

ENVIRONMENTAL MANAGEMENT PRACTICES PRESENT IN HOTEL PROJECTS IN FOZ DO IGUAÇU – PR: CASE STUDY

 <https://doi.org/10.56238/arev7n1-141>

Submission date: 12/17/2024

Publication date: 01/17/2025

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ABSTRACT

This article aimed to verify the existence of sustainable practices such as tools, training, control and environmental education incorporated into a group of hotels located in the city of Foz do Iguaçu, given its tourism potential. A semi-structured itinerary was applied to three large hotels in the city. The information obtained was organized in table form and analyzed using comparative graphs between the hotels. At the end of this article, it was possible to observe that most of the enterprises reactively adopt environmental practices, that is, they aim to comply with the legislation. It was possible to identify that there is room for improvement in the environmental management practices of the hotels surveyed.

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Keywords: Hotel Industry. Environmental Management. Sustainable Practices.

INTRODUCTION

The city of Foz do Iguaçu attracts thousands of tourists every year. According to data from Foz do Iguaçu International Airport (2024), the number of arrivals and departures in 2024 exceeded expectations, with more than 1.150 million passengers.

Due to the location of the Iguaçu Falls, its geographical position on the triple border with Argentina and Paraguay, and also the Itaipu Binational Hydroelectric Power Plant, the city began to attract a large number of tourists, thus developing a hotel complex prepared to welcome national and international guests, with various categories of accommodation, serving people of different social levels.

The hotel industry provides several benefits to the city. The structure offered by the hotels has attracted events to the city, such as seminars and lectures. Another relevant factor is the generation of jobs and income, both direct and indirect, with the hiring of employees, local suppliers, and the structure that is formed around these enterprises. The basis of Foz do Iguaçu's economy is tourism, with an emphasis on the trade and services sector. In 2024, Iguaçu National Park received 1,893,116 visitors in 2024, registering the third highest number in history, behind only 2018 and 2019, the period before the pandemic. The highlight was Brazilian tourists, who set a new record with 1,119,590 visits.

According to the Brazilian System of Classification of Accommodation Facilities developed by the Ministry of Tourism (MTur), the hotels selected for this study are classified as Resorts: "Hotel with leisure and entertainment infrastructure that offers beauty services, physical activities, recreation and interaction with nature on the premises" (SBClass, 2024).

Resorts must meet minimum requirements for infrastructure, services, and sustainability. This system classifies hotels and indicates some mandatory items related to environmental quality that hotels must implement to obtain three, four, and five stars. This requires hotels to implement some items related to environmental management on the hotel premises, i.e., they demonstrate a reactive stance.

It is important to emphasize that, since adherence to the classification created by EMBRATUR is not mandatory, these references are for information purposes only.

As for the category of hotels, there is a huge number of categories, not only of hotel classifications but also of categories. According to the World Tourism Organization (WTO) (2001), there is no single system that is recognized internationally.

With the increasing concern regarding the sustainability of enterprises, the hotel industry began to implement environmental actions to comply with legislation. However, according to Ramos (2006), hotels need a management system and not specific actions to be able to use natural resources rationally.

The hotel industry is not normally associated with pollution and environmental degradation, however, the impacts caused by irresponsible management of water, energy, waste, and chemicals can be significant, taking into account the total number of enterprises, as well as the growth that the hotel industry has had in Foz do Iguaçu in recent years.

The introduction of environmental management in companies is normally done reactively, with the initial objective of preventing environmental impact and anticipating compliance with legislation. Sanches (2000) exemplifies a concept of proactive environmental management that goes far beyond the idea of policing and preventing pollution, in which companies: “promote preventive programs, train employees and promote environmental awareness and responsibility at all levels of the organization, monitor operations continuously and work quickly to correct problems as soon as they occur”. This is because, according to the aforementioned authors, an EMS that complies with ISO 14001 represents an important step for the hotel organization, especially because it becomes a differentiator and a competitive advantage in a segment where organizations only operate within the limits of compliance with Environmental Laws. Thus, studies carried out for the implementation of an EMS in the hotel industry will be conducted based on the issues contained in the official standards, which meet the requirements of ISO 14001 aiming at certification through clean technologies (Schenini, Lemos, and Silva, 2017). Clean technologies, as defined by Gazeta Mercantil (1996), encompass both the operational and managerial processes used in the production of goods and services, without causing negative impacts on the environment. According to Misra (1996), the adoption of these technologies by companies provides several benefits. Among the main results, the following stand out: environmental preservation, improvement of working conditions, reduction in the consumption of raw materials and energy, improvement in the quality of products and services, reduction in costs and waste, in addition to increasing productivity and profitability. The implementation of clean technologies involves a set of methods that can be adapted to the specific needs of each company and can be applied to any industrial or service sector.

