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THE ESSENCE AND MECHANISM OF ENVIRONMENTAL SAFETY MANAGEMENT

Arthur Amber[1]

Abstract. *Relevance*. Over time and as public awareness grows, it is becoming increasingly clear that environmental protection is one of the most important issues facing people in the 21st century. Growing industrialisation and business development are increasing the impact of business on the environment, which can have serious consequences for human health, natural ecosystems and the economy. As a result, environmental security has become one of the most important issues for companies, governments and society as a whole. The *article reveals* the theoretical foundations of the essence and mechanisms of environmental safety management of an enterprise. The main objectives are: to clarify the essence of the concept of corporate environmental safety management; to propose a classification of objects, subjects and functions of corporate environmental safety management; to consider approaches to corporate environmental safety management; to illuminate theories of corporate environmental safety management that influence national security; to identify stages of corporate environmental safety management; and to develop a classification of tools and indicators for corporate environmental safety management. *Research methods*. The article used a historical approach, a systemic approach, methods of analysis and synthesis, deduction, the logical method and a method of generalisation as the basis of the study. *Conclusions*. This research confirms that managing environmental safety in an organisation is a complex process that requires the involvement of different management subjects and objects. Furthermore, the study showed that theories of environmental safety management in enterprises have implications for ensuring national security. The result of this research is the development of classifications for objects, subjects, functions, tools and indicators of environmental safety management in enterprises, which will improve and effectively perform tasks related to environmental safety management in enterprises.

Key words: safety, national security, enterprise safety, environmental security, environmental safety of enterprise, enterprise environmental safety management.

JEL Classification: M11, O13, Q20

1. Introduction

The management system is a complex and multifaceted approach to organising and managing the processes that take place within an organisation. It includes several elements, such as objects, subjects, functions, management approaches, tools and indicators, which work together to ensure the effectiveness of a company's activities. The distribution of responsibilities and powers between different levels of management, the development of effective management strategies and tactics, as well as the provision of a convenient and efficient mechanism for monitoring the implementation of tasks, are the results of its implementation within the company.

"Environmental safety management of enterprises" refers to a system of strategic planning, coordination and implementation of measures aimed at minimising the negative impact of the enterprise on the environment, ensuring compliance with environmental legislation and standards, reducing environmental risks and promoting the principles of sustainable development.

Effective environmental safety management is critical for companies to achieve long-term success and sustainability in today's world, where

[1] Private Higher Education Establishment "European University", Ukraine *(corresponding author)*
E-mail: arthur.amber.ua@gmail.com
ORCID: https://orcid.org/0009-0001-3924-0875

environmental issues and concerns are becoming increasingly important. It involves a range of activities, including identifying and assessing environmental risks and impacts, developing and implementing environmental policies and procedures, training employees on environmental issues, and monitoring and reporting on environmental performance.

Implementing an effective environmental safety management system can bring many benefits to an organisation, including improved environmental performance, reduced environmental risks and liabilities, enhanced reputation and stakeholder confidence, and increased efficiency and cost savings. It can also help companies comply with environmental regulations and standards, avoid fines and penalties, and prevent damage to the environment and public health.

Overall, environmental safety management is an essential part of corporate social responsibility and sustainability, and it is becoming increasingly important for companies to adopt a proactive approach to environmental management in order to remain competitivein the global marketplace.

2. The Essence of Enterprise Environmental Safety Management

Although all these authors identify the objects of environmental safety management in enterprises, each of them uses different approaches and methods, which can lead to confusion and incomprehension about environmental safety management in enterprises (Kryvenko, 2017; Kolosov, 2013; Lebediev, 1994).

In order to standardise and unify environmental safety management in enterprises, it is proposed to use a classification of objects based on three groups: natural objects, technical objects and social objects, which include the population and consumers. This will make it possible to simplify and unify the process of environmental safety management in companies, making it more effective and transparent.

Environmental safety management professionals play an important role in ensuring environmental safety and sustainable development. They carry out monitoring, identify potential risks and impacts on the environment, develop and implement effective measures to prevent pollution and promote environmental awareness and culture among employees and the public.

Based on the analysis of domestic literature, the following classification of management subjects can be proposed: V. Vlasov; Yu. Cherneha; I. Mikhieieva; M. Skrypnyk; I. Khoruzha.

