

Environmental Cost and Environmental Management in Non-Primary Industrial Companies in the District of Abancay, Apurimac Region, Peru – 2024

Mag. Arístides Peláez-Santi¹, Mag. René Velarde-Robles², Brillins Peláez-Callalli³, Mag. Gladys Peláez-Santi⁴, Mag. Rosa Sánchez-Bautista⁵, Mag. Juan Sánchez-Bautista⁶ and Mag. Jorge M. Chávez-Díaz⁷

Abstract

The general objective is to determine how the Environmental Cost influences the Environmental Management in the non-primary Industrial Companies of the District of Abancay, period 2024. The hypothetical-deductive method was used, with a quantitative approach, the scope is correlational-causal, and the design is non-experimental-cross-sectional. The population is made up of 882 taxpayers registered in the database of the Peruvian Tax Administration - SUNAT, in the economic activity of non-primary industries, in the District of Abancay, period 2024. The sample is 268, and the unit of analysis was 239 managers surveyed involved in the area of production. A survey was used, using a Likert scale questionnaire. It was concluded that the research has obtained significant results that demonstrated that the Environmental Cost influences the Environmental Management in the non-primary Industrial Companies of the District of Abancay, period 2024, in the directions of prevention, control and image costs. The recommendations point towards timely implementations and follow-ups.

Keywords: *Environmental cost, Environmental management, Prevention cost, Control cost, Image cost, Environmental accounting.*

INTRODUCTION

Nowadays, industrial companies are of great importance in the development of a country's economy, but they are also the main cause of environmental damage generated during the production process, since the market of goods does not reflect the true environmental value of the resources that have been used for their production, these are considered as market externalities and result in the external costs incurred in the production process not being reflected in the final prices, Therefore, an externality exists when the production or consumption of a good directly affects consumers or companies that do not participate in its purchase or sale. It can be analyzed that the natural resources used in the production processes are of economic conception and monetary valuation, so it is of vital importance to implement environmental costs and consider them in the internal cost structure of the companies, through a good environmental management where the policies of measurement and recognition of environmental impacts are considered, and in this way a balance will be achieved between the economic development of the company and the protection of the environment.

Environmental costs are the costs of raw materials, direct labor and indirect costs during the production process to mitigate environmental impacts resulting from the production of a product or the provision of a service (Cañizares, Roig 2014).

It was reported that each year the tobacco industry costs the world more than 8 million human lives, 600 million trees, 200,000 hectares of land and 22,000 million tons of water, and generates 84 million tons of CO₂, the costs of cleaning up tobacco waste are not borne by the industry but by taxpayers, it costs China each year US\$ 2600 million, India US\$ 766 million, Countries such as France, Spain, and cities like San Francisco and

¹ Universidad Nacional Federico Villarreal, E-mail: pelaez060174@gmail.com

² Hospital de Abancay ESSALUD, E-mail: Rene.velarde@essalud.gob.pe

³ Universidad Nacional Federico Villarreal

⁴ Universidad Nacional Federico Villarreal

⁵ Universidad Nacional Federico Villarreal

⁶ Universidad Nacional Federico Villarreal

⁷ Universidad Peruana de Ciencias Aplicadas. E-mail: pccajoch@upc.edu.pe

California in the United States have implemented the "extended producer responsibility legislation", making the industry responsible for cleaning up what it pollutes (Organización Mundial de la Salud, OMS, 2022).

It is also reported that tobacco industries damage the health of society and deteriorate the environment, generating scarcity of resources and the weakness of ecosystems, activities that generate environmental costs that aggravate in greater proportion to middle- and low-income countries, arable land and water resources are used to grow tobacco instead of food (ONU, 2022).

In the case of Peru, of the 150,000 industrial companies that operate, between 15,000 and 20,000 should have an approved environmental management instrument, but more than 77% do not, indicating that only 3,500 industrial companies have an approved environmental management instrument, which could be a PAMA or a declaration of environmental adequacy, an environmental management measure that will definitely have an economic return for the company or will generate savings. (GESTIÓN, 2019).

Banco Central de Reserva del Perú (2022) in its report "APURIMAC: Síntesis de Actividad Económica enero 2022". It indicates that agricultural activity grew 7.7 percent compared to the same month of 2021, as a result of a higher production of the agricultural subsector (19.4 percent), partially mitigated by the lower production of the livestock subsector (-0.9 percent). The expansion of the agricultural subsector was explained by higher production for the external market and agro-industry (64.5 percent), as a result of higher potato production (64.6 percent); likewise, production for the domestic market increased (7.5 percent), due to higher production of avocado (72.2 percent) and alfalfa (53.3 percent).

From the analysis of the international, national and regional background, it is determined that there are problems of environmental pollution emitted by industrial companies during the production process, which must be identified for measurement and valuation translated into environmental costs, for compliance it is important to implement environmental management policies, and mitigate environmental pollution produced by industrial companies, otherwise its effect could harm the objectives set by the company.

