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Development of good environmental practices in enterprises in the city of Guayaquil, Ecuador, through the implementation of linkage projects.



## Desarrollo de buenas prácticas ambientales en emprendimientos de la ciudad de Guayaquil, Ecuador mediante la implementación de proyectos de vinculación

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**Abstract:** A sustainable enterprise is one that, in addition to the economic component, involves environmental protection and social development. The implementation of good environmental practices (GEPs) improves the situation of microenterprises with respect to environmental regulations, in addition to improving their competitive situation. The objective of this research was to develop GHPs in enterprises in the northern zone of the city of Guayaquil through the implementation of linkage projects aimed at strengthening the capacities of small enterprises for sustainable resource management. The research was descriptive and cross-sectional in scope. A purposive sampling of microenterprises in the northern zone of the Tarqui parish of Guayaquil, Ecuador, was carried out. A total of 21 microenterprises with a variety of production activities were selected in a purposive sampling. A structured questionnaire was applied to describe whether the enterprises used GHPs. According to the results obtained, it became evident that there is a need to train microentrepreneurs because they are aware of the benefits of GHPs in their processes, but they do not apply them adequately. Although they recycle some products, they do not adopt policies aimed at the rational and sustainable use of water and energy resources.

**Keywords:** Good environmental practices, microenterprises, sustainable development.

**Resumen:** Un emprendimiento sostenible es aquel que además del componente económico implica la protección ambiental y el desarrollo social. La implementación de buenas prácticas ambientales (BPAs) permite mejorar la situación frente a regulaciones ambientales de las microempresas; además de mejorar su situación competitiva. El objetivo de esta investigación fue desarrollar BPAs en emprendimientos de la zona norte de la ciudad de Guayaquil por medio de la ejecución de proyectos de vinculación orientados a potenciar las capacidades de pequeñas empresas para una gestión sostenible de los recursos. La investigación tuvo un alcance descriptivo y transeccional. Se realizó un muestreo intencional de microempresas de la zona norte de la parroquia Tarqui de Guayaquil, Ecuador. Se seleccionó en un muestreo intencional un total 21 de microempresas

que presentaron variadas actividades de producción. Se aplicó un cuestionario estructurado que busco describir si los emprendimientos utilizaban BPAs. De acuerdo a los resultados obtenidos, se evidenció que existe la necesidad de formar a los microempresarios debido a que conocen los beneficios de las BPAs en sus procesos, pero no realizan la aplicación de manera adecuada. A pesar de reciclar algunos productos no adoptan políticas dirigidas al uso racional y sustentable de los recursos hídricos y energéticos

**Palabras clave:** Buenas prácticas ambientales, microempresas, desarrollo sostenible.

## Introduction

The sustainability of the planet's natural resources depends on the environmental awareness of each of the people who inhabit it. Environmental awareness must prevail in their scope of action and work; however, this care must also be led by companies, due to the environmental impacts they generate, being every day more responsible with natural resources when manufacturing a good or providing a service (González, 2018).

Consumers around the world are increasingly concerned about the environmental impacts of the products they choose. Given this reality, many smart companies are paying attention to the growing desire for greener products, which are building a niche that will soon become mainstream (Abanyam and Raymond, 2019).

Given that business activities are considered one of the main causes of environmental degradation, it has become important to analyze the role played by employers and their organizations in the sustainability of societies (ONEill, Hersauer and Golden, 2009; Hockerts, Wüstenhagen and Greening, 2010; Parrish, 2010). Thus, in the last decade, the concern for understanding what is the real impact of companies on society has grown exponentially, with some authors even talking about a paradigm shift in economics. The traditional understanding of value creation simply in terms of economic gains has expanded to include non-economic gains.

Small and medium-sized enterprises (SMEs) are important for the economic fabric of a country because of the amount of employment they generate, their production is linked to the domestic market and a large part of the population and the local economy depend on their activity and the positive and negative impacts they produce (Bermeo and Saavedra, 2018; Avila and Ceño, 2020). Although SMEs have a relatively small individual importance, associatively they can have large impacts on the regions where they operate. (Sarango, Álvarez and Del Río, 2018).

In today's global business environment, SMEs face increased competitive, regulatory and community pressures. In addition, there is also pressure for environmental sustainability, which requires the implementation of strategies to reduce the environmental impacts caused by the products and services offered. Clem (2008) adds that ecology reflects a social consciousness around saving and using the Earth's natural resources, preserving and protecting them for the good

of civilization. As customers become more aware of environmental issues, the demand for green products increases. (Kumar and Ghodeswar, 2015).

