

Implementing Environmental Accounting as a Factor of Organization's Economic Security

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Abstract—The purpose of this article is to justify the definition of environmental accounting, consider the current procedure and existing problems of accounting for environmental costs, obligations and sources of financing, disclose principles for classifying environmental costs based on international practice, and justify the need to introduce environmental accounting as a factor of economic security of an organization. The study is based on general scientific and special methods of description, generalization, analysis, interpretation and theoretical methods of formal and dialectical logic. The results should include the formulated author's interpretation of environmental accounting, the conclusion of the trend of improving domestic accounting standards in accordance with the generally recognized world classification of environmental costs of the organization, the formulation of the benefits of implementation and possible difficulties in setting environmental accounting, as well as the rationale for the introduction of this direction of accounting as a factor in increasing environmental responsibility of business entities.

Keywords—environmental accounting, economic security, environmental costs, environmental obligations, financial statements.

I. INTRODUCTION

In the current economic situation characterized by climate change, global warming, water and air pollution due to increased emissions of pollutants into the environment, deterioration of the general health of the working population, land depletion and reduction of natural resources, environmental safety issues are becoming increasingly important. Environmental safety is an integral part of the country's national security; it is no accident that the Russian Federation approved the Environmental Security Strategy for the period up to 2025, which considers the establishment and implementation of excessive requirements in the field of environmental safety and the growth of costs for ensuring environmental standards of production and consumption as challenges and threats to economic security. Moreover, in order to implement the Strategy at the federal, regional, municipal and sectoral levels, the main tasks should be set primarily for business entities – enterprises and organizations that leave a negative environmental trace. In this regard, the implementation of environmental accounting, which is one of the factors of economic security of an economic entity, is of particular relevance, since the environmental damage caused by the organization ultimately negatively affects the financial situation and financial results of the entity due to an increase in the number and duration of occupational diseases, dismissal of employees, increased tariffs for environmental

payments, etc. reasons. This thesis is supported by M.N. Vlasenko, who notes that “environmental safety is an integral part of the organization's economic security system and significantly affects the results of economic activity” [1]. Environmental accounting issues have recently been widely discussed by the scientific community in relevant publications, in particular Vegers S.G., Birimkulova A.D., Serdyukova E.V., Chkhutashvili L.V., Yakovleva E.N., Zamuly I.V. et al [2-9]. Of particular scientific interest are the developments presented in dissertations defended on this problem, in particular, Cheprakova T.N., Ilyicheva E.V. and others [10-11]. When building an environmental accounting system, one should be guided by the foreign experience in organizing environmental accounting described in the works of Frank Keith Birkin, Zhifang Zhou, Lone O., Shen H., Miyazaki Zh et al [12-16]. Justify the implementation of environmental accounting as a factor in strengthening the economic security of the organization Gubaidullina I.N., Plotnikova G.A., Nikulin N.L. et al [17-21]. However, for all the breadth of developments available on this problem, the issues of implementing environmental accounting in enterprises require further consideration, unification and standardization, especially in the context of the introduction of new environmental standards, the transition to international standards financial statements, since information on the environmental footprint left by the organization is very important for foreign investors to make decisions, and for assessing environmental assets, costs and obligations of management personnel ma accessible and representative information that, to date, in accordance with national standards in the classical accounting is not formed in full.

The aim of this work is to consider the problems of environmental accounting, introduced by modern business entities, as a factor in ensuring their economic security. To achieve this goal, the following tasks were set and solved: the problems of defining environmental accounting were disclosed, the objects of environmental accounting proposed by regulatory documents were examined, as well as the methodology for their recognition and reporting, the classification of environmental costs used in foreign practice used for management purposes was substantiated the need to put into practice and improve environmental accounting as a factor in leveling threats to economic security.

II. METHODS

The study is based on universal general scientific methods of analysis, generalization, analogy, modeling, empirical methods of description and interpretation, as well as theoretical methods of formal and dialectical logic. The

methodological basis of the study was the work of domestic and foreign scientists in force at the time of writing of this work regulatory legal acts, as well as draft regulatory acts, preparing to enter into force.

III. RESULTS

The definition of environmental accounting currently is not normatively fixed; various authors interpret this concept in different ways, so first of all we will justify this definition based on a review of the points of view of various scientists presented in Table I.