The first environmental management practices generally occur when ways are created to increase the efficiency of the use of raw materials, water, and energy, by not generating, minimizing, or recycling the waste generated, which generates, in addition to environmental benefits, economic benefits for the hotel (Ramos, 2006).

According to Hart (2004):

The idea of sustainability has been represented by the increase in expectations regarding social and environmental performance. Global sustainability has been defined as the ability to “meet the needs of the present without compromising the ability of future generations to meet their needs”.

Feil and Schreiber (2017) mention that sustainability is related to the capacity of the global system, containing the integration of the human environment as an inseparable system, to maintain its quality and/or property at a level close to, equal to, or higher than its historical average, considering the dynamic changes caused by variables over time.

Lacerda and Cleophas (2023) describe that the concept of sustainability has its origins related to the term ‘sustainable development’, which meets the needs of present generations without compromising future generations. However, the concept was constructed in the face of discussions between the environmental, cultural, social, economic, and political dimensions, that is, the relationship between people and between them and the environment (BRUNDTLAND-WCED REPORT, 1987, p.14). One of the most widely disseminated concepts of sustainability in the business world is based on the idea that companies, in addition to generating economic and financial results, also need to engage in social actions and care for the environment (Hart and Milstein, 2004).

Within the concept of a sustainable company, it is necessary to look beyond environmental issues. For example, Buckley (2012) explains that the social dimension of development includes “a commitment to promote social integration, which encourages societies that are stable, safe and fair, based on the promotion and protection of all human rights”.

According to Bornl (2005), environmental policies should always consider the possible benefits and aspects of the social dimension of sustainable development, that is, they should not be limited to the pursuit of environmental integrity and quality at all costs.

This article aimed to verify the existence of sustainable practices such as tools, training, control and environmental education incorporated into a group of hotels located in the city of Foz do Iguaçu, given its potential for ecological tourism.

CHARACTERIZATION OF THE STUDY AREA

The Foz do Iguaçu region was discovered in 1542, through the colonizing expedition of the Spaniard Alvar Nuñez Cabeza de Vaca, who was guided by Guarani Indians.

The definitive settlement by Brazilians occurred in 1888 when the Iguaçu Military Colony was founded. In 1939, the Iguaçu National Park was created in the region of the Falls and, in 1974, construction of the Itaipu Hydroelectric Dam began. The municipality was created by State Law No. 1,383, on March 14, 1914, and established on June 10 of the same year. It is located in the extreme west of Paraná, on the border of Brazil with Paraguay and Argentina. It is the tourist and economic center of western Paraná and the second most visited tourist destination in Brazil.

Foz do Iguaçu has businesses in a wide range of sectors. Among them is the hotel industry, more specifically resorts, and hotels, which will be the object of study of this paper.

THE ORIGIN OF THE HOTEL ACTIVITY

The hotel industry is an activity of great relevance in today's economy. Its main purpose is to provide lodging, security, food, and other services inherent to hospitality activities. (Petrocchi, 2002).

According to Gonçalves and Kritz (1998), there is no record of when and how the hotel industry emerged in the world. The evidence suggests that this activity began due to the natural need that travelers have to seek shelter, support, and food during their travels. The same authors also highlight that the creation of a space specifically intended for lodging dates back to a few centuries before the Christian era, when in Ancient Greece, in the sanctuary of Olympia, the Olympic Games were held.

For these events, the stadium and the podium were built, where the winners were honored and the Olympic flame was displayed. Later, the changing rooms and a guesthouse, measuring approximately 10,000 square meters, were added to house visitors. This guesthouse would have been the first hotel that we had heard of.

In Brazil, the hotel industry began in the colonial period, when mansions, farms, convents and, especially, roadside ranches served as lodging for travelers.