This classification may be useful in certain contexts, but it is not universal and has its limitations. Its main problems may be related to the fact that it does not take into account responsibility for environmental protection and the distribution of sectors and industries.

In order to ensure an effective environmental safety management system at enterprises, the following classification of environmental safety management entities was proposed:

I. Based on the level of responsibility for environmental protection: global organisations and institutions; national and regional governments; local and municipal governments; business structures and associations; non-governmental organisations; community-based organisations; civil society organisations; individual citizens, including employees, customers and other stakeholders.

II. By sector and industry: Extraction and management of natural resources; Agriculture and food production; Energy production and consumption; Manufacturing and industrial processes; Transportation and logistics; Waste management and treatment; Water supply and management; Nature conservation and ecosystem management; Other industries and sectors.

III. By forms of participation in environmental safety management: direct participation (government officials, managers, experts and environmental activists) and indirect participation (consumers, investors, shareholders and other stakeholders).

This classification of issues for managing the environmental safety of companies is in line with the concept of sustainable development, which aims to balance economic, social and environmental factors for the benefit of present and future generations.

To ensure an effective environmental safety management system at enterprises, it is proposed to use the following classification of environmental safety management functions:

I. At the management level: strategic management functions (development of the company's environmental safety strategy; definition of environmental safety goals and objectives; development of environmental protection and

safety policies); tactical management functions (development and implementation of action plans for environmental safety issues; planning and coordination of environmental protection measures; monitoring compliance with legal requirements and environmental safety policies); operational management functions (organisation and implementation of environmental safety work in the company; control of environmental safety at all stages of the production process; development and implementation of plans and programmes to improve environmental safety).

II. In terms of types of systems: compliance with legal requirements (compliance with environmental protection and safety legislation; implementation of state programmes and plans for environmental protection; prevention of pollution; implementation of preventive measures to prevent pollution; development and implementation of measures to modernise pollution sources); environmental management system (implementation of an environmental management system (EMS)); certification of EMS according to international standards; continuous improvement of EMS and environmental safety management; sustainable development (implementation of the concept of sustainable development in the company; consideration of environmental aspects in production and company development decisions; creation of an effective energy saving system and use of renewable energy sources).

III. In terms of an organisation's strategic orientation, there are three types: reactive (reacting to environmental safety problems after they have occurred and making decisions based on temporary circumstances), proactive (actively preventing environmental safety problems and planning and developing future environmental safety strategies), and strategic (developing and implementing a vision for the organisation's environmental safety and creating an environmental safety strategy aimed at achieving long-term goals).

IV. In terms of general and specific groups, there are general environmental safety management functions that aim to ensure environmental safety and compliance with environmental regulations, and there are specific environmental safety management functions that aim to prevent environmental pollution.

The classification thus helps companies to manage environmental safety effectively by identifying specific functions that need to be performed at different management levels, in different systems and with different strategic orientations.

It is important to study theories and approaches to environmental safety management in companies in order to develop a scientifically based strategy for environmental management in the company. A review of the scientific literature shows that there are several approaches to environmental safety management, depending on the activities and requirements of the company. Each has its advantages and disadvantages, so the choice of approach depends on the specific circumstances and needs of the business.

The environmental management approach aims to ensure compliance with environmental protection legislation, minimise waste and reduce pollutant emissions. It is based on ISO 14001 standards and other environmental management systems that allow organisations to comply with environmental regulations and reduce the impact of their activities on the environment (Blanco-Portela, 2016; Bevilacqua, 2017).

The sustainable development approach allows companies to develop innovative and environmentally friendly solutions that have a positive impact on the company's image and business development. However, some companies may refuse to implement environmentally friendly technologies and innovations due to their high cost or insufficient profitability, thus upsetting the balance between environmental and economic interests. In this context, the 'circular economy' approach is a productive solution, as it involves the creation of a closed production cycle in which waste is transformed into resources, thereby reducing production costs and promoting the conservation of natural resources (Geissdoerfer, 2017; Su, 2019).

The circular economy approach is beneficial for businesses from an economic perspective, as waste recycling is a source of additional profit. Despite its drawbacks and the complexity of implementation, especially for companies with complex technological processes and small amounts of waste, organisations can still achieve their environmental goals by applying the "green marketing" approach.