Vidal & Asuaga (2021) presents a review of the Hispanic literature on the evolution of the link between organizations and environmental care. It emphasizes Environmental Management Systems and Management Accounting as a framework that makes it possible both to evaluate the organization's environmental compliance and to develop indicators for external reporting.

Sinforoso-Martínez et al. (2019) argues that the methodological procedure allows the accounting recognition of environmental externalities in the cost of production and that the results reveal that the value of environmental externalities allows decisions to be made to plan activities in favor of the environment. Finally, it concludes that companies should value the environmental impacts of their production, to include it as part of their cost and obtain resources to manage activities in favor of natural resources.

Amay-Vicuña et al. (2020) designs environmental accounting elements to provide Holcim Ecuador S.A. with guidelines for recognizing and valuing income, assets, liabilities, and environmental costs generated by production processes.

Marrucci & Papá T (2022) denotes a slight deterioration in the environmental performance of some organizations and an improvement in economic performance. There is no correlation between environmental and economic performance. 60% of the organizations do not fully comply with the standard requirements linked to environmental declarations. The results question the positive effects of environmental management systems on environmental performance.

Kharuddin et al. (2022) reveals that pressures, religiosity and subjective norms positively and significantly influenced managers' intentions to engage in pro-environmental practices. But these intentions did not lead them to execute financially responsible behavior in preserving the environment. The findings exposed the need for managers to have governmental and corporate support to make environmental preservation mandatory and to be financially responsible for preserving the environment. These behaviors of accounting personnel have also been noted in other types of entities (Chávez-Díaz et al., 2024).

Several studies around the world stress the importance of implementing environmental costs in their processes, as they recognize the negative impact of poor environmental management in different industries (Arendt et al., 2022; Mohd Fuzi et al., 2022; Valarezo-Vera & Solís-Muñoz, 2023).

Cheng Z & Li (2022) reveals that rising environmental costs can drive green industrial growth, through structural and technological effects.

Ramzan et al. (2022) argues that financial development, ICT and fossil fuels have significant predictive power of the ecological footprint, demonstrating asymmetric predictability of ecological distribution. The government should implement rigid regulations on waste, industrial smoke, scraping, transport and burning of plastics and chemicals in industry and pollutant emissions.

Andersen & Bams (2022) indicates that consumer-oriented companies that are visible to the public observe a positive relationship between environmental commitment and operational performance and use environmental management as a tactic to attract consumers, feeling pressure to over-invest. Highly polluting, capital-intensive and less visible industries observe a negative relationship between operational performance and environmental impact management. Their environmental management deviates primarily from risk management and compliance motivations. If the cost of an environmental activity is high, companies are less likely to engage on their own, and regulatory intervention is more likely to be warranted.

Daddi et al. (2022) argues that managerial satisfaction positively influences competitiveness and environmental reputation, even without considering the mediating role of internalization.

Torres Garay (2021) indicates that the incorporation of the Environmental and Occupational Health and Safety Management System obtained positive results, obtaining economic benefits, internal and external recognition for the improvement shown in the indicators and the results of audits and approvals.

Several studies carried out in Peru show important findings on environmental deterioration, such as those by Argota Pérez & Iannacone (2020) which states that the wastewater showed undesirable concentrations, being its use value limited and the environmental mineral treatment system passive, therefore, it was not able to comply with the recommendations. Or also those of Cuzcano Quispe (2021) which determines a large environmental impact of construction and demolition waste on the sustainability of buildings in a district of Lima 2020. In the same way Bustamante Pérez (2022) reveals that there is a significant relationship between environmental management and solvent waste management in an adhesives company, Lima 2022, and if the environmental management mechanisms are changed, the company's solvent waste management will also change. In turn, (Villon Mariluz, 2023) shows that there is a direct relationship between environmental management and contamination by mining tailings in the Huascarán-Ancash basin, 2022.

Laguna et al. (2019) points out that significant environmental impacts of the investment in the foundation stage were found, two strategies for the reduction of soil resources were proposed. The total environmental costs for each strategy were determined, and finally, the sustainability of natural resources was evaluated. Rodriguez R et al. (2020) notes that, despite social immobilization restrictions, calculated noise levels have remained above WHO recommendations and consistently above Peruvian environmental noise quality standards. It highlights the need to properly assess environmental noise and noise sources in the city of Lima, as well as the number of people exposed, in order to properly implement effective and cost-effective noise mitigation action plans. This issue even has an impact on the education of young university students in times of COVID (Morán et al., 2022).

Álvarez Vicaño (2023) concludes on the need to implement an occupational health and safety management system under ISO 45001:2018 and the optimization of its environmental management system under ISO 14001:2015 through the implementation of environmental sustainability objectives.