The arrival of the Portuguese royal court in Rio de Janeiro in 1808 and, later, the opening of the ports led to an increase in the flow of people, causing boarding houses, inns, and taverns to open their doors to travelers who arrived and moved around.

According to the writer Otília Schimmelpfeng (1991), the first hotel in the city of Foz do Iguaçu was opened in 1915, and owned by the Engel family. Mr. Frederico Engel, a pioneer of the hotel industry in the city, rented an abandoned mansion located on what is now Avenida Brasil and started the Hotel Brasil. Later, Frederico Engel opened the Hotel dos Saltos, located at the Iguaçu Falls, currently known as the Belmond Hotel das Cataratas.

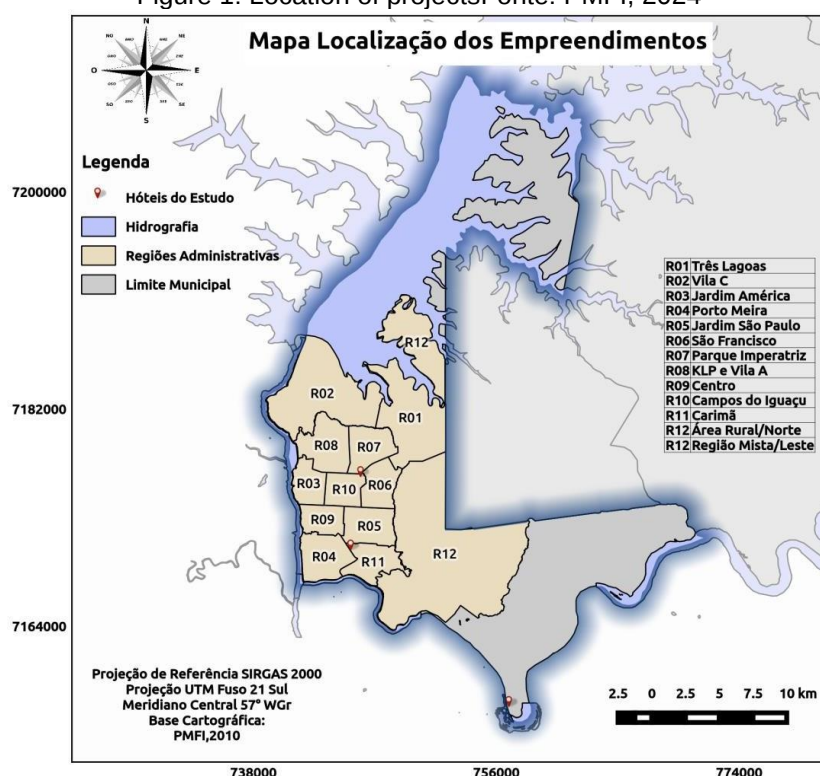
According to data from the 2014 inventory of tourist attractions in Foz do Iguaçu, the city currently has 113 hotels offering accommodation services and facilities.

MATERIALS AND METHODS

The hotels selected for this study were (three): Belmond Hotel das Cataratas, Mabu Thermas Grand Resort and Recanto Cataratas Thermas Resort & Convention located in the city of Foz do Iguaçu.

The following figure shows the location of the establishments (Figure 1).

Figure 1: Location of projects Fonte: PMFI, 2024



The research was structured through bibliographic, documentary, and field surveys to collect the largest quantity and diversity of information about the companies studied. The study began with the analysis of secondary data, followed by the construction of the

primary data collection instrument. It was conducted using a semi-structured script that combines open and closed questions, where the interviewee is allowed to discuss the proposed topic (Lakatos and Marconi, 2003; Boni and Quaresma, 2005) containing 51 items, applied to those responsible for environmental management in each of the hotels that are the object of this study. Information obtained through various sources was used, such as observation, documentary research, interviews, and site visits. Field data collection was carried out from May to July 2015. The interviews were scheduled in advance and applied in person. During the visits, the sustainable practices developed within each hotel, the existence of environmental certification in them, and the difficulties encountered in implementing sustainable technologies and practices in the establishments were analyzed.

A comparative analysis was made between the environmental practices found in the studied locations, the analysis was divided into five (05) thematic axes as follows: sustainable technologies, socio-environmental practices, green marketing, environmental management, and control of environmental practices.

