported initiatives to improve environmental governance in the Eastern Partnership countries.

Four years of regional cooperation have resulted in significant progress in areas such as the creation of coordination structures in countries, the mobilization of resources to prepare environmental indicators, and the modernization of information systems, which has improved the quality of reporting and facilitated the sharing of environmental data [2].

An analysis of the significant results achieved in all Eastern Partnership countries is presented in Table 1.

As can be seen from the table, at the end of the project, Ukraine from all the participating countries

made the smallest contribution to the development of information support.

Table 1

Analysis of the results in all Eastern Partnership countries achieved under the project "Towards a Common Environmental Information System (SEIS) in the European Neighborhood"

№	Country	Project results
1	2	3
1	Azerbaijan	<ul style="list-style-type: none"> – Development of the Azerbaijan 2020 Program: Looking to the Future, which includes the tasks of SEIS development. – Creation of the state system of environmental indicators on the Internet. – Going to the preparation of reports on the state of the environment. – Open access to the first state digital water cadastre is scheduled for 2015.
2	Armenia	<ul style="list-style-type: none"> – Formal cooperation with the UNECE on achieving the SEIS goals. – Development of new framework and sectoral legislation in the field of environmental monitoring, data management and preparation of reports on the state of the environment. – Creation of a centralized system for dissemination of all environmental and environmental statistics. – Data exchange using the EANS reporting infrastructure. – Implementation of the project on compilation and management of environmental data in the Sevan Lake basin.
3	Belarus	<ul style="list-style-type: none"> – The system of interagency interaction has been officially established and developed. – The National Environmental Monitoring System (NSMOS) is an organizational structure that brings together 11 types of environmental monitoring. – Development of the state system of environmental indicators in accordance with regional indicators. – Formal cooperation with the UNECE on achieving the SEIS goals. – Participation in the training on the exchange of water quality data using the methodology of the European Water Information System (WISE).
4	Moldova	<ul style="list-style-type: none"> – Development of the Government's Open Data Portal within the framework of the eGovernment Policy. – Participation in the training on the exchange of water quality data using the methodology of the European Water Information System (WISE). – Formal cooperation with the UNECE on achieving the SEIS goals. – Participating country in the Enhanced Cooperation with the EANS project for the further implementation of SEIS (InSEIS project, June 2014 - July 2015).
5	Georgia	<ul style="list-style-type: none"> – Signing of an inter-agency agreement on data exchange within the country. – Establishment of a Center for Environmental Information and Education (CEIO) to improve access to environmental information and coordinate national SEIS implementation work. – Participation in the training on the exchange of water quality data using the methodology of the European Water Information System (WISE). – Membership of the Global Earth Observation System (GEOSS) since 2014. – Formal cooperation with the UNECE on achieving the SEIS goals.
6	Ukraine	<ul style="list-style-type: none"> – Establishment of an inter-agency body to coordinate SEIS-related activities. – Development by the State Statistics Committee of a system for access to environmental indicators on the Internet. – Development of bills related to the functioning of the state environmental monitoring system and the use of environmental indicators

Built by authors based on [2]

A new EANS project has been in operation since 2016. The overall objective of the project is to further implement the principles and methods of the Common Environmental Information System (SEIS) in the six EaP countries. The project builds on the achievements and results of previous cooperation within the framework of the project on the creation of a Common Environmental Information System in the European Neighborhood region and aims to further strengthen the capacity of the relevant agencies of the participating countries in the next areas:

– cooperation: forming partnerships between producers and users of data and information;

- content: producing comparative information that meets policy needs;
- Infrastructure: application of common modern information communication tools.

A separate objective of the project is to contribute to the regular preparation of environmental indicators and reports on the state of the environment to create a scientific and information base for policy development and quality management in the field of environment [3].

Within the framework of this project, an open database for participating countries is provided, which contains statistical information on environmental indicators of the United Nations Economic Commission for Europe. According to this database, Ukraine provides about 50% availability of environmental indicators (Table 2).