TABLE I. REVIEW OF THE PROPOSED DEFINITIONS OF ENVIRONMENTAL ACCOUNTING

Author and reference	Author's suggested interpretation of environmental accounting
Ilyicheva E.V. "Environmental accounting in the context of the implementation of the policy of environmental balance": Doctoral dissertation abstract for Dr. of economical sciences. Orel State Technical University, 2010. P. 201.	A system for collecting, registering and summarizing information that will enable the identification, assessment, planning and forecasting, control and analysis of environmental costs and environmental obligations (economic assessment of the degradation of natural resources and environmental pollution)
"Environmental Law Of Russia: a dictionary of legal terms," M.: Gorodets. A.K. Golichenkov. 2008.	1) Function of environmental management; 2) A generic term for accounting activities in the field of environmental protection, the use of natural resources and ensuring the environmental safety of humans and other objects (society, state)
Gogoleva T.N., Bakhturina Yu.I. "Environmental accounting in the system of types of accounting," International Accounting. 2016. No. 12 (402). P. 52-66.	A set of methods of internal management accounting, financial accounting for the purposes of external reporting, as well as analysis of costs and results of actual performance
Saenko K.S. "Accounting for environmental costs," M.: Finance and Statistics, 2005. P. 376.	An ordered system for collecting, registering and summarizing information in physical and monetary terms about natural resources, environmental obligations, business operations of the organization's environmental activities through continuous, continuous documented accounting of nature management of an economic entity
Chkhutiashvili L.V. "Environmental accounting in Russian organizations in a market economy," Management accounting. 2012. No. 11. P. 69-78.	A process of reflecting in the accounting system the environmental costs and obligations of organizations, as well as the socio-environmental and economic results of the activities of business entities in order to manage the business and achieve the optimal environmental and economic niche in the market of goods and services

Based on the analysis of the above interpretations, we can conclude that the bulk of the definitions of environmental accounting derives from the definition of accounting given by the previously existing Law on Accounting No. 129-FZ, and now repealed in connection with the adoption of Law 402-FZ, indicating specific objects of accounting – environmental costs and obligations. Moreover, a number of definitions provide a wide field for using the information generated on accounting about environmental costs and obligations - occupation by an economic entity of a certain share of the

market for goods and services, ensuring environmental safety of people and society. In this work, based on a generalization of the above interpretations, under environmental accounting we will understand the accounting subsystem (both financial and managerial), which generates representative information about the environmental activities of the organization in order to ensure its effectiveness and appropriate decisions by internal and external users of this information.

Documents of the first (Federal laws, Government Decisions, Decrees of the President) and second level (Federal and industry accounting standards) of the regulatory accounting system do not provide guidance on the methodology of environmental accounting, but since the relevance of environmental accounting is increasing, and environmental facilities accounting are increasingly found in the practice of doing business, the Ministry of Finance of the Russian Federation prepared a letter dated 05/27/2011 No. 07-02-18 / 02 "On Accounting, Formations information and disclosure in the financial statements of the environmental activities of the organization". The main thesis of this letter states that information "on the activities of an economic entity in the field of environmental management, environmental protection and environmental safety" should be reflected and disclosed in the financial statements. The main requirement for the disclosure of this information in the financial statements is its materiality, that is, the ability to influence the management decisions of interested users of financial information, especially in relation to the provision of the said organization with resources. At the same time, this letter relates to the objects of environmental accounting:

- 1) capital investments related to environmental activities;
- 2) current costs associated with environmental activities;
- 3) estimated liabilities related to environmental activities;
- 4) sources of financing of costs of environmental measures.

Capital investments related to environmental activities include the costs of constructing facilities and installations for the protection and purification of air from pollution, generating energy from alternative sources, security and treatment facilities designed for wastewater treatment, separate equipment and entire waste treatment workshops industrial and domestic activities, security facilities to prevent natural negative factors (dams from flooding, fences in avalanche hazardous areas), costs, connection with land reclamation, cleaning the soil and water bodies from pollution, construction of protective facilities that reduce the negative impact on the environment, on radiation safety measures, decontamination of hazardous waste, as well as associated with these R&D activities.

Accounting and reporting these capital expenditures does not have specific principles; they are subject to the current Accounting Provisions 6/01 standards for fixed assets, Accounting Provisions 14/07 for intangible assets that are formed in connection with environmental protection, and Accounting Provisions 17 / 02 regarding R&D. The main approach to accounting for these assets involves the accumulation of actual costs for their creation and development on the account for accounting for investments in non-current assets and reflected in the balance sheet according to the corresponding article. At the same time, in a commented letter, the Ministry of Finance notes the

appropriateness of a separate accounting of capital investments related to environmental activities. Upon completion of the acquisition, construction and manufacture of facilities, as well as upon completion of development, meeting the criteria for the recognition of relevant assets, they are transferred to fixed assets, intangible assets or R&D results at the initial cost, which is the sum of the actual costs taken into account when making investments. At the same time, in accordance with the program for developing federal accounting standards for the coming years from 2021, it is planned to introduce new Federal accounting standards for fixed assets and intangible assets, however, their implementation is postponed annually due to the unpreparedness of the accounting community to revise existing accounting methods and assessments, which are actively discussed at seminars and conferences devoted to the problems of accounting development. Certain problems with regard to these assets exist in relation to their subsequent valuation, depreciation and changes in estimated values, such as depreciation methods and useful lives, since it is in relation to these environmental assets that it is very difficult to determine how to generate economic benefits in the future and accordingly evaluate the future the effect of their operation. Therefore, when discussing the issues of revaluation, impairment and changes in the estimated values of environmental assets, you should refer to existing developments on accounting issues, in particular those disclosed in the author's publication [22].