The ecological marketing approach involves engaging consumers in supporting a company's environmental activities. It is based on creating

environmental awareness and stimulating demand for environmentally friendly products and services (Kotler, 2010; Charter, 1999). It creates conditions for increasing the attractiveness of the company to consumers, increasing the demand for environmentally friendly products and services, improving the company's image and promoting environmental protection. However, there is a risk of increasing the cost of products, leading to the exclusion of the poor, insufficient transparency and information support for environmental standards and criteria, and the possibility of misuse of marketing strategies to increase sales.

However, there is an alternative approach that can help companies reduce their negative environmental impacts without increasing the price of their products and services. This approach is called environmental innovation, which involves the application of cutting-edge technologies and innovations to achieve environmental safety in business operations (Jabbour, 2010; Zeng, 2015). It reduces the risks associated with price increases and helps companies attract the attention of consumers seeking to buy products with a lower negative impact on the environment.

Although important approaches to corporate environmental management have already been discussed, it is proposed to consider additional approaches that are necessary to ensure European integration and sustainable development. One such approach is Life Cycle Assessment (LCA), which involves assessing the environmental impacts of a product or service at each stage of its life cycle, from raw material extraction to disposal. Another is 'zero waste', which involves developing products and processes that produce zero waste. The third approach is natural capitalism, which recognises the limits of natural resources and helps companies use them more efficiently. This can be achieved through the use of renewable energy, closed-loop production systems and sustainable business models.

In general, while each of these approaches has its advantages, the most effective strategy for ensuring environmental safety is considered to be a combination of approaches, adapted to the specific needs of each company.

Ecological theories of environmental management are aimed at ensuring sustainable development and preservation of natural resources. In view of the process of European integration of Ukraine, the research of ecological management theories becomes an even more important task, as it will help to harmonise national standards with the requirements of the European Union in the field of ecology and sustainable development.

Thus, these theories are aimed at managing environmental safety and a balanced approach to environmental, economic and social performance:

1. The theory of ecological responsibility and the theory of ecological management contribute to sustainable development and balance economic growth with environmental protection.
2. Green management and eco-efficiency theories focus on creating a sustainable business model that balances environmental goals with overall business objectives.
3. Preventive management and environmental risk management theories emphasise the importance of reducing environmental risks and hazards.
4. Closed-loop management and green production theories are based on achieving sustainable production and minimising waste.
5. Environmental sustainability and modernisation theories promote sustainability through a holistic approach that takes into account economic, social and environmental factors.
6. The theories of standardised environmental management and ecological marketing promote environmental protection and sustainability. However, the standard environmental management theory focuses more on internal management practices, whereas the ecological marketing theory focuses on external communication with customers and stakeholders.

Green supply chain management and environmental management theories focus on achieving sustainable development and ensuring a balance between economic growth and environmental protection.

These theories are not mutually exclusive and by integrating different theories, companies can create a more comprehensive and effective approach to environmental management.

The theories of environmental risk management and the green supply chain are important concepts in addressing national security issues. The theory of environmental risk management involves identifying and reducing potential risks that can have a significant impact on a country's

economy, infrastructure and social stability. The theory of green supply chain management involves managing supply chain processes to reduce negative environmental impacts and ensure the sustainability and resilience of critical goods and services. By using sustainable production processes, reducing waste and optimising energy efficiency, countries can help ensure the availability of key resources even in the face of environmental challenges.

Other concepts, such as environmental management theory and sustainable environmental development theory, are also relevant to national security because they involve the sustainable management of natural resources and the environment. By ensuring the long-term sustainability and resilience of these resources, countries can contribute to their security and stability.

3. Mechanism of Enterprise Environmental Safety Management

In order to effectively manage environmental safety, companies must implement consistent steps that ensure environmental protection and business sustainability:

– the first stage of environmental safety management is to carry out an environmental assessment. This involves identifying the environmental risks associated with the company's activities, including pollution, waste generation and emissions. The environmental assessment should also include an evaluation of the company's environmental performance, identification of environmental aspects and identification of significant environmental impacts (Jones, 2002);

– the second stage of environmental safety management is environmental planning. It involves the development of plans to manage identified environmental risks, including setting goals and objectives, developing strategies to achieve them and identifying the resources needed to do so. Environmental planning also establishes environmental policy, develops an environmental action plan and identifies the roles and responsibilities of personnel involved in environmental management (Walker, 1993);