Table 2

Ensuring that Ukraine provides statistical information on environmental indicators of the United Nations Economic Commission for Europe

№	Environmental indicators of the United Nations Economic Commission for Europe	Provision of statistical information, %	Last updated date, year	Availability in the statistical documentation of Ukraine, %
1	2	3	4	5
1	A. Air pollution and ozone depletion	70		100
	A1. Emissions of pollutants into the atmospheric air;	+	2015	+
	A2. Ambient air quality in urban areas;	+	2014	+
	A3. Consumption of ozone-depleting substances.	–		+
2	B. Climate change	0		100
	B1. Air temperature;	–		+
	B2. Atmospheric precipitation;	–		+
	B3. Greenhouse gas emissions.	–		+
3	C. Water	50		80
	C1. Renewable freshwater resources;	–		–
	C2. Freshwater abstraction;	+	2017	+
	C3. Total water use;	+	2017	+
	C4. Household water use per capita;	–		+
	C5. Water supply industry and population connected to water supply industry;	+	2016	+
	C6. Connection of population to public water supply;	–		–
	C7. Water losses;	+	2016	+
	C8. Reuse and recycling of freshwater;	+	2016	+
	C9. Drinking water quality;	–		+
	C10. BOD and concentration of ammonium in rivers;	+	2013	+
	C11. Nutrients in freshwater;	+	2013	+
	C12. Nutrients in coastal seawaters;	–		+
	C13. Concentrations of pollutants in coastal seawater and sediments (except nutrients);	–		+
	C14. Population connected to wastewater treatment;	–		–
	C15. Wastewater treatment facilities;	+	2017	+
	C16. Polluted (non-treated) wastewaters.	+	2017	+
4	D. Biodiversity	15		66
	D1. Protected areas;	+	2016	+
	D2. Biosphere reserves and wetlands of international importance;	–		+
	D3. Forests and other wooded land;	–		+

1	2	3	4	5
	D4. Threatened and protected species;	–		+
	D5. Trends in the number and distribution of selected species;	–		–
	D6. Invasive alien species.	–		–
5	E. Land and soil	0		100
	E1. Land uptake;	–		+
	E2. Area affected by soil erosion.	–		+
6	F. Agriculture	25		100
	F1. Irrigation;	–		+
	F2. Fertilizer consumption;	+	2017	+
	F3. Gross nitrogen balance;	–		+
	F4. Pesticide consumption.	–		+
7	G. Energy	70		100
	G1. Final energy consumption;	+	2017	+
	G2. Total primary energy supply;	+	2017	+
	G3. Energy intensity;	+	2017	+
	G4. Renewable energy consumption;	+	2017	+
	G5. Final electricity consumption;	–		+
	G6. Gross electricity production.	–		+
8	H. Transport	50		75
	H1. Passenger transport demand;	+	2018	+
	H2. Freight transport demand;	+	2018	+
	H3. Composition of road motor vehicle fleet by fuel type;	–		–
	H4. Age of road motor vehicle fleet;	–		+
9	I. Waste	100		100
	I1. Waste generation;	+	2017	+
	I2. Management of hazardous waste;	+	2017	+
	I3. Waste reuse and recycling;	+	2017	+
	I4. Final waste disposal.	+	2017	+
10	J. Environmental financing	100		100
	J1. Environment protection expenditure.	+	2017	+

Built by authors based on [4]

At the same time, analysis of the statistical information of Ukraine indicates that the country conducts a statistical survey of at least 85-90% of indicators, but they are not presented within the framework of the EANS project. Data that is not available in the open project database can be found in the Ecological passports [5] and in the Regional reports on the state of the environment [6], as well as in state-level statistical collections ("Statistical collection of Ukraine" [7], "Ukraine in figures"[8]) and in the documentation of various organizations involved in environmental monitoring (Central Geophysical Observatory named after Boris Sreznevsky [9, 10]), etc. It leads to the conclusion that Ukraine does not put maximum efforts into preparation and design statistical information as apart of its international activities.

It should also be noted that despite the availability of statistical information on some of the indicators, the data on them were last updated in 2013-2015.

In 2018, the Government endorsed the concept developed by the Ministry of Natural Resources for the creation of a nationwide automated Open Environment system, which will be freely accessible and integrate into one electronic database the environmental data of various central executive bodies and local self-government bodies.

The purpose of the Concept of creation of the national automated system "Open environment" [11]:

–to modernize the work of state and local self-government bodies in the field of environmental protection;

- to reach a new level of public administration in the field of environmental protection;
- to form a national information and telecommunication infrastructure of state and local self-government bodies in the field of environmental protection;
- to ensure respect for the environmental rights of citizens in the part of free access to environmental information on the state of the environment;
- publish public registers of open data in the field of environmental protection;
- to modernize the procedure and improve the quality of the provision of administrative services in the field of environmental protection through transformation into digital format (digitalization);
- to ensure compliance with Ukraine's international commitments in the field of environmental protection, including the rational use, reproduction and protection of natural resources;
- to ensure the regular production of environmental indicators and assessments for environmental policy-making, management decisions, and the exchange of environmental information at the international level in accordance with the principles of the European Environmental Agency's Joint Environmental Information System.