To define what constitutes sustainable technology used in the hotel industry, Kuehr's statement (2007 apud CHARBEL, 2010) was applied, stating that environmental technologies foster the continuous improvement of processes, products, and services, through the adequate conservation of raw materials and energy, reducing the consumption of toxic substances, waste of natural resources and generation of pollution during the production cycle.

Sustainable practices are positive attitudes that contribute to the preservation of natural resources, reduction of pollution, incentive to recycling, and elimination of waste. To present the results obtained, it was decided to organize the data in graphs and written reports explaining the main characteristics of each hotel enterprise.

RESULTS AND DISCUSSIONS

The following table (Table 1) contains the main information about the hotels studied, such as name, year of commencement of activities, built area, total number of employees, and activities developed.

Projects	Start of Activities	Constructed Area (m ²)	Total Employees	Activities Developed
Hotel A (Belmond Hotel das Cataratas)	1958	15,400	276	Lodging, food and beverage, administrative area
Hotel B (Mabu Thermas Grand Resort)	1973	27,000	307	Lodging, food and beverage, administrative area
Hotel C (Recanto Cataratas Thermas Resort & Convention)	1990	45,000	300	Lodging, food and beverage, administrative area

Source: Survey data

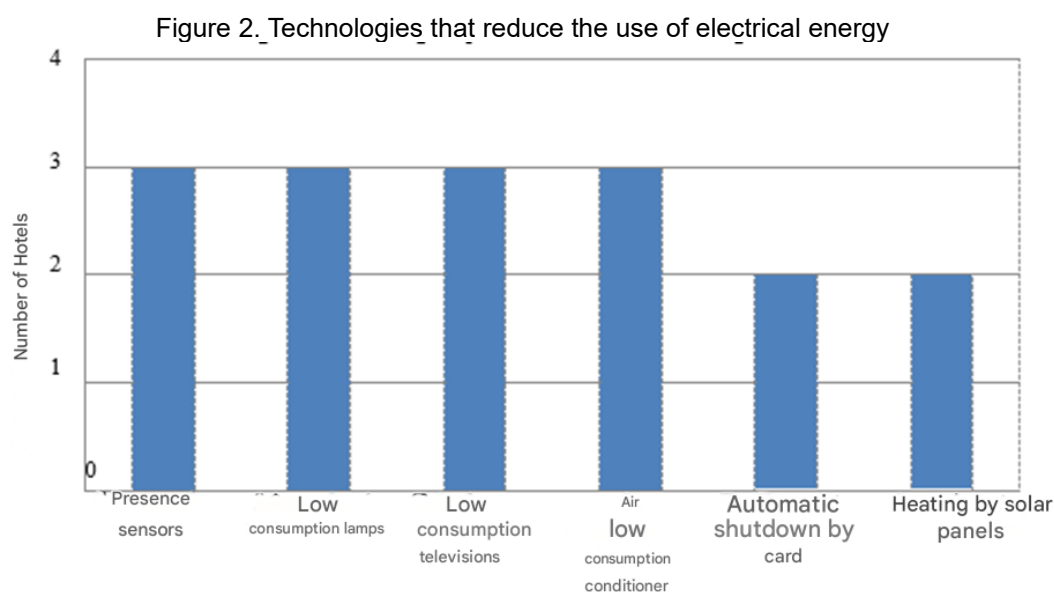
ANALYSIS OF COLLECTED DATA

The interview script was analyzed and the questions were divided into five (05) thematic axes, namely: sustainable technologies, socio-environmental practices, green marketing, environmental management, and assessment and control of environmental practices. The practices found to reduce water consumption were quite diverse. In Hotel C, rainwater is collected and reserved for firefighting. It was observed in Hotel B that only the guest bathrooms have sensors on the taps to activate the water.

Dual-flush toilets are found in 100% of the hotels.

Hotel C's water supply is provided by Sanepar and by artesian wells drilled in the hotel area; the swimming pool is supplied by the Guarani Aquifer.

Biodegradable products are used in 100% of the hotels surveyed (A, B, and C). The laundry room in all hotels has an electronic dispenser, where the precise amount of product and water required for each fabric, color, and quantity of clothing is used. Water usage monitoring at Hotel A is only done in the laundry room.



Source: research data.