In the notes to the financial statements regarding environmental capital assets, information should be disclosed on their availability at the beginning and end of the year, on revaluation and impairment, on how to repay the cost and other information by analogy with fixed assets, intangible assets and R&D expenses, but only in in case this information will be recognized by the reporting organization as material.

The composition of the current costs of environmental activities of the company includes various items, for example, the costs of maintenance and operation, repair and maintenance of equipment and other environmental facilities; material costs for environmental needs, in particular the cost of raw materials, materials, fuel and electricity used in environmental activities; the cost of maintaining personnel engaged in environmental activities of the company; rental and lease payments for environmental equipment; environmental payments, which are fees for negative environmental impact, etc. The list of these articles depends on the technological features of the company, the types of environmental activities carried out, the environmental policy of the company and other factors. The methodology for the recognition of these costs is based on the general principles prescribed by Accounting Provisions 10/99 and involves their allocation as expenses for ordinary activities or as other expenses (for example, fines, penalties for violation of environmental laws). When organizing item-by-element accounting, the above costs relate to the corresponding cost elements (material costs, labor costs, social security contributions, depreciation and other expenses), and when preparing planned and reporting costing, an organization can separate out a separate costing article "Environmental measures", what may be provided for by accounting policies. Accordingly, these costs are reflected in the financial statements in the statement of financial performance under the relevant articles (cost, management, other expenses) and

are subject to disclosure in the notes to the financial statements if they are material.

During the construction of factories, structures and other fixed assets in the newly developed territories, in a number of cases, factors negatively affecting the environment arise. In accordance with Accounting Provisions 8/10, if there are obligations to restore the violated ecological system, the business entity must include in the price of the facility under construction the value of the estimated liability, which most accurately reflects the potential costs necessary for the implementation of environmental restoration measures. Methods for assessing these types of obligations are disclosed by various scientists, in particular Pronina A.M., Ivanov A.E. et al. [23-24] It should be noted that the value of this formed environmental obligation is subject to discounting, taking into account the discount rate applied by the organization, followed by revaluation as the deadline approaches. The amount of the revaluation of the specified obligation from the moment of acceptance of the erected object into fixed assets is not subject to inclusion in the initial cost, but will be included in the current expenses of the organization. Also, the revaluation of the estimated liability should be carried out upon receipt of additional information on the amount of potentially necessary to fulfill the obligation to level the negative environmental footprint. In the notes to the financial statements, information on the amount of the formed environmental obligation, on the method of its formation, assessment and change is subject to disclosure.

The Ministry of Finance of the Russian Federation names sources of financing the organization's expenses for environmental activities as retained earnings of the organization, which, in analytical accounting, may disclose information on the amounts spent on environmental protection measures, state aid accounted for in accordance with Accounting Provisions 13/2000, and rented funds. When reflecting information on the sources of financing environmental activities in analytical accounting, appropriate sub-accounts are to be allocated to assess the organization's interest in reducing the negative environmental footprint, but the regulatory document does not name specific principles for accounting for these sources.

Therefore, if the financial statements prepared in accordance with Russian standards contain detailed information about the objects of environmental accounting, an economic entity can apply for certain preferences when implementing large projects for the development of new territories, receiving subsidies for implementing significant events, etc.

However, following the recommendations of the organizations in the letter of the Ministry of Finance and disclosing detailed information about the objects of environmental accounting is an internal affair of the company and is determined by its accounting policy. The level of disclosure of information on environmental activities is largely determined by the professional judgment of the chief accountant in the preparation of notes to the financial statements. Therefore, in order to unify the disclosure of information on environmental activities, it may be recommended to include the corresponding section in the notes to the financial statements in accordance with the internationally recognized classification of environmental costs.

In international practice, the main goal of environmental accounting is to obtain information for making informed decisions that will allow the company to further receive financial benefits, in particular:

- provide control over the rational use of natural resources (water, land, fossil fuels, etc.);
- make a better assessment of investments, taking into account environmental measures;
- assess environmental risks;
- include environmental indicators in the company performance evaluation system;
- more accurately calculate the cost taking into account environmental measures;
- assess the costs of environmental activities.