Industrial companies are currently emitting environmental pollution due to their productive activities, they act under a conscience dominated by exclusively material issues, based on economy and power, consumption and unlimited exploitation of natural resources, social costs are not taken into account, so there is a need to direct efforts towards the search for a balance between economic efficiency, environmental protection and social responsibility, Many entities provide information on environmental results as part of a responsible management

of their environment, through qualitative reports that do not objectively measure their environmental performance in terms of real costs and benefits, due to guidelines that quantitatively reflect the environmental management of a company.

This research will be carried out in non-primary industrial companies in the district of Abancay, province of Abancay, Apurimac region, which are not unaware of the problems of incorporating environmental costs and environmental management policies in their production process.

LITERATURE REVIEW

Murillo & Cano (2021) argues that there is currently a growing environmental deterioration, making it necessary to take actions to ensure that resources last over time, the implementation of environmental management policies as part of its operational development, is of importance in companies, in conclusion, this article seeks to give a brief description of the role of environmental costs against the sustainable development of enterprises. Although the implementation of environmental policies will bring higher environmental costs for the industries and related companies, it is important for the companies to be aware of the environmental costs (Yan et al., 2020).

The highest absolute environmental costs can be attributed to greenhouse gases, particulate emissions and acidification caused specifically by coal and steel. The countries with the highest absolute costs are China and India, because China extracts and processes large quantities of materials, while India bears a large share of the climate damage caused by global materials production. The countries with the most beneficial ratio of environmental costs to GDP are countries that process materials, such as Japan and Germany (steelmaking), and countries that mainly extract oil, such as Algeria, Azerbaijan and Nigeria, because they largely externalize upstream environmental costs. and downstream processes (Arendt et al., 2022).

Teplická & Hurná (2023) The environmental costs of the divisions are between EUR 1.9 million and EUR 3.1 million, according to the company. Total environmental costs by individual country represent the lowest value in Slovakia and Italy, they correspond to the category of air costs for all divisions and the second category is other environmental costs, Brazil and Mexico do not record this category of accounting costs. The key category for reducing environmental costs is water costs for China and Slovakia, Mexico, Brazil and Italy have residual costs.

Valarezo-Vera & Solís-Muñoz (2023) argues that, if the company executes environmental remediation activities, the activity that requires the most funding is the maintenance of river flows. Therefore, the cost study is a tool that contributes to the continuity of its operations and, to the decision-making process.

Díaz Gómez (2019) indicates that the implementation of an environmental management system produces economic benefits. Indeed, environmental management has been observed and produced results of common interest and of great value, with the aim of developing and outlining the necessary guidelines to develop and implement a management system based on indicators to measure performance. (Carbal, et al., 2020).

Environmental management has been growing in importance in the last two decades, due to the boom of new commercial schemes that have grown as a result of the social, economic and cultural globalization brought about by the opening of markets through free trade agreements. Competitiveness has evolved and companies are increasingly aware of their social role and of the contributions they must make in order to achieve higher levels of economic integration, development and growth. (Almánzar-Fortuna, 2019).

From the literature review, the working hypothesis is obtained.

H0: Environmental Cost influences Environmental Management in non-primary Industrial Companies in the District of Abancay, period 2024.

Doroni (2021) proposes: a) to make explicit the relationship between the environment and human rights; b) to frame the problem of environmental and social costs generated by a practice of commercialization of natural resources; c) to verify the relationship between such costs and contexts of socio-environmental vulnerability;

d) to study measures of compensation and remediation of the ecological-social debt generated and measures for the prevention of environmental rights; e) to study measures of compensation and remediation of the ecological-social debt generated and measures for the prevention of environmental rights.

Canahuire-Montúfar & Loaiza-Rojas (2022) determines the level of relationship between environmental management and social responsibility. It concludes that environmental management does not have a significant level of relationship with social responsibility in the brick and tile sector. Similarly, for environmental management, it was identified that the planning factor is the most important factor, for social responsibility, and the voluntary responsibilities.

Studies show a weak planning of environmental management, indifference to the operations of their company and inefficient methods to evaluate the success of their operations. Therefore, an environmental management model should be proposed to improve the conservation of natural resources, thus contributing to the revaluation of resources and promoting the protection of biodiversity in order to create environmental awareness in society. (Pariona-Luque et al., 2023).

Loa et al. (2023) assures that with a good environmental plan that involves adequate environmental education in each department of Peru, it is possible to improve the prevention of environmental impacts. An environmental plan could even benefit the management of municipal taxes (Chávez-Díaz et al., 2023).

There is evidence of good results in prevention work, such as those carried out in the Puno region. A total of 10,600 miners have been registered, of which 6,000 have made declarations of commitment, 2,445 are in the cleanup stage, and 20 companies have been formalized (Chavez Flores et al., (2023).

