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REVIEW

Fundamentals of environmental management in companies

Fundamentos de la gestión ambiental en empresas

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ABSTRACT

Environmental pollution is one of society's current concerns, which is why companies have a significant responsibility to control their operations in order to mitigate this phenomenon. Proper waste management is an indispensable practice of corporate social responsibility and is a tool that increases the competitiveness of companies in a globalized environment, improving their image and reputation, efficiency in production processes and lower costs. The present study was carried out with the objective of describing the fundamentals of environmental management in companies. Various perspectives on environmental management strategies and practices can be implemented in companies, including the reduction of greenhouse gas emissions, responsible waste management, efficient use of natural resources, among other aspects. It also highlights the importance of collaboration between the private sector, government authorities and society in general to promote the adoption of sustainable practices in the meat industry.

Keywords: Environmental Contamination; Waste Management; Industries; Organization and Administration.

RESUMEN

La contaminación ambiental constituye una de las preocupaciones actuales de la sociedad, de ahí que las empresas posean una notable responsabilidad en el control de sus operaciones para mitigar este

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fenómeno. Una adecuada gestión de residuos constituye una práctica indispensable de responsabilidad social empresarial y es una herramienta que aumenta la competitividad de las empresas en un entorno de globalización, mejorando su imagen y reputación, eficiencia en los procesos productivos y menores costos en ellos. El presente estudio se realizó con el objetivo de describir los fundamentos de la gestión ambiental en empresas. Diversas perspectivas sobre las estrategias y prácticas de gestión medioambiental pueden implementarse en empresas, incluyendo la reducción de emisiones de gases de efecto invernadero, el manejo responsable de residuos, el uso eficiente de recursos naturales, entre otros aspectos. Además, se destaca la importancia de la colaboración entre el sector privado, las autoridades gubernamentales y la sociedad en general para promover la adopción de prácticas sostenibles en la industria cárnica.

Palabras clave: Contaminación Ambiental; Administración de Residuos; Industrias; Organización y Administración.

INTRODUCTION

In the current context of growing environmental awareness and concern about the impact of human activities on the environment, companies are facing increasingly demanding challenges in terms of sustainability and environmental responsibility.1,2

The ISO 14001:2015 NC defines the environment as the surroundings in which an organization operates, including air, water, soil, natural resources, flora, fauna, humans, and their interrelationships.

The environment is seen as a set of basic conditions that surround human beings as a whole and oblige them to assume a coherent and responsible attitude, capable of resulting in concrete protection actions that strengthen the balance that should exist between the elements of nature that make possible the prolongation of life on Earth, where the subjective right to enjoy a healthy environment requires a type of culture immersed in this problem to understand the scope of its role.3

For Massolo4, environmental management is the set of actions and strategies through which anthropic activities that influence the environment are organized to achieve an adequate quality of life by preventing or mitigating environmental problems".

Márquez Delgado et al.5 refers that there is complementarity between development and environment where environmental education is recognized as an essential and effective instrument to achieve conciliation between both, thus contributing to the development of essential environmental management based on the concept of environment as a guiding category. As systematized in the bibliography consulted, this concept has evolved over time in correspondence with the development of social systems and their impact on the natural environment.

Jaula6 highlights the diverse and complex multidimensional relationships in a continuous state of change, with a dialectical relationship between society and nature.

The environment is considered "a complex and dynamic system of ecological, socioeconomic and cultural interrelationships, which evolves through the historical process of society, encompassing nature, society, historical-cultural heritage, what has been created by humanity, humanity itself, and as an element of great importance, social relations, and culture." 5

According to studies carried out on the environment, it is considered a complex and dynamic system of ecological, socioeconomic, and cultural interrelations, which evolves through the historical process of society, encompassing nature, society, the historical-cultural heritage, what has been created by humanity, humanity itself, and as an element of great importance, social relations, and culture.8,9

The environment is thus defined as the system that integrates the totality of abiotic, biotic, and socioeconomic elements through diverse and complex multidimensional relationships in a dynamic and evolving state, where there is a dialectical relationship between society and nature.10

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Environmental degradation is the set of damages the environment suffers regarding its natural surroundings and components. It is directly related to how a country develops its economic activities and the procedures it uses to exploit its natural resources. The accelerated and increasing deterioration of the environment is the most serious long-term danger facing the entire human species.11,12

Industrial processes generate a range of solid, pasty, liquid, or gaseous wastes with corrosive, reactive, explosive, and toxic characteristics that present potential risks to human health and the environment. Different sources can generate this waste, which can be hazardous or non-hazardous. The main waste generator is industry.