It was observed (Figure 2) that the hotels surveyed have implemented almost all the technologies that help reduce the use of electricity. One hypothesis for the implementation of these technologies is the cost of energy, which has increased significantly in recent years. In his work on sustainable technologies and practices in the hotel industry in João Pessoa – Paraíba, Amazonas (2014) he found that in the hotel industry, “the option of technologies that reduce energy consumption is clear, and, indirectly, obtain financial savings for business owners”. In Hotel B, diesel generators are used during peak hours (6 pm to 9 pm), when the energy tariff is higher. Through an automatic system, the power grid provided by Copel stops working and the diesel generator system is activated. After the end of peak hours, the system is activated again for the COPEL power supply network. As for presence sensors, these are found in 100% of the hotels surveyed. In Hotel A, it is only available in the locker room, and in Hotel B, it was observed that it is only available in the hallway in a new wing of the hotel.

Energy-efficient televisions and air conditioners are found in 100% of the hotels surveyed.

Energy-efficient light bulbs in Hotel B were installed through COPEL's Energy Efficiency Program. The hotel presented a project indicating the advantages that the electrical system would have with this replacement, so the energy operator paid for the replacement. This program is executed annually in compliance with the clause of the Electric Energy Concession Agreement and Law No. 9,991/00.

This law determines that concessionaires and licensees of public electricity distribution services must apply part of their annual net operating revenue to end-use energy efficiency programs, that is, in projects executed in customer facilities and/or that provide benefits to the customer (COPEL, 2015).

Hotel C uses glass facades to take advantage of all the natural light available, thus reducing energy consumption. It also has water heating using solar panels that are used in the kitchen and showers in the apartments.

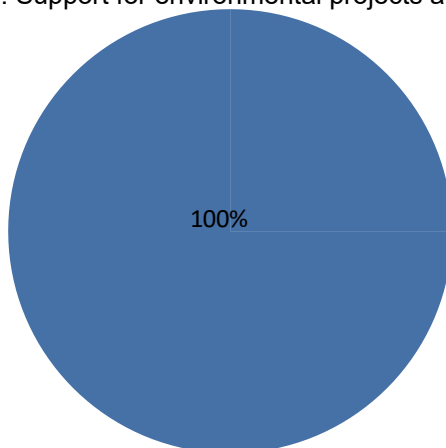
As for social and environmental practices, all hotels have implemented selective waste collection.

In 100% of the hotels, bed linen is not changed daily if the guest stays more than one day at the hotel, but if the guest requests it, it is changed. It is interesting to note that all hotels use explanatory material with the advantages of these actions for nature.

These advantages range from saving water, energy, and chemical products to increasing the useful life of products. A sewage treatment plant was found in 66% of the hotels surveyed (Hotel A and Hotel B).

Most of the environmental practices found regarding solid waste, for example, are mandatory, due to legislation; others, such as sewage treatment plants and bed linen and towel exchange policies, are proudly displayed to enhance the image of the enterprise.

Figure 3. Support for environmental projects and NGOs



■ Yes

Source: research data.

The person in charge of Hotel B is not aware that the company supports environmental projects (Figure 3) but reported that the company supports social projects through donations, such as the Lardos Velinhos, which is also supported by donations from Hotel A.

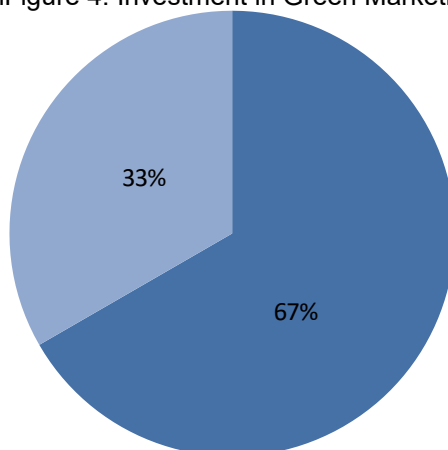
Hotel C makes regular donations to the institution for the recovery of drug addicts, Sagrada Família, and also supports the social actions of the Rotary Club.

Other practices adopted by Hotel A are: cleaning the river on Environmental Day, sponsoring the ACQUA program, and the Carnivores Project of the National Park. Hotel A also contributes to snacks for the Escola Parque.