In this sense, a sustainable enterprise is one that, in addition to the economic component or monetary benefits, involves environmental protection and social development. Entrepreneurs and companies that make environmental progress their core business can be called sustainable entrepreneurs, generating new products, services, techniques and modes of organization that substantially reduce the impact to the ecosystem and increase the quality of life (Guzmán and Trujillo, 2008; Schaltegger and Wagner, 2011; Rodríguez, 2016).

The identification and evaluation of environmental aspects and effects associated with an undertaking is essential to know the impact generated by activities, products or services, and to be able to establish environmental objectives (World Organization for Standardization, 2015). The environmental impacts of any productive activity are classified according to whether they are produced as a consequence of the input process of resources (consumption, whether of products, water, energy, among others), of the output process (pollution and waste) or are directly due to the action of the activity on the territory in which it is carried out (impacts on space).

For this reason, this research posed the following question: How to develop the implementation of good environmental practices to achieve sustainable enterprises in the city of Guayaquil, Ecuador, through the active participation of students, professors and the community in general by means of activities linked to society?

Good environmental practices are instruments that are implemented at a destination or in a company to ensure that negative impacts are reduced and positive impacts are enhanced, benefiting both the client and the business owner. These are voluntary activities carried out by entrepreneurs and/or organizations that facilitate compliance with sustainability criteria.

The general objective of this research was to develop good environmental practices in enterprises in the northern area of the city of Guayaquil through the implementation of linkage projects aimed at strengthening the capacities of small enterprises for sustainable resource management.

The importance of this research lies in the fact that all sectors of the economy generate negative impacts on the environment. In order to mitigate these impacts and minimize risks, the importance of implementing good environmental practices by all actors in the productive sector arises.

Small and medium-sized enterprises (SMEs) play a very important role in the development of any economy due to their relationship and impact on the generation of employment and economic growth, and in general worldwide, they account for an average of 80% of the businesses in an economy. In this sense, the importance of this sector of the economy is transcendental for the generation of jobs, development of production, and sustainable management of the economy (Veintimilla, 2014).

Corporate environmental management in SMEs can become one of the weapons to face the opening of markets, as long as the different actors of the business and environmental sector manage to orient themselves towards potential niches, for this it is required to adapt a new management that strengthens coordination between them and leave the traditional approach of

an isolated environmental management, integrating it to the competitiveness of companies and region as a whole (Gonzalez, 2017).

Ecuador registered a total of 843,745 companies. According to size, 90.51% are microenterprises, that is, they have annual sales of less than 100 thousand dollars and have between one and nine employees on their payrolls (INEC, 2015). The distribution of companies by economic sector at the national level is composed as follows: services (40.59%); commerce (36.62%); agriculture, livestock, forestry and fishing (10.42%); manufacturing industries (8.62%); construction (3.40%) and mining and quarrying (0.35%) (INEC, 2016). There are 81,598 microenterprises in Guayaquil. The main activities carried out in this city are: wholesale and retail trade and vehicle repair with 59.34%, accommodation and food service with 9.62%, other service activities with 8.89% and manufacturing industries with 7.84%.

León (2015) assures that SMEs are a vulnerable productive sector that needs to be strengthened in environmental matters. In Ecuador out of a sample of 10,646 companies, 2,734 companies (26%) have some type of environmental certification, while the rest (7,912) do not have any type (74%).

## **Materials and methods**

This research was carried out in three phases. In the first phase, a diagnosis was made of the practices carried out in enterprises in the city of Guayaquil, Ecuador. The second phase corresponded to the analysis of the results in order to propose linkage projects aimed at generating a guide of good practices in some of the diagnosed enterprises, and finally, the implementation of these projects was carried out.

The research was descriptive and cross-sectional in scope. A purposive sampling of microenterprises in the northern zone of the Tarqui parish in the city of Guayaquil, Ecuador was carried out. A total of 21 microenterprises with a variety of production activities were selected in a purposive sampling. A structured questionnaire was applied to describe whether the enterprises used environmental practices. The collection of information was carried out in a single period.

A structured questionnaire developed from the instruments of Galvan, Clemente and Reyes (2012), and Abanyam and Raymond (2019), which allow describing green business practices for corporate sustainability, was used for data collection. The questionnaire has 20 questions. The instrument was structured in four response options: strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD) with values of 4, 3, 2 and 1 respectively. The instruments were validated by five experts and subjected to a reliability test. Cronbach's alpha coefficient method was used to analyze the data obtained from the instrument. The result of the reliability estimation of the pilot study yielded a coefficient of 0.886.