The Chartered Institute of Management Accountants (CIMA) offers to disclose information on environmental activities with the division of environmental costs into two large groups: to prevent and eliminate harmful environmental impacts.

We consider the proposed classification of environmental costs, shown in Table II.

TABLE II. CLASSIFICATION OF ENVIRONMENTAL COSTS FOR THE MANAGEMENT OF BUSINESS EFFICIENCY [25]

Costs of prevention of harmful impacts on the environment:	Costs of eliminating the harmful impacts on the environment:
<p>I. Costs of preventive measures to prevent harmful impacts on the environment:</p> <ul style="list-style-type: none"> - Acquisition of emission control equipment; - Creation of protective structures; - Selection of suppliers that comply with environmental standards - Formation of the environmental policy of the organization, etc. 	<p>I. Internal costs, i.e. related to the consequences of the production of hazardous materials/products, but before they are released into the environment:</p> <ul style="list-style-type: none"> - Processing, disposal, processing of toxic materials; - Compensation payments to employees and customers; - Domestic penalties, etc.
<p>II. The costs of evaluating the potential harmful impacts on the environment and ensuring compliance of the company with environmental standards and environmental policy:</p> <ul style="list-style-type: none"> - Monitoring, testing and verification of products, emissions, etc.; - Development of performance indicators; - Costs of certification, obtaining permits; - Monitoring compliance by suppliers with environmental standards, etc. 	<p>II. External costs, i.e. costs associated with violation of the internal control system and the release of hazardous materials, waste or pollutants into the environment:</p> <ul style="list-style-type: none"> - land restoration costs; - costs of contaminated water treatment; - medical support for the victims; - loss of reputation; - external fines, etc.

The specified classification of environmental costs is reflected in the internal reports of companies and is used for analysis and monitoring to ensure compliance with environmental standards and environmental policies in accordance with global trends. Companies whose structure of environmental costs is dominated by the costs of preventing harmful effects on the environment are recognized as more socially responsible, oriented towards preserving the

environment in the future and have more competitive advantages.

IV. DISCUSSION

Based on the points of view considered, the organization of environmental accounting suggests the need for its implementation. The following factors can be considered as advantages of introducing environmental accounting and, accordingly, ensuring the environmental component of organization's economic security:

- An effective system of accounting for environmental costs allows you to identify and take advantage of the opportunity to reduce the overall costs of the organization and more accurately calculate the cost of production. Reducing of total costs can be achieved by reducing losses during waste disposal, and as a result of their processing the additional revenue can be obtained.
- Information on the environmental costs incurred will reduce the probability of errors in pricing for products, goods, work, services sold by the organization, which will help to avoid ineffective decisions regarding the company's assortment and vector of development. This, in turn, will increase consumer value by reducing the risks associated with investments and other solutions that have long-term consequences.
- Management of environmental costs for the production of products, works, services that meet the environmental requirements of buyers and customers will enhance the company's reputation and, consequently, revenue growth. It may also be possible to enter the premium market segment and sell manufactured products, works and services at premium prices.
- Lack of information on environmental costs can lead to losses associated with environmental damage and significant additional costs.

At the same time, when introducing environmental accounting, attention should also be paid to risk zones, which include:

- complexity and high costs of organizing environmental accounting;
- difficulty of identifying cost carriers and assigning them to specific products;
- lack of the possibility of reliable assessment and control of certain types of environmental costs, in particular the effect of harmful production factors on the health of employees;
- less competitive prices for products at the stage of implementation of environmental accounting.

Accordingly, the subjects are faced with the most important task of increasing environmental responsibility in the modern conditions, the solution of which should be given a significant attention by conducting further scientific research in order to prevent threats to environmental safety and, thereby, ensure a sustainable development trend.

V. CONCLUSION

According to the results of the study, the following conclusions can be drawn. In connection with the growth of the environmental responsibility of business entities, there is a need to implement and consolidate a generally accepted interpretation of the definition of environmental accounting, which, in our opinion, should be understood as a subsystem of accounting (financial and managerial) that generates representative information on the environmental activities of the organization in order to ensure its effectiveness and making appropriate decisions by internal and external users of this information.

The disclosed principles of recognition and assessment of environmental accounting facilities in accordance with Russian accounting standards will allow companies to generate information that is necessary for external reporting users for partial assessing the level of environmental responsibility of the company, while there is a need to develop a specific standard on environmental measures, since the information generated in financial accounting is not unified and the procedure for its submission depends on the accounting policies of the company. Accordingly, the considered classification of environmental costs should be fixed in order to compile unified reports on environmental activities and open to a wide range of reporting users.

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