A trial version of the Open Environment system has already been launched into an electronic resource with the following items [12]: - water, air, metadata directory, eco-finance.

The section "water" presents the same data provided by the State Agency for Water Resources of Ukraine. Eco-finance is also information on the total amount of environmental tax in each region of Ukraine for 2017. The "air" and "metadata catalog" sections are not yet operational. In the metadata directory, the list of future indicators are environmental indicators of the European Economic Commission for Europe. That is, a new project designed to address the inadequacies of statistical support relies on international requirements and requires the immediate formulation of environmental information flows from data sources to a "metadata catalog" within the automated Open Environment system, which will also allow environmental information to be provided to an open database promptly of the UNECE project.

As one of the main tasks of environmental statistics is to support sound environmental policies, the information must be complete and reliable. At the same time, in the Mykolaiv and Kherson regions, data on eco-finance in the Open Environment system do not correspond to those provided in the Environmental Reports of these regions for the same year (Table 3).

Table 3

Environmental tax for 2017 (UAH million)

Region	Report on the state of the environment	Open Environment
Kherson	9,89	11.85
Mykolaiv	42,7	32.78

Built by authors based on [12, 13-14]

It is impossible to compare the data in the Odessa region because in the regional report the environmental tax is indicated only for small and medium-sized enterprises.

It should also be noted that according to the Report on the results of the audit of the effectiveness of the exercise of powers by public authorities in terms of control over the completeness and timeliness of receipt of environmental tax on emissions into the atmosphere and discharges into water bodies, there are several problems in Ukraine [15]:

- untimely submission of environmental tax filers by taxpayers;
- failure to submit tax reports on environmental tax during 2015-2016;
- there are cases of lowering in the environmental tax declarations by the payers of the actual volumes of pollutant emissions into the air.

Apparently, in the area of information security there are problems with the submission of information to objects that directly affect the NA.

To address all of the above issues, it is necessary that the Open Environment performs not only the function of presenting general environmental information, which is also provided in various forms of reports. It should be a multifunctional, automated resource, provide up-to-date information and be useful not only to the ordinary citizen, but also to the owners of environmental information, in order to create an effective basis for managing the development of greening. For this reason, already functioning systems must be taken as the basis. An example of such a system is the SAP ERP SAP R / 3: a system that supports and integrates the company's business processes in real time.

This system can be taken as a basis for the development of an effective resource in the field of

information support as a component of the system of managing the development of greening of economic sectors. In this respect, the environmental information collection and analysis system developed based on ERP SAP R / 3 will have several advantages:

- flexible adaptation of the system to changes in environmental legislation;
- providing users of all levels with accurate and reliable information in real-time;
- ability to analyze information for management decisions;
- ability to control factors that affect the effectiveness of greening;
- the use of a single integrated solution for all areas of the country's activities;
- increasing the efficiency of greening;
- increasing transparency through transparency;
- storage of large amounts of information and data protection;
- reducing the need to prepare much of the paper reports and more.

Not only will such a system provide general environmental information, it will also allow the automatic calculation of certain indicators, such as environmental taxes or average concentrations of pollutants, which will simplify conditions for environmental activities, as well as objects that have a negative impact on the environment in different sectors of economy and higher authorities, because the system will simplify the process of formation of statistical collections and, thanks to up-to-date information, will speed up the process of responding to negative trends in the state of the environment. It, in turn, will lead to the development of management decisions in the field of greening will be implemented more quickly and based on relevant, true, undistorted environmental information.

The scheme for collecting and analyzing environmental information developed based on the ERP system SAP R / 3 is presented in Fig. 1.

Fig. 1 - Scheme for environmental information collection and analysis is developed on the basis of SAP R / 3 ERP system

Built by authors based on [16]

The only downside is that using such a system poses significant requirements for the training of economic and statistical specialists at the middle and higher organizational levels, which will be able to:

- collect, organize and analyze a statistical information on the socio-economic development of society;
- to develop and apply appropriate methods of processing and summarizing statistical information;
- to make based on statistical analysis of generalizations and conclusions, to justify management decisions;

- realistically evaluate the consequences of management decisions made based on statistical analysis;
- to make effective use of the latest information technologies for processing statistical information.