About green marketing, Churchill Jr. and Peter (2005) state that green marketing refers to marketing activities whose objective is to minimize the negative effects of the company's physical environment. The objective of green marketing consists of activities that aim to generate changes to meet the needs of consumers without a major impact on the environment.

Green marketing is the marketing strategy linked to an environmentally conscious image.

Figure 4. Investment in Green Marketing



■ Yes ■ No

Source: research data.

As a positive point in green marketing (Figure 4), Hotel B received the 2014 Brazil Sustainability Award. This award encourages associated tourism operators and their main stakeholders to work with resources in an environmentally responsible, socially fair, and economically viable manner.

With the increase in global warming, there is a strong trend towards awareness among the population, concerned with sustainability. Green marketing is a market management tool. Through its strategies, businesses project a positive image before society and position their services in the market, differentiating themselves from others. By using green marketing strategies, hotels can add value to their hotel chains, improve their credibility, and enhance their image among customers.

The objective of the EMS is to ensure that concern for the environment is not only achieved through specific actions, but that it is included in the company's policy, being present in all stages of activities, from planning to execution, and disseminated throughout the organizational structure, always with a commitment to the continuous improvement of actions aimed at environmental preservation.

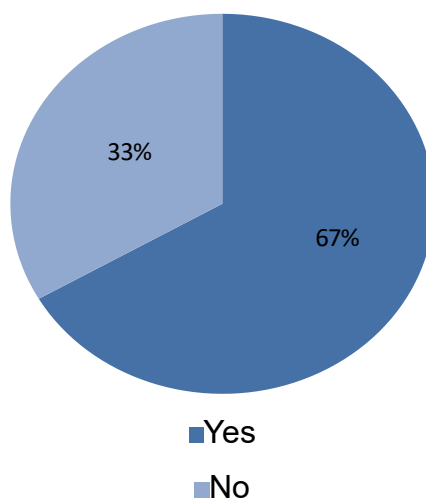
By implementing the EMS in hotels, the advantages went far beyond marketing, as there was a reduction in expenses associated with the use of resources and a reduction in environmental risks and accidents.

Main advantages:

- Compliance with environmental legislation and reduction of risks associated with non-compliance;
- Cost reduction with increased efficiency in the company's various processes through lower consumption of inputs (water and energy) and reduced waste generation;
- Increased motivation and participation of employees in internal management;
- Greater knowledge of the company's processes;
- Gains in competitiveness and better positioning in the market (especially by foreign guests).

Most hotel organizations are implementing environmentally responsible practices in their management, as they understand that environmental resources are elements of utmost importance for their conservation. The EMS is a way of organizing environmental actions logically, providing a system capable of achieving its objectives, always prioritizing the gradual and continuous improvement of environmental actions.

Figure 5. Environmental Management System



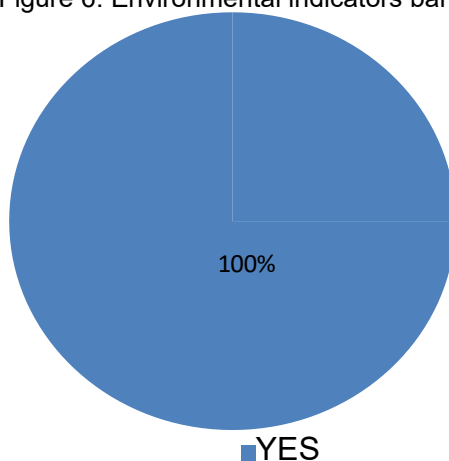
Source: research data.

We observed that all the hotels surveyed have been in existence for over twenty years (20), a period that can be considered sufficient for the company to consolidate itself in the market and be able to implement an environmental management system. In the research by (SANTOS et al, 2006) on Environmental Management in Hotel ventures, 75% of the hotels studied that had been in existence for over twenty years are certified by the ISO 14001 standard. In our data collection, we found that only 33%, that is, one hotel, is certified by this standard. According to the applied script (Figure 5), it was possible to verify that Hotel A has ISO 14001 certification. This certification specifies the requirements of an EMS and allows an organization to develop and implement environmentally sustainable policies and goals. Hotel B has ABNT NBR 15401 certification. This standard specifies the requirements related to the sustainability of accommodation facilities, establishing specific minimum performance criteria for sustainability. It is important to highlight that the hotels comply with legislation related to Occupational Health and Safety, which is a set of measures adopted to minimize work accidents and occupational diseases, as well as to protect the integrity and work capacity of employees.