– the third stage of environmental safety management is the implementation of environmental measures. At this stage, the plans developed in the previous stage have been implemented. Implementation involves allocating resources, training personnel and developing procedures and processes for managing environmental risks. The integration of environmental management into business operations, the establishment of environmental performance indicators and the development of procedures and processes for managing environmental risks should also be included in the implementation of environmental measures (Dale, 2003);

– the fourth stage of environmental safety management is environmental monitoring and evaluation. Its purpose is to measure and evaluate the effectiveness of the environmental management system. It includes data collection, analysis and the development of corrective actions to address problems. It also involves regular review of environmental policy, objectives and targets, evaluation of the company's environmental performance and identification of areas for improvement (Walker, 2001).

In the context of sustainable development and the European integration process, additional stages are considered to ensure the effective integration of environmental safety management into the overall business strategy. These stages may include the integration of environmental safety management into the overall business strategy, ensuring that environmental aspects are considered in all aspects of the business. After successful integration, the next steps may include efficient use of resources and waste reduction, life cycle assessment of products or services, and stakeholder engagement.

By integrating additional steps into the EMS process, companies can improve their environmental performance and meet the requirements of sustainable development and European integration.

To create an effective management system, it is important to consider the tools for managing environmental safety. They enable companies to interact effectively with the environment and reduce the negative impact of their activities on the environment and people.

Given the relevance to national security, the following classification is proposed:

I. Regulatory compliance and reporting (regulatory compliance tools; environmental certification and attestation tools).

II. Risk assessment and management (risk assessment tools; emergency response tools).

III. Environmental monitoring and management (environmental monitoring tools; sustainability management tools; biodiversity and ecosystem services assessment tools; environmental management information systems).

III. Environmental technologies and practices (green technologies and innovations; product life cycle assessment; circular economy tools; carbon footprint calculators);

IV. Environmental education and stakeholder engagement (environmental education and training tools; stakeholder engagement tools; productivity indicators and reporting).

V. Supply chain management (green supply chain management tools).

It is necessary to comply with standards and regulations and to demonstrate compliance through relevant documentation and reporting. Risk assessment and management are key tools for identifying potential hazards and responding to them in a timely and effective manner.

Environmental monitoring and management are important tools for collecting and analysing data on the state and sustainability of the environment. The application of environmental technologies and practices is necessary to ensure environmental safety and to implement a circular economy. Effective public participation in decision-making and stakeholder interaction depends on the use of environmental education and stakeholder engagement. Finally, supply chain management tools are needed to control environmental aspects throughout the supply chain.

Thus, the classification of environmental safety management tools for enterprises based on criteria related to ensuring national security will help enterprises to develop and implement comprehensive environmental safety strategies, ensure sustainable production, comply with environmental norms and standards, reduce the risks of negative impacts on the environment and increase the sustainability of business activities.

Environmental safety is an integral part of national security. Taking into account compliance with national security requirements, the article proposes a classification of indicators of environmental safety management of enterprises to ensure sustainable development of the national economy and prevent possible environmental disasters:

I. Cost indicators (cost of complying with environmental responsibility requirements; cost of remediating environmental impacts; cost of developing sustainable products; cost of ensuring compliance with national safety requirements in conservation activities).

II. Investment indicators (investment in research and development of environmentally friendly technologies; investment in environmental education and training of employees; investment in renewable energy sources; investment in national security measures related to environmental protection practices).

III. Income indicators (increased income from sustainable production, cost reduction through energy efficiency measures, increased market share through environmentally friendly practices, increased income from meeting national safety requirements in nature conservation activities).

IV. Risk indicators (costs of paying environmental fines and penalties, costs of potential legal actions related to environmental incidents, costs of reputational damage due to environmental incidents, risks associated with non-compliance with national safety requirements in nature conservation activities).

V. Performance indicators (energy consumption per unit of production, water consumption per unit of production, waste generation per unit of production, compliance with national safety requirements in nature conservation activities).

VI. Social responsibility indicators (number of projects aimed at reducing environmental impact, number of employees participating in social responsibility programmes, amount of charitable contributions to environmental and nature conservation projects, number of partnerships with organisations working in the field of ecology and environmental protection).