The problems defined by Sebastián13 today are becoming concrete and are no longer threats but realities: drought and floods, the increase in the number and force of natural disasters, coastal flooding, soil salinization, destruction of coastal areas, climate change, as well as other social problems that affect the quality of human life, such as extreme poverty, hunger, disease, illiteracy, and many other current situations, threaten to bring humanity to its demise.

According to Gligo et al.14, in Latin America and the Caribbean, the natural environmental disturbances are air and water pollution, depletion of resources, loss of biological diversity, and land degradation.

Understanding these theoretical foundations is essential to address today's environmental challenges and move towards a more sustainable future. By integrating different perspectives and approaches, we can develop comprehensive solutions that protect the environment for future generations. Therefore, this article aims to describe companies' environmental management fundamentals.

DEVELOPMENT

Environmental management can be developed in various community settings since the community itself is called upon to become the main social actor for the care and protection of the environment, and it is also where environmental education is carried out due to its participatory nature and orientation towards concrete action.

Environmental management comprises the set of policies and activities that companies develop to protect and conserve the elements that make up the environmental system through their integral management, leading to the prevention and mitigation of environmental problems.17

On the other hand, environmental management is currently a relevant strategy in the organizational process and environmental performance, whose main purpose is to improve each of the eco-efficient activities for the extreme mitigation of the negative impacts caused by pollution or environmental degradation, whose main causes are the conscious irresponsibility of companies and citizens in carrying out bad practices regarding the irrational use of natural resources.18

For Gil Rodriguez et al.19, environmental management should be composed in an integrating work so that good environmental skills are generalized to create seizure on the important explanations for the care of the environment; that is why Educational Institutions, more and more, significantly impact the environment.

In Cuba, the National Assembly of the People's Power approved Law 150/2022 of the Natural Resources and Environment System. This law states that environmental management is integral and trans-sectoral and requires the active participation of all natural and legal persons based on consensus.20

According to Massolo4, there are several tools and instruments for environmental management:

- Environmental Legislation
- Land Use Planning
- Environmental Impact Studies
- Environmental Audits
- Life Cycle Analysis
- Eco-labeling

- Ecodesign or environmental design
- Application of pollutant dispersion models
- Environmental diagnosis and information systems
- Environmental management systems
- Certifications

Climate change, biodiversity loss, and pollution are major environmental challenges today. Environmental management is a fundamental tool to address these challenges and build a more sustainable future for people and the planet.

Corporate Environmental Management

Economic activity in all sectors has contributed negatively, to a greater or lesser extent, to exacerbating the serious environmental problems affecting humanity. As an economic agent, the company has a very high share of responsibility. The contemporary environmental crisis affecting humanity, resulting mainly from irrational patterns of production and consumption, shows the need for companies to operate to ensure economic growth and the conservation of the biophysical substratum of their activity and the social development of the nearby locality.

Avila et al.21 highlight three fundamental dimensions: the economic dimension, related to the economic performance of the company; the environmental dimension, referring to the management of natural resources as a support for the productive base; and the management of waste generated during the productive process, and the social dimension that takes into account the benefits that the company can contribute to social development, based on corporate social responsibility.

For Zapata Gómez, 22 companies should bear in mind that the application of an environmental management program brings them a series of advantages and benefits in different aspects, such as:

- Allows the identification of significant environmental aspects.
- The improvement of environmental performance in the Organization's Management Balance Sheet.
- It provides the basis to achieve the continuous improvement process through the definition and review of environmental objectives.
- It improves the credibility of the environmental performance by the interested parties.
- It helps to select the most appropriate actions to improve environmental performance.
- It provides results on the distribution of the company's direct and indirect environmental impacts and comparisons of the company's environmental performance in different periods.

It also ratifies that environmental refers to an organization's relationship with all stakeholders, i.e., neighbors, fauna, flora, environmental authorities, and others, in a broader context with the global ecosystem. This has to do with the importance of the management system and its significance inside and outside the organization because of its interaction with stakeholders, i.e., with those who are positively or negatively affected by the company's management.