The data collected for the study were analyzed using the mean, standard deviation, and a one-way analysis of variance (ANOVA) with Tukey's test to determine whether significant differences existed between the environmental dimensions assessed. Any item with a mean of 2.50 and above was considered

accepted, while any mean score below 2.50 was posed as rejected, according to the methodology of Abanyam and Raymond (2019).

## Result

The environmental diagnosis was carried out in 21 microenterprises constituted as legal entities or individuals with entrepreneurial activity. They belong to four sectors (Table 1), including: services (8), food (5), commerce (5) and technology (3). With regard to environmental certifications, none of them have been recognized for their environmental management. Among the main services offered are: vehicle washing, oil change and engine washing, washing, drying and ironing of clothes.

**Table 1.** *Diagnosed microenterprise items*

**Table 1**  
Diagnosed microenterprise items

Type of microenterprise	Number	%
Services		38,1
Feeding	5	23,8
Trade		14,3
Technology	5	23,8
Total		

The success and growth of micro-enterprises dedicated to car washing motivates reflection on their practice, because they present paradoxical aspects, they contribute to local economic growth and the generation of employment and income, providing improvements in the quality of life of communities, but at the same time, these activities can also cause serious environmental impact (Costa et al., 2009; Carrasquero et al., 2015).

Table 2 presents the mean scores of the dimensions measured according to the results of the respondents. According to the analysis of variance and test of means, it is possible to group the student dimensions into three categories, according to the answers obtained, the first and where the highest weights were obtained were policy, environmental processes, sustainable management of resources and environmental practices. The mean in these dimensions did not exceed 2.60; therefore, it was considered that the microenterprises know about sustainable management practices and processes, but do not apply them.

**Table 2.** *Dimensions evaluated in the environmental diagnosis*

**Table 2**  
Dimensions evaluated in the environmental diagnosis

Dimension	Media	Group
Company environmental strategies	2,15	B
Environmental training	1,80	C
Environmental conservation	2,18	B
Environmental policy and management	2,55	A
Environmental processes and sustainable resource management	2,53	A
Environmental practices	2,60	A
Promotion of environmental values	1,88	C
Green marketing	2,10	B

\* Note: Mean followed by different letters in each row indicates significant differences according to Tukey's test ( $p \leq 0.05$ ).

In order to go deeper into the environmental management of the microenterprises, the results are presented separately for each of the dimensions analyzed. Table 3 presents the questions related to strategies, training, conservation and environmental policy, as well as environmental processes for sustainable resource management.

**Table 3.** Means and standard deviations of the environmental diagnosis for the microenterprises evaluated.

**Table 3**  
Means and standard deviations of the environmental diagnosis for the microenterprises evaluated

Dimension	Ask	Media	DE
Company environmental strategies	Good environmental practices represent a strategy for the development of your microenterprise.	2,35	0,81
Environmental training	Conducts environmental training programs for its employees	1,80	0,62
Environmental conservation	Investing in your company around environmental conservation investments	1,65	0,49
Environmental policy and management	Considers that being an environmentally friendly product is an important quality requirement.	2,70	0,57
Environmental processes and sustainable resource management	Knows what is a policy for environmental conservation	2,95	0,76
	The company adopts a policy of rational and sustainable use of resources.	1,70	0,57
	Environmental management must be carried out by contracted personnel.	3,65	0,59
	The use of environmentally friendly production processes improves your company's image in the market.	2,40	0,50

SD= Standard deviation

The analysis reveals that, for these first five dimensions evaluated, the questions of the questionnaire recorded mean scores ranging from 1.80 to 3.65. The study



also shows that all items recorded standard deviations ranging from 0.49 to 0.19, indicating that there was little dispersion among respondents' answers.

Table 4 presents the responses corresponding to the dimensions environmental practices, promotion of environmental values and ecological marketing. The diagnostic scores on the questions asked ranged between 1.55 and 3.20 for the dimensions promotion of environmental values and good environmental practices, respectively.

**Table 4.** Means and standard deviations of the environmental diagnosis for the microenterprises evaluated in the dimensions of practices, promotion of environmental values and ecological marketing.