The working hypothesis is obtained from the literature review.

H1: The cost of prevention in non-primary industrial enterprises influences environmental management in the district of Abancay, period 2024.

There are proposals for improvement such as those of Edelman & Estévez (2019) who proposes a 5-year plan to help solve the problems of the urban environment in the metropolitan area of Lima. In this direction Agüero Alva et al. (2020) points out that the municipality has deficiencies in environmental management for not having solved environmental problems, such as the presence of informal mining, limited access of families to basic water and sewage services, inadequate management of solid and liquid waste, tree felling, deficiencies in public cleaning and maintenance of streets, parks and gardens.

Vidal & Asuaga (2021) proposes to seek the harmonization of economic profitability, environmental care and social welfare, encouraging an increase in the demands of different interest groups, which is reflected in a growth of environmental management in companies.

Castro & Suysuy (2020) indicates that environmental management tools should be designed based on the ISO 14001 and ISO 9001 standards, and that the Leopold matrix, cause and effect assessment of environmental impacts, environmental cost control and the implementation of a system for the registration of environmental impacts can be used as tools.

The working hypothesis is obtained from the literature review.

H2: The cost of control in non-primary industrial enterprises influences environmental management in the district of Abancay, period 2024.

(Hernández Pajares & Yagui Nishii, 2021) shows that there is institutional influence by type of business movement, CE circular economy practices did not present a high degree of disclosure, and input consumption mitigation and waste management practices exhibit greater disclosure. It indicates that there is a relationship in the business group at the level of environmental information, but neither the size nor the sector of the companies was related to the CE information.

Al-Waeli et al. (2022) The study also showed that environmental costs (external social costs, contingent costs) positively affect financial performance, while social costs, contingent costs, hidden costs and image and

relationship costs positively influence environmental disclosure. There is no mediation of environmental disclosure for the impact of conventional costs on financial performance. It was also found that environmental disclosure mediated the impact of *environmental costs* (external social costs, conventional costs, image and relationship costs) on financial performance. There are advantages for companies that produce less moderate environmental disclosure and allow them to gain the confidence of investors. The implications of this study provide insights into the implementation of environmental *cost measurement and disclosures* in Iraq.

Likewise, clean technologies as a business competitive advantage, since any company that incorporates environmental strategies (including the adoption of clean technologies) will carry out a better analysis of its environmental costs, building a corporate image to obtain a greater advantage over its competitors. The author warns about the consequences of the adoption of clean technologies in the improvement of the quality of life of people and other living beings on the planet (Salas Canales, 2020).

The working hypothesis is obtained from the literature review.

H3: The cost of image in non-primary industrial enterprises influences environmental management in the district of Abancay, period 2024.

METHODOLOGY

The research has a quantitative, correlational-causal approach, with a hypothetical-deductive method. It is non-experimental and cross-sectional.

The population is made up of 882 taxpayers registered in the database of the Peruvian Tax Administration - SUNAT, in the economic activity of non-primary industry, in the District of Abancay, period 2024. A sample of 239 respondents was obtained and considered as the unit of analysis.

The SPSS statistical tool was used to obtain the reliability and correlation results.

RESULTS

Based on the responses of 239 people obtained from 118 people who work in the areas of the company, we proceeded to describe each of the variables and their dimensions, using descriptive statistics, with the help of frequency tables.

Table 1. Demographic aspects

Value	n	Perc. %	Cumulative percentage
Area of work in the company			
Management	118	49,4	49,4
Production	121	50,6	100,0
Total	239	100,0	
Length of service in the company			
1 year	16	6,7	6,7
2 years	129	54,0	60,7
3 years	77	32,2	92,9
4 years	15	6,3	99,2
5 years	2	,8	100,0
Total	239	100,0	
Length of service in the position			
1 year	75	31,4	31,4
2 years	129	54,0	85,4
3 years	33	13,8	99,2
4 years	2	,8	100,0
Total	239	100,0	

The results of the correlations performed show values lower than 0.05 and therefore the hypotheses proposed in the study for each one are approved.

Table 2. Pearson correlation

Hypothesis testing	Value	gl	p-value	Results
H0	115,176 ^a	4	,001	Approved
H1	104,889 ^a	4	,001	Approved

H2	89,161 ^a	4	,001	Approved
H3	76,484 ^a	4	,001	Approved

DISCUSSION

Based on the majority of the answers given by the companies, it can be concluded that the environmental cost is well managed because the indicators are administered correctly, but in order to achieve the company's objectives and goals, the administration of the indicators must be improved.

In the same direction, the research of Díaz Gómez (2019) y Valarezo-Vera & Solís-Muñoz (2023) who conclude that the environmental cost study is a tool that contributes to the continuity of their operations and to decision-making.