The evolution from a linear economy to a circular one demands changes along the product value chain.23 This implies introducing an innovative transformation model in the product and production process.24 For this reason, it is important to establish policies, techniques, and strategies at the public and private levels that lead to circularity in a company.25.

Corporate environmental management (CEM) is a set of strategies, actions, and tools companies implement to minimize their negative environmental impact and contribute to sustainable development. It is a comprehensive approach that seeks to integrate environmental protection into the company's daily operations, from decision-making to the execution of activities.

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Environmental Management Systems

ISO 14001 offers an EMS model and tools for its design and implementation; it is one of the alternatives promoted to solve the existing dilemma between economic development and environmental conservation. The objective of the standard is to provide organizations with a reference framework to protect the environment and respond to changing environmental conditions in balance with socioeconomic conditions. It is the reference document used internationally for the certification of organizations by Environmental Management Systems Certification Bodies. ISO 14001 was adopted by Cuba as a Cuban standard and is known as the NC-ISO 14001:2015 standard.

Society's expectations regarding sustainable development, transparency, responsibility, and accountability have evolved within the context of increasingly stringent legislation, growing pressures about environmental pollution, inefficient use of resources, inappropriate waste management, climate change, ecosystem degradation, and biodiversity loss.

This has led organizations to adopt a systematic approach to environmental management by implementing environmental management systems, which aim to contribute to the "environmental pillar" of sustainability.26

As Prieto27 explains, implementing an efficient EMS (environmental management system) also favors the control of environmental indicators, innovation, savings, better use of resources, greater employee motivation, and growth of the company's image.

The European standard, EMAS, was also developed, which defines EMSs as part of the integrated management system comprising the following aspects: organizational structure, responsibilities, practices, procedures, processes, and resources to achieve an environmental policy.28

Environmental Management Systems (EMS) have raised awareness among institutions of the importance of good corporate governance, optimizing their resources, and striving to conserve the environment while at the same time performing their social function.29

As can be seen, the EMS is an essential tool for organizations to promote balanced behavior regarding their economic objectives, environmental respect and protection regulations, and social, economic, and competitive pressures in a changing environment.28 Under this logic, the EMS is understood as one of the most widely accepted systems, widely studied and internationally accepted.30 In addition, some studies affirm that EMSs meet the expectations generated by organizations.[31,32]

Environmental Management in Meat Companies

Meat production and its subsequent industrialization constitute an important part of the world's food industry. As a whole, this economic activity includes the raising of animals and their subsequent industrial processing. This productive sector can have high environmental impacts if the destination of its by-products, effluents, wastes, etc., is not properly managed.

Vásquez et al.33 also point out that food production involves high consumption of electricity not only for its production processes but also for its conservation; they also mention the dependence generated in the meat industry on electricity, gas, and water to maintain the air conditioning of the product, this being a fundamental process for ensuring the organoleptic properties of the food, controlling the reproduction of microorganisms and reducing food spoilage, something that can have serious repercussions on the process and the health of both workers and consumers of the products.

The application of Cleaner Production (CP) in the slaughterhouse industry plays an important role in the challenges faced by this sector. Meat production and processing have major environmental impacts throughout its life cycle. However, slaughter constitutes the greatest environmental impact in the entire production chain. The meat industry generates waste in blood, bones, and viscera, which, in addition to the environmental problem, are a health concern due to their pathogenic capacity at the microbial level (Salmonella spp and Shigella spp). This industry has a high potential for wastewater generation; pesticides

and even considerable chlorine levels can be found in curing and brine operations. The residues are rich mainly in nitrogen and organic matter and can be used in by-product lines.34

According to García et al.35, some materials must be eliminated from the human and animal food chain to avoid the risk of disease transmission (such as Bovine Spongiform Encephalopathy) and be treated to ensure their correct destruction.

CONCLUSIONS

Adequate waste management constitutes an indispensable practice of corporate social responsibility. It is a tool that increases the competitiveness of companies in a globalized environment, improving their image and reputation, efficiency in production processes, and lowering their costs. Various perspectives on environmental management strategies and practices can be implemented in meat companies, including reducing greenhouse gas emissions, responsible waste management, and the efficient use of natural resources, among other aspects. In addition, the importance of collaboration between the private sector, government authorities, and society in general to promote sustainable practices in the meat industry is emphasized.

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