Conclusions and perspectives of further research. Despite the country's involvement in international projects aimed at improving statistical support in the field of ecology, Ukraine does not make the necessary efforts to produce significant results in this area. It is necessary to be more productive in EU projects aimed at enhancing data management and environmental information capacity. It is also necessary to formulate flows of environmental information from the primary sources of data to the "metadata catalog" within the framework of the automated system «Open Environment», that will allow timely provision of environmental information to the open database of the EANS project, and will improve information support of Ukraine in the context of international requirements.

ЛІТЕРАТУРА

1. 3У «Про Основні засади (стратегію) державної екологічної політики України на період до 2030 року». URL: <https://zakon.rada.gov.ua/laws/show/2697-19>
2. Разработка совместной системы экологической информации со странами восточного партнерства. Информационный центр программы европейского соседства. Флаер, ЕАОС. – 2015 р.
3. Внедрение принципов и методов совместной системы экологической информации (SEIS) в странах «восточного партнерства». Проект ENI SEIS II в регионе «Восточного партнерства» (2016 – 2020). Флаер, ЕАОС. – 2016 р.
4. ENI SEIS II East. Implementation of the Shared Environmental Information System (SEIS) principles and practices in the ENP East region. URL: <https://eni-seis.eionet.europa.eu/east>
5. Екологічний паспорт Одеської області за 2017 рік. м. Одеса, 2018 р. – 132 с.
6. Регіональна доповідь про стан навколишнього природного середовища в Одеській області у 2017 році. м. Одеса, 2018 р. – 270 с.
7. Статистичний щорічник України за 2017 рік. Державна служба статистики України. м. Київ, 2018 р. – 541 с.
8. Україна у цифрах у 2017 році. Державна служба статистики України. м. Київ, ТОВ «Видавництво «Консультант», 2018 р. – 241 с.
9. Огляд стану забруднення навколишнього природного середовища на території України за даними спостережень гідрометеорологічних організацій у 2017 році. Центральна геофізична обсерваторія імені Бориса Срезневського. м. Київ, 2018 р. – 50 с.
10. Офіційний сайт Центральної геофізичної обсерваторії імені Бориса Срезневського URL: <http://cgo-sreznevskiy.kiev.ua/index.php>
11. Розпорядження від 07 листопада 2018 р. № 825-р «Про схвалення Концепції створення загальнодержавної автоматизованої системи «Відкрите довкілля». м. Київ. URL: <https://www.kmu.gov.ua/ua/npas/pro-shvalennya-koncepciyi-stvorenniya-zagalnoderzhavnoyi-avtomatizovanoyi-sistemi-vidkrite-dovkillya>
12. Офіційний сайт «Відкритого довкілля». URL: <http://openenvironment.org.ua/index.htm>
13. Регіональна доповідь про стан навколишнього природного середовища у Херсонській області у 2017 році. м. Херсон, 2018 р. – 238 с.
14. Регіональна доповідь про стан навколишнього природного середовища в Миколаївській області у 2017 році. м. Миколаїв, 2018 р. – 199 с.
15. Звіт про результати аудиту ефективності виконання повноважень органами державної влади в частині контролю за повнотою і своєчасністю надходження екологічного податку з викидів у атмосферне повітря та скидів у водні об'єкти. Рахункова палата. м. Київ, 2018 р. – 48 с.
16. Коблянська Г. Ю. Застосування модулю "Управлінський облік і звітність" (CO) Системи ERP SAP R/3 для автоматизації управлінського обліку / Г. Ю. Коблянська, І. С. Реєнтенко // Облік і фінанси. - 2012. - № 2. - С. 74-81.