Based on the classification provided, it can be concluded that the evaluation of a company's environmental performance should take into account various aspects such as cost, investment, revenue, risk, efficiency and social responsibility. The assessment of a company's performance should be carried out in conjunction with all these aspects, allowing for a comprehensive and objective evaluation of its environmental activities.

It is also important to note that a company's social responsibility to protect the environment is no less important than its economic viability;

therefore, companies must ensure that their activities meet the requirements of environmental and social responsibility.

In order to improve the classification of environmental performance indicators for companies in the context of the European integration process, the following factors could be included: compliance with European environmental legislation; investment in environmentally friendly technologies recognised by the European Union; adherence to the principles of the European circular economy and efficient use of resources; financing and support for EU sustainable development initiatives; compliance with EU environmental reporting requirements; performance in EU environmental initiatives; and cooperation with EU stakeholders.

The inclusion of European integration aspects in the classification of indicators allows a better assessment of the organisation's performance in the context of EU sustainable development requirements and demonstrates its commitment to comply with European environmental standards and initiatives.

The components of corporate environmental management enable companies not only to comply with legal requirements, but also to improve their reputation with consumers and other stakeholders.

To effectively manage environmental safety at enterprises, it is necessary to identify the components of such management:

– an environmental policy is an official statement by a company of its commitment to protecting the environment and minimising the impact of its activities on natural resources;

– risk assessment is the process of identifying, evaluating and prioritising the environmental risks associated with a company's activities, products or services;

– compliance is an element of ensuring that the company meets all legal requirements relating to environmental protection;

– the environmental management system is a structured system of procedures and processes that enables an organisation to effectively manage its environmental impacts;

– environmental performance monitoring is the process of tracking a company's progress against environmental objectives and indicators and measuring its environmental performance against relevant standards;

– environmental reporting is a systematic and accessible report that provides stakeholders with information about the organisation's environmental performance, including a report on environmental risks and impacts;

– stakeholder engagement is the process of interacting with different groups, such as employees, customers, suppliers, regulators and local communities, to understand their environmental concerns and perspectives and to build relationships based on trust and transparency;

– environmental education and awareness is the process of educating and training employees on environmental protection and best practices, and raising awareness of the company's environmental policies and initiatives;

– emergency response planning involves the development and implementation of action plans to respond to hazardous situations, such as spills or emissions of hazardous substances into the environment;

– continuous improvement involves the ongoing analysis and improvement of the environmental safety management system and its performance with the aim of reducing negative environmental impacts and achieving greater sustainability.

Therefore, the implementation of a comprehensive approach to environmental sustainability, including environmental policy and management systems, risk assessment, monitoring of environmental performance and compliance, reporting on environmental activities and stakeholder engagement, is critical to reducing environmental risks and hazards, achieving environmental objectives and ensuring a sustainable future.

4. Conclusions

The research results obtained confirm that the environmental safety management of companies is a complex process that requires the involvement of various management subjects and objects. To achieve effective management, it is necessary to develop strategies and use various tools and indicators.

The research also shows that theories of managing corporate environmental security have implications for ensuring national security. Therefore, understanding and applying these theories is important for ensuring

sustainable development and environmental protection.

The result of this research is the development of classifications of objects, subjects, functions, tools and indicators for managing environmental security in enterprises. This will contribute to the improvement and effective implementation of environmental security management tasks in enterprises.

In addition, the results of this research provide a framework for developing practical measures for environmental management at company level. These include implementing an environmental management system, conducting environmental impact assessments, establishing environmental monitoring and reporting systems, and implementing pollution reduction and prevention measures.

Overall, this research highlights the importance of environmental management in ensuring the sustainability and long-term success of businesses. It underlines the need for companies to prioritise environmental protection and integrate environmental concerns into their core business strategies. By doing so, companies can not only help protect the environment, but also improve their bottom line by reducing costs, enhancing their reputation and opening up new markets and opportunities.

In doing so, the study confirms the critical role that environmental management plays in ensuring the sustainability and long-term success of businesses. It provides a comprehensive framework for managing environmental security and identifies key strategies, tools and indicators that can be used to improve environmental performance at the corporate level. The findings of this research are expected to be valuable to policy makers, business leaders and environmental professionals who can use this information to develop and implement effective environmental management practices in their respective organisations.

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