The main result is the economic benefit of implementing an environmental management system. It is concluded that there is a convenient cost-benefit relationship, since it was determined that the benefits reported by the system are higher than the costs incurred in the implementation and maintenance of this system. Carbal et al. (2020) shows a low integral environmental management system, which allows communicating, diagnosing, executing, planning, measuring, evaluating and adjusting the environmental performance of industrial SMEs. These results are contrasted with the reality of non-primary industrial companies in the District of Abancay, where they have a system of environmental costs that contribute to Environmental management, consequently the opinions of Díaz-Gómez, (2019) y Valarezo-Vera & Solís-Muñoz (2023) is similar to the results obtained in the investigation, Carbal et al. (2020) Differs with research results.

Based on the majority of company opinions, the cost of prevention is well managed, but in order to achieve the company's objectives and goals, the management of the indicators must be improved. In contrast to Doroni (2021) who explains the relationship between the environment and human rights, the delimitation of the problem of environmental and social costs originated by the marketing of natural resources, the relationship of environmental costs and the environment of socio-environmental vulnerability was found, looking for compensation measures, reparation of the social-ecological debt that are generated by economic growth and its measures of prevention of environmental rights. These results are contrasted with the reality of non-primary industrial companies in the District of Abancay, where they have a system of prevention costs that contribute to environmental management. In this sense, there are similar results with other authors such as Doroni (2021).

In contrast to Kharuddin et al. (2022) whose findings exposed the need for managers to have government and business support to make environmental preservation mandatory and be financially responsible for preserving it. Cheng & Li (2022) say that, if all provinces can improve and optimize their industrial structures, improve their levels of technological innovation in the face of increasingly stringent environmental regulations, they will be able to achieve green industrial development and better change the economic growth model. These results are contrasted with the reality of non-primary industrial companies in the District of Abancay, where they have a system of control costs that contribute to environmental management, Consequently, the opinion of Cheng & Li (2022) is similar to the results obtained in the research, (Kharuddin et al., 2022) He differs with the results of the research, agreeing with Cheng.

In contrast to Al-Waeli et al. (2022), the results reflect the average percentage of environmental disclosure in the selected industrial companies was 20.0 % and the mean found was 20.2 %, they also showed that environmental costs (external social costs, contingent costs) positively affect financial performance, while social costs, contingent costs, hidden costs and image and relationship costs positively influence environmental disclosure. These results are contrasted with the reality of non-primary industrial companies in the District of Abancay, where they have a system of image costs that contribute to environmental management, Consequently, the opinion of Al-Waeli et al. (2022) is similar to the results obtained in this research.

CONCLUSIONS

In accordance with the research objectives, the hypothesis testing and the results achieved, the following conclusions were reached:

It was determined that environmental cost influences environmental management, given that optimal results were obtained and a significance level of less than 0.05 was reached; considered as a barrier. It is concluded that environmental costs is an important factor to consider in 41.4 % of the people surveyed, consider that the company agrees with the management of environmental cost with a frequency of 99, also 39.7 % emphasize that they totally agree with the management of environmental cost with a frequency of 95. Well, this is because the good management of environmental cost helps to determine a good environmental management in non-primary industrial companies, in the district of Abancay, Apurimac Region, Peru.

It was determined that prevention costs influence environmental management, given that optimal results were obtained and a significance level of less than 0.05 was reached; It is concluded that prevention costs is an important factor to consider that 46 % of the people surveyed, consider that the company totally agrees with the management of prevention cost with a frequency of 110, also 37.7 % emphasize that they agree with the management of prevention cost with a frequency of 90, to consider in 61 % that they totally agree and in 39 % agree. Well, this is due to the good management of the prevention cost that helps to determine a good environmental management in non-primary industrial enterprises in the district of Abancay, Apurimac Region, Peru.

It was determined that control costs influence environmental management since it obtained optimal results and a significance level of less than 0.05 was reached; It is concluded that control costs is an important factor to consider that 40.2 % of the people surveyed, consider that the company totally agrees with the management of the control cost with a frequency of 96, also 40. This is due to the fact that good management of control costs helps determine good environmental management in non-primary industrial companies in the district of Abancay, Apurimac Region, Peru.

It was determined that the cost of image influences environmental management given that optimal results were obtained and a significance level of less than 0.05 was reached; It is concluded that the cost of image is an important factor to consider that 37.7 % of the people surveyed, consider that the company totally agrees with the management of the cost of image with a frequency of 90, also 46. This is due to the fact that good image cost management helps determine good environmental management in non-primary industrial companies in the district of Abancay, Apurimac Region, Peru.

RECOMMENDATIONS

It is recommended to implement environmental cost systems that are specific to the company, through environmental management, which will allow a good structuring of the cost of production, to provide information quickly, and thus be able to offer a good quality product to capture a large part of the market and stay in it, so that the company obtains a good profitability. Also, implement strategies such as training of workers and improve the management of prevention costs, and mitigate the risks that the company has.