In addition, they have an Internal Accident Prevention Committee (CIPA) whose objective is to prevent accidents and diseases resulting from work. The CIPA is responsible for identifying the risks of work processes and preparing a risk map. In addition, it periodically carries out inspections of the work environment and conditions, aiming to identify situations that may pose risks to the safety and health of workers.

The hotels also have an Environmental Risk Prevention Program (PPRA), which aims to establish a methodology of action that guarantees the preservation of the health of workers, through the evaluation of environmental risks existing in the work environment. Regarding the control of environmental practices, Van Bellen (2008) states that indicators seek to communicate progress toward a goal simply and objectively, sufficiently accurate to portray the company's real situation as accurately as possible, emphasizing phenomena that are linked to human action and its consequences. In this sense, the hotel sector needs to have a sustainability measurement model that allows it to visualize, monitor, and control its level of performance to achieve sustainability. Based on this aspect, Tinoco and Kraemer (2011) define sustainable development indicators as something necessary and essential to base decision-making on the most diverse levels and in the most diverse areas.

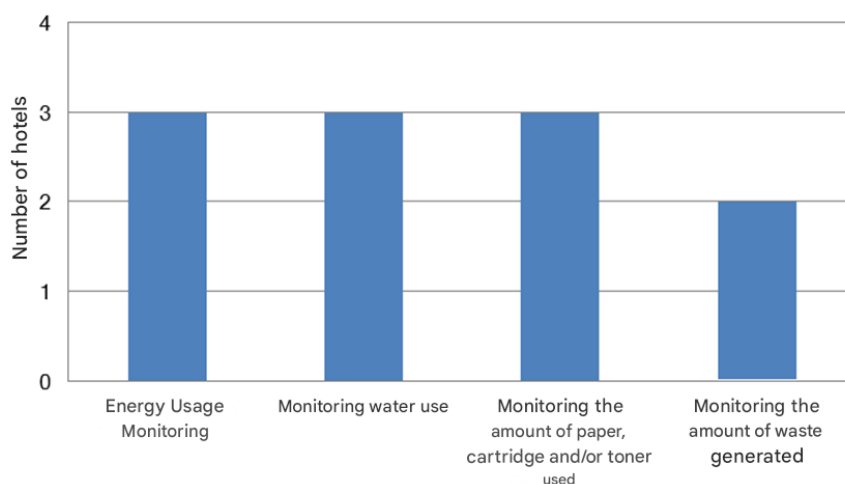
Figure 6. Environmental indicators bank



Source: survey data.

According to the data collected, 100% of the hotels have a database of environmental indicators, where these indicators are recorded and monitored (Figure 7).

Figure 7. Monitoring and Control



In Figure 7, we can see which inputs are monitored and how many hotels do this monitoring. Hotel B monitors the use of water, energy, and the amount of waste generated every month. As for waste, since the hotel works with events when a contract is signed with a company, the company is responsible through a contract that the tenant is responsible for the waste brought to the hotel, such as cardboard boxes, packaging, and paper.

Hotels A, B, and C monitor the use of paper at their reception, cartridges, and/or toner, since the company that performs this work is outsourced, in this case, they need to carry out the control to verify consumption later.

FINAL CONSIDERATIONS AND RECOMMENDATIONS

Among the main difficulties reported in implementing sustainable technologies and practices, the high cost was the main obstacle pointed out. Another relevant issue is the fact that managers do not perceive any appreciation or recognition of the use of these practices by guests, especially Brazilians. Some difficulties were also reported, even on the part of some company employees (housekeepers, receptionists, cooks, etc.), who sometimes show some resistance, as they do not recognize the importance of an environmental management system.

It is important to emphasize that there is room for improvement in both the quantity and quality of technologies applied to environmental management in all the hotels surveyed, even those already certified and with a well-defined environmental policy.

To improve the rate of adoption of sustainable practices by employees, it is necessary to invest in environmental education and specific training on the practices that are adopted and the technologies implemented. This training should be periodic. It is recommended that certified hotels continue to invest in their EMS to maintain their certifications.

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