REFERENCES

1. ZU «Pro Osnovni zasady` (strategiyu) derzhavnoyi ekologichnoyi polity`ky` Ukrayiny` na period do 2030 roku». [Law of Ukraine "On the Fundamental Principles (Strategy) of the State Environmental Policy of Ukraine for the Period up to 2030"]. URL: <https://zakon.rada.gov.ua/laws/show/2697-19>
2. Razrabotka sovместnoy sy`stemy` ekologiy`cheskoj y`nformacy`y` so stranamy` vostochnogo partnerstva. [Development of a joint environmental information system with the Eastern Partnership countries]. *Information Center for the European Neighborhood Program*. Flyer, EEA. - 2015
3. Vnedreny`e pry`ncy`pov y` metodov sovместnoy sy`stemy` ekologiy`cheskoj y`nformacy`y` (SEIS) v stranax «vostochnogo partnerstva». [Implementation of the principles and methods of the Joint Environmental Information System (SEIS) in the Eastern Partnership countries]. *ENI SEIS II project in the Eastern Partnership region (2016 - 2020)*. Flyer, EEA. - 2016
4. ENI SEIS II East. Implementation of the Shared Environmental Information System (SEIS) principles and practices in the ENP East region. URL: <https://eni-seis.eionet.europa.eu/east>
5. Ekologichny`j pasport Odes`koyi oblasti za 2017 rik. [Environmental passport of Odessa region for 2017]. Odessa, 2018 - 132 p.
6. Regional`na dopovid` pro stan navkoly`shn`ogo pry`rodnogo seredovy`shha v Odes`kij oblasti u 2017 roci. [Regional report on the state of the environment in the Odessa region in 2017]. Odessa, 2018 - 270 p.
7. Staty`sty`chny`j shhorichny`k Ukrayiny` za 2017 rik. Derzhavna sluzhba staty`sty`ky` Ukrayiny`. [Statistical Yearbook of Ukraine for 2017]. *State Statistics Service of Ukraine*. Kyiv, 2018 - 541 pp.
8. Ukrayina u cy`frax u 2017 roci. Derzhavna sluzhba staty`sty`ky` Ukrayiny`. [Ukraine in numbers in 2017]. *State Statistics Service of Ukraine*. Kyiv, Consultant Publishing House LLC, 2018 - 241 p.
9. Oglyad stanu zabrudnennya navkoly`shn`ogo pry`rodnogo seredovy`shha na tery`toriyi Ukrayiny` za dany`my` sposterezhen` gidrometeorologichny`x organizacij u 2017 roci. [Survey of the state of environmental pollution in the territory of Ukraine according to the observations of hydrometeorological organizations in 2017]. *Central Geophysical Observatory named after Boris Sreznevsky*. Kyiv, 2018 - 50 p.
10. Oficijny`j sayt Central`noyi geofizy`chnoyi observatorii imeni Bory`sa Sreznevs`kogo. [Official site of Central Geophysical Observatory named after Boris Sreznevsky]. URL: <http://cgo-sreznevskiy.kiev.ua/index.php>
11. Rozporyadzhennya vid 07 ly`stopada 2018 r. 825-r «Pro sxvalennya Konceptiyi stvorennya zagal`noderzhavnoyi avtomaty`zovanoyi sy`stemy` «Vidkry`te dovkillya». [Order of November 7, 2018 No. 825-p "On approval of the Concept of creation of the national automated system" Open Environment "]. m. Kyiv. URL: <https://www.kmu.gov.ua/en/npas/pro-shvalennya-konceptiyi-stvorennya-zagalnoderzhavnoyi-avtomatizovanoyi-sistemi-vidkrite-dovkillya>
12. Oficijny`j sayt «Vidkry`togo dovkillya». [The official site of the Open Environment]. URL: <http://openenvironment.org.ua/index.htm>
13. Regional`na dopovid` pro stan navkoly`shn`ogo pry`rodnogo seredovy`shha u Xersons`kij oblasti u 2017 roci. [Regional report on the state of the environment in the Kherson region in 2017]. Kherson, 2018 - 238 p.
14. Regional`na dopovid` pro stan navkoly`shn`ogo pry`rodnogo seredovy`shha v My`kolayivs`kij oblasti u 2017 roci. [Regional report on the state of the environment in the Mykolaiv region in 2017]. Mykolaiv, 2018 - 199 p.
15. Zvit pro rezul`taty` audy`tu efekty`vnosti vy`konannya povnovazhen` organamy` derzhavnoyi vlady` v chasty`ni kontrolyu za povnotoyu i svoychasnistyu nadkhodzhennya ekologichnogo podatku z vy`ky`div u atmosferne povitrya ta sky`div u vodni ob`yekty`. [Report on the results of the audit of the effectiveness of the exercise of powers by public authorities in terms of controlling the completeness and timeliness of the receipt of environmental tax on emissions into the air and discharges into water bodies]. *Accounting Chamber of Ukraine*. Kyiv, 2018 - 48 p.
16. Koblyans`ka G. Yu. Zastosuvannya modulyu "Upravlins`ky`j oblik i zvitnist`" (SO) Sy`stemy` ERP SAP R/3 dlya avtomaty`zacyi upravlins`kogo obliku [Application of the module "Management accounting and reporting" (CO) ERP SAP R / 3 system for automation of management accounting]. *Accounting and finance*. - 2012. - № 2. - P. 74-81.