It is also necessary to deploy greater control of environmental costs in the production process, hiring highly trained professionals to ensure compliance with the production system established by the company in order to achieve its objectives and goals.

REFERENCES

- Agüero Alva, H. L., Graciela, I., Peña, M., Lidia, S., & Vela, R. (2020). Una investigación sobre la Gestión Ambiental en ciudad de la Sierra Peruana. *Revista Varela*, 20(57), 381–396. <http://revistavarela.uclv.edu.cu/revistavarela@uclv.cu>
- Almánzar Fortuna, R. J. (2019). Estudio de caso para el desarrollo e implementación de un sistema de la gestión ambiental. *Revista GEON (Gestión, Organizaciones y Negocios)*, 6(2), 52–62. <https://doi.org/10.22579/23463910.174>
- Álvarez Vicaño, J. A. (2023). *Diseño de un sistema de gestión de seguridad y salud en el trabajo basado en la norma ISO 45001:2018 y optimización de los procesos del sistema de gestión ambiental basado en la norma ISO 14001:2015 para prevenir los riesgos laborales y mejorar la sostenibilidad ambiental de la empresa HIDROQUIMICA INDUSTRIAL S.A.* [Título profesional, Universidad ESAN]. <https://repositorioslatinoamericanos.uchile.cl/handle/2250/6506957>