**Table 4**

Means and standard deviations of the environmental diagnosis for the microenterprises evaluated in the dimensions of practices promotion of environmental values and ecological marketing

Dimension	Ask	Media	DE
Environmental practices	Plant native trees, foliage, use rainwater or recycled greywater to reduce ecological damage.	1,75	0,64
	Produces durable products from design to disposal reducing ecological damage to ensure sustainable development.	2,30	0,47
	Find environmentally friendly alternatives to harmful products, at the same or improved level, at a lower cost.	2,50	1,05
	Uses environmentally friendly materials, procedures and processes and ensures optimal use of raw materials.	2,75	0,44
	Recycle waste products (e.g., plastic, paper, glass) to increase operating income and consider expanding production capacity.	3,10	0,79
Promotion of environmental values	Choose packaging material with minimal impact on the environment.	3,20	0,62
	Use ads that promote a green lifestyle when highlighting a product or service.	2,10	0,85
	Uses green themes to sell new lifestyles and ideas.	1,55	0,51
	Advertise green initiatives effectively to gain market share.	2,00	0,73
Green marketing	Include green business practices in the overall corporate message to attract new customers.	1,85	0,67
	Integrate green marketing into the marketing mix with green products.	2,15	0,93
	Present an environmentally friendly corporate image through advertising and sales promotion to all stakeholders.	2,05	0,60

SD= Standard deviation

Environmental management practices are applicable to any type of company, regardless of economic sector, size, activity or any other type. According to the diagnosis carried out in the microenterprises, the questions related to the

use of ecological themes to sell their service or product and investment in environmental conservation presented the lowest results of 1.55 and 1.65, respectively. This is related to the fact that microentrepreneurs are unaware of the advantages of green or ecological marketing due to the fact that the approach to green or ecological marketing in Latin America is in an introductory stage.

According to the results obtained, it became evident that there is a need to train microentrepreneurs because they know the benefits of good environmental practices in their processes, but do not apply them adequately. Although they recycle some products, they do not adopt policies aimed at the rational and sustainable use of water and energy resources. For García and Vargas (2015), environmental practices in microenterprises have not yet reached a systemic structure that makes it possible to agree on criteria to improve environmental performance.

In the dimension of promoting environmental values, none of the aspects diagnosed can be considered accepted by the microenterprises, i.e., all had a score of less than 2.5. Therefore, it is necessary to encourage these practices that promote the use of ecological themes, include ecological business practices and advertise environmental initiatives in order to acquire a greater market share. According to Huerta and García (2009), the current trend in environmental matters is to make it an intrinsic part of the corporate strategy of companies, i.e., the most appropriate thing nowadays is to have a business strategy that includes, in addition to all the traditional components, environmental aspects as a critical part of the firm's success.

The environmental microenterprises consulted do not carry out environmental training programs with their employees. Environmental training plays an important role in the formation of a citizenry that is aware of and actively interested in the environment and its associated problems (Martínez, 2010). The preparation of professionals, communities, decision makers and other key social groups in the understanding of environmental problems is key to achieving social commitment from the perspective of individual responsibility. Similarly, environmental training contributes directly to the fulfillment of the environmental objectives of the institution and prepares people to contribute from their work or professional and social position, to the transition towards sustainable development.

The diagnosis made showed the need to train microentrepreneurs in environmental issues. For this reason, in the next phase of the research, we proceeded through linkage projects to strengthen the capacities of small businesses through the transmission of knowledge to promote the establishment of good environmental practices aimed at sustainable management of resources.

Five of the microenterprises diagnosed were selected, two in the service sector, one in technology, one in food and one in formal commerce. In each microenterprise, a group of eight undergraduate students, through outreach activities, developed good environmental practices in the microenterprises, with a total of 40 student trainers. It should be noted that the students received 20 hours of GEP training prior to carrying out the outreach activities.

The objectives of the linkage projects were oriented to: Conduct a review of the companies' operations plan, Train the personnel of the various microenterprises; as well as related communities, in good environmental practices, such as: efficient



water and energy consumption, sustainable administration and sustainable waste management, Generate a guide of good environmental practices according to the operational activities carried out in the microenterprise, Monitor the implementation of good environmental practices in the activities in the companies or institutions.

## Conclusions

Good housekeeping practices are applicable to any type of company, regardless of economic sector, size, activity or any other type. It became evident that there is a need to train microentrepreneurs because they are aware of the benefits of good environmental practices in their processes, but do not apply them adequately.

The development of the research allowed for the execution of linkage projects aimed at training the personnel of the various microenterprises, as well as related communities, in good environmental practices, such as: efficient water and energy consumption, sustainable administration and sustainable waste management, generating a guide of good environmental practices in accordance with the operational activities carried out in the microenterprise.

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