- Al-Waeli, A., Ismail, Z., Hanoon, R., & Khalid, A. (2022). The impact of environmental costs dimensions on the financial performance of Iraqi industrial companies with the role of environmental disclosure as a mediator. *Eastern-European Journal of Enterprise Technologies*, 5(13 (119)), 43–51. <https://doi.org/10.15587/1729-4061.2022.262991>
- Amay-Vicuña, R. K., Narváez-Zurita, C. I., & Erazo-Álvarez, J. C. (2020). La contabilidad ambiental y su contribución en la responsabilidad social empresarial. *Dominio de Las Ciencias*, 6(1), 68–98. <https://doi.org/10.23857/dc.v6i1.1137>
- Andersen, I., & Bams, D. (2022). Environmental management: An industry classification. *Journal of Cleaner Production*, 344(130853), 130853. <https://doi.org/10.1016/j.jclepro.2022.130853>
- Arendt, R., Bach, V., & Finkbeiner, M. (2022). The global environmental costs of mining and processing abiotic raw materials and their geographic distribution. *Journal of Cleaner Production*, 361, 132232. <https://doi.org/10.1016/j.jclepro.2022.132232>
- Argota Pérez, G., & Iannacone, J. A. (2020). Sistema de tratamiento mineral pasivo ante el costo ambiental sostenible estimado en la laguna de oxidación Angostura Limón, Ica, Perú. *Biotempo*, 17(1), 79–90. <https://doi.org/10.31381/biotempo.v17i1.2998>
- Banco Central de Reserva del Perú. (2022). *Apurímac: Síntesis de Actividad Económica Enero 2022*. <https://www.bcrp.gob.pe/docs/Sucursales/Cusco/2022/sintesis-apurimac-01-2022.pdf>
- Bustamante Perez, F. A. (2022). *Gestión ambiental y su relación con el manejo de residuos de solventes en una empresa de adhesivos* [Título profesional, Universidad Cesar Vallejo]. <https://repositorio.ucv.edu.pe/handle/20.500.12692/111532>
- Canahuire Montúfar, V., & Loaliza Rojas, E. (2022). Gestión Ambiental y Responsabilidad Social: un Estudio Exploratorio en la Industria de Tejas y ladrillos de Cusco, Perú. *Producción + Limpia*, 17(1), 20–34. <https://doi.org/10.22507/pml.v17n1a2>
- Cañizares Roig, M. (2014). La contabilidad ambiental: una visión desde la academia cubana Environmental Accounting: a View from the Cuban Academy. *Cofin Habana*, 8, 1–10. <https://revistas.uh.cu/cofinhab/article/view/1318>
- Carbal, A. E., García, M. D., & Álvarez, Y. (2020). Sistema de gestión ambiental para pymes industriales. *Revista ESPACIOS*, 41(24). <https://revistaespacios.com/a20v41n24/a20v41n24p11.pdf>
- Castro Torres, A. S., & Suysuy Chambergó, E. J. (2020). Environmental management tools to reduce the impact of environmental costs in a construction company. *Revista Universidad y Sociedad*, 12(6), 82–88. <https://rus.ucf.edu.cu/index.php/rus/article/view/1817/1811>
- Chavez Flores, R., Hinojosa Mamani, J., Mamani Gamarra, J. E., Zela Paricahua, M., Catacora Lucana, E., & Flores Flores, V. C. (2023). Gestión ambiental correctivo y formalización minera en la región altoandina Puno – Perú. *Ciencia Latina Revista Científica Multidisciplinar*, 7(4), 2474–2492. https://doi.org/10.37811/cl_rcm.v7i4.7092
- Chávez-Díaz, J. M., Bonilla Migo, A., Monterroso Unuysuncco, N. I., & Romero-Carazas, R. (2023). Gestión para la recaudación de impuestos municipales: diagnóstico y propuesta. *Revista Venezolana de Gerencia*, 28(103), 1052–1067. <https://doi.org/10.52080/rvgluz.28.103.9>
- Chávez-Díaz, J. M., Monterroso-Unuysuncco, N. I., Bonilla-Migo, A., & Aquino-Perales, L. (2024). Trouble in paradise? or Ethical Dilemmas in the Accounting Management of a Religious Organization, A Case Study. *International Journal of Religion*, 5(2), 157–164. <https://doi.org/10.61707/zk0efv33>
- Cheng, Z., & Li, X. (2022). Do raising environmental costs promote industrial green growth? A Quasi-natural experiment based on the policy of raising standard sewage charges. *Journal of Cleaner Production*, 343(131004), 131004. <https://doi.org/10.1016/j.jclepro.2022.131004>
- Cuzcano Quispe, L. M. (2021). *Costos ambientales y residuos de construcción y demolición (RCD) en la sostenibilidad de edificaciones de un distrito de Lima 2020* [Tesis doctoral, Universidad Cesar Vallejo]. <https://repositorio.ucv.edu.pe/handle/20.500.12692/69317>
- Daddi, T., Todaro, N. M., Marrucci, L., & Iraldo, F. (2022). Determinants and relevance of internalisation of environmental management systems. *Journal of Cleaner Production*, 374(134064), 134064. <https://doi.org/10.1016/j.jclepro.2022.134064>
- Díaz Gómez, P. G. (2019). Relación costo-beneficio de sistemas de gestión ambiental en empresas manufactureras venezolanas. *Revista de Ciencias Sociales*, 25(1). <https://www.redalyc.org/articulo.oa?id=28059678013>
- Doroni, G. (2021). Costos ambientales-sociales en el marco de la mercantilización de los recursos naturales. Contextos de vulnerabilidad social-ambiental. *Derecho Global. Estudios Sobre Derecho y Justicia*, 6(17), 77–106. <https://doi.org/10.32870/dgedj.v6i17.356>
- Edelman, D. J., & Estévez, P. A. G. (2019). La Gestión Ambiental Urbana De Lima, Perú. *European Scientific Journal ESJ*, 15(5). <https://doi.org/10.19044/esj.2019.v15n5p78>
- GESTIÓN. (2019, September 3). Solo una de cada cuatro empresas industriales peruanas cumple con remediación ambiental. *GESTIÓN*. <https://gestion.pe/peru/solo-una-de-cada-cuatro-empresas-industriales-peruanas-cumple-con-remediacion-ambiental-noticia/>
- Hernández Pajares, J., & Yagui Nishii, V. (2021). Análisis de información y factores de desempeño ambiental y de economía circular en empresas peruanas. *Comuni@cción: Revista de Investigación En Comunicación y Desarrollo*, 12(1), 37–52. <https://doi.org/10.33595/2226-1478.12.1.481>
- Kharuddin, S., Nik Ahmad, N. N., Mohd Ariffin, N., & Modh Said, R. (2022). The Antecedents of Managers' Environmental Management Practices and Financially Responsible Behaviour: Examining Managers' Behaviour in Malaysia's Environmentally Sensitive Industries. *International Journal of Economics and Management*, 16(3), 285–300. <https://doi.org/10.47836/ijeam.16.3.02>

- Laguna, C. C., Sánchez, A., & Laguna, J. A. (2019). Los costos medioambientales en la gestión de la sostenibilidad de los recursos naturales en las empresas que realizan inversiones constructivas. *Revista de Investigación Latinoamericana En Competitividad Organizacional*. <https://www.eumed.net/rev/rilco/04/costos-ambientales.html>
- Loa M.A.H, Roca G.R, & Marín, M. V. (2023). Education and environmental management of solid waste in Peru, in the period 2012-2022: A review of the scientific literature. In Larrondo Petrie M.M., Texier J., & Matta R.A.R. (Eds.), *Proceedings of the LACCEI international Multi-conference for Engineering, Education and Technology*. Latin American and Caribbean Consortium of Engineering Institutions.
- Marrucci, L., & Daddi, T. (2022). The contribution of the Eco-Management and Audit Scheme to the environmental performance of manufacturing organisations. *Business Strategy and the Environment*, 31(4), 1347–1357. <https://doi.org/10.1002/bse.2958>
- Mohd Fuzi, N., Habidin, N. F., Adam, S., & Ong, S. Y. Y. (2022). The relationship between environmental cost on organisational performance and environmental management system: a structural equation modelling approach. *Measuring Business Excellence*, 26(4), 496–507. <https://doi.org/10.1108/MBE-03-2021-0039>
- Morán, R. C. D., Arriola, N. Z., Camus, F. C. E., & Chávez-Díaz, J. M. (2022). Remote education and academic stress in peruvian university students in times of the COVID-19 pandemic. *Universidad y Sociedad*, 14(3). <https://rus.ucf.edu.cu/index.php/rus/article/view/2926>
- Murillo, E. M., & Cano, D. G. (2021). Los costos ambientales frente al desarrollo sostenible de las empresas. *Adversia*, 26, 1–10. <https://revistas.udea.edu.co/index.php/adversia/article/view/345863>
- ONU. (2022, May 31). *La industria del tabaco también daña el medio ambiente*. ONU. <https://news.un.org/es/story/2022/05/1509502#:~:text=Las%20tabacaleras%20destruyen%20600%20millones%20de%20%C3%A1rboles%20y,que%20el%20sector%20se%20responsabilice%20de%20esos%20perjuicios>
- Organización Mundial de la Salud (OMS). (2022, May 31). *Alerta sobre el impacto ambiental de la industria tabacalera*. Organización Mundial de La Salud (OMS). <https://www.who.int/es/news/item/31-05-2022-who-raises-alarm-on-tobacco-industry-environmental-impact>
- Pariona-Luque, R., Pacheco, A., Ccama, F., Reyes, R., & Lema, F. (2023). Evaluation of Environmental Management and Conservation of Natural Resources in Tourism Enterprises in Ayacucho, Peru: Workers' Perceptions. *Diversity*, 15(6), 764. <https://doi.org/10.3390/d15060764>
- Ramzan, M., Raza, S. A., Usman, M., Sharma, G. D., & Iqbal, H. A. (2022). Environmental cost of non-renewable energy and economic progress: Do ICT and financial development mitigate some burden? *Journal of Cleaner Production*, 333(130066), 130066. <https://doi.org/10.1016/j.jclepro.2021.130066>
- Rodríguez, R., Machimbarrena, M., & Tarrero, A. I. (2022). Environmental Noise Evolution during COVID-19 State of Emergency: Evidence of Peru's Need for Action Plans. *Acoustics*, 4(2), 479–491. <https://doi.org/10.3390/acoustics4020030>
- Salas Canales, H. J. (2020). Tecnologías limpias como fuente de ventaja competitiva empresarial. *ACADEMO Revista de Investigación En Ciencias Sociales y Humanidades*, 7(1), 97–104. <https://doi.org/10.30545/academo.2020.ene-jun.10>
- Sinforoso-Martínez, S., Ricardez-Jimenez, J. D., & Pelegrín-Mesa, A. (2019). Externalidades ambientales desde el enfoque del costo para la toma de decisiones en materia ambiental. Caso de una empresa cafetalera. *Retos de La Dirección*, 13(1), 170–187. http://scielo.sld.cu/scielo.php?pid=S2306-91552019000100170&script=sci_arttext
- Teplická, K., & Hurná, S. (2023). Comparison of Environmental Costs in Divisions with Different Geographical Action and their Significance in Environmental Management. *Management Systems in Production Engineering*, 31(3), 248–253. <https://doi.org/10.2478/mspe-2023-0027>
- Torres Garay, O. M. (2021). *Diseño de un sistema de gestión ambiental, de seguridad y salud en el trabajo para una empresa metalmeccánica* [Título profesional, Universidad Nacional de San Martín]. <https://cybertesis.unmsm.edu.pe/handle/20.500.12672/16150>
- Valarezo-Vera, K. C., & Solís-Muñoz, J. B. (2023). Análisis de costos ambientales. Herramienta fundamental para la toma de decisiones en empresas generadoras de energía hidroeléctrica. *Pacha. Revista de Estudios Contemporáneos Del Sur Global*, 4(11), e230191. <https://doi.org/10.46652/pacha.v4i11.191>
- Vidal, A., & Asuaga, C. (2021). Gestión Ambiental en las Organizaciones: Una revisión de la literatura. *Revista Del Instituto Internacional de Costos*, 18, 84–122. <https://intercostos.org/ojs/index.php/riic/article/view/33/24>
- Villon Mariluz, J. A. (2023). *Gestión ambiental y contaminación por relaves mineros en la cuenca del Huascarán-Ancash, 2022* [Tesis magistral, Universidad Cesar Vallejo]. <https://repositorio.ucv.edu.pe/handle/20.500.12692/109282>
- Yan, Z., Zou, B., Du, K., & Li, K. (2020). Do renewable energy technology innovations promote China's green productivity growth? Fresh evidence from partially linear functional-coefficient models. *Energy Economics*, 90(104842), 104842. <https://doi.org/10.1016/j.eneco.2020.104842>