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Sustainability and the environmental impact of the tourism industry: An analysis of the hotel sector in Catalonia, Spain

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Abstract

Purpose: This research examines policies aimed at reducing the environmental impact of the hotel sector in Catalonia, Spain in 2020 and how they are communicated to stakeholders through corporate websites. It applies academic criteria to identify key aspects that are relevant to tourism.

Design/methodology/approach: This study conducts a descriptive analysis of Catalonia's hotel sector in 2020, utilizing SABI (Iberian Balance Sheet Analysis System) data. It selects the top 48 companies in the hotel sector that are legally required to report their annual accounts in the regular format. The study then systematically evaluates their websites to assess the availability and transparency of information on environmental sustainability.

Findings: Sustainable tourism, marked by non-financial indicators such as environmental impact, energy/water usage and waste generation, is a very important issue for stakeholders in the hotel industry, including governments, owners, investors, and customers. The sector's reporting methods are crucial for effectively communicating environmental policies to these parties. While many companies have implemented strategies to assess and reduce their environmental impact, there is still considerable room for improvement, particularly in communicating these efforts to the various stakeholders.

Research limitations/implications: This research, while rigorous, has certain limitations that suggest directions for future studies. A primary constraint involves data reported at a group level by hotel companies, which complicates obtaining specific data for the Catalonia region, particularly for hotel groups with an international presence. Another significant limitation is the reliance on indirect data collection, based on the companies' self-reported environmental policies posted on their websites.

Practical implications: By identifying and knowing the environmental policies of the hotel industry over the analyzed period, we can help the industry itself to improve the sustainability of its environmental efforts and make it more attractive to all stakeholders.

Social implications: The study highlights the importance of environmental policies and the achievement of the UN Sustainable Development Goals (SDGs) in the hotel industry. This industry plays an important role in achieving the UN SDGs, which offer significant benefits for business, such as access to new markets, better risk management and long-term sustainability, as well as social benefits. This is increasingly expected by both consumers and investors.

Originality/Value: This study examines the commitment and information transparency of the Costa Brava hotel sector in terms of environmental sustainability, as well as its communication strategies. This

is achieved primarily through the analysis of corporate websites, comparing the information and indices to those of other entities in the sector. The relevance and value of this analysis stems from the recognition that, despite the efforts made to improve the sector, further progress needs to be made in order to make it more attractive to stakeholders.

Keywords: Sustainability, Environmental impact, Communication, Transparency, Tourism, Hotel, Hospitality industry

Jel Codes: Q01, Q51, Q53, Q56

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1. Introduction

Prior to the Covid-19 pandemic, tourism accounted for 10.3% of the global Gross Domestic Product and provided 330 million jobs around the world, i.e., 10.4% of total employment. Tourism also posted a growth rate of 3.5% in 2019, one percentage point higher than the overall economic growth, which was 2.5% (World Travel & Tourism Council, 2020). At the same time, tourism in Spain in 2019 was worth €154.487 billion and accounted for 12.4% of Spanish GDP. It also provided 2.72 million jobs, which is 12.9% of the total (Spain's National Statistics Institute (INE), 2020). The tourism industry in Spain grew by 30.8% between 2015 and 2019. Figure 1 shows the economic power of the tourism industry from 2015 to 2019 (the latest figures available from the Spanish National Statistics Institute).

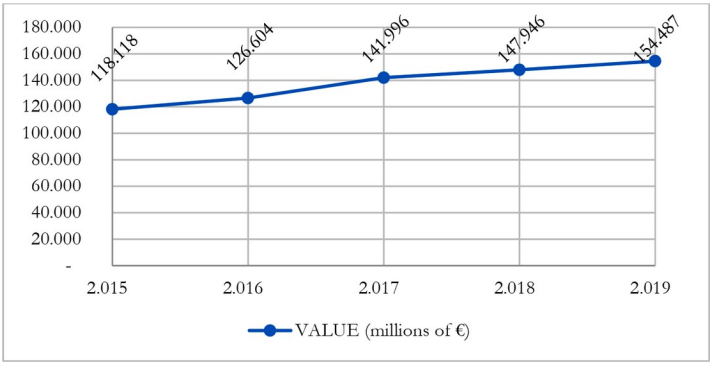

Figure 1. Tourism's Contribution to the Spanish Economy (Spain's National Statistics Institute, INE)

When examining the Catalonian economy, in 2018 tourism represented approximately 12% of Catalonian GDP. The tourism offering in Catalonia, comprising around 700,000 beds, made up 22% of the Spanish total and 2.5% of the EU total (Government of Catalonia, 2019). Table 1 shows the census of tourism establishments, broken down by type and with figures on the number of establishments and the total beds they offer.

Not surprisingly, the pandemic caused by the coronavirus saw Spain record a decrease of 78.52% in international tourism numbers, to 19.7 million in 2020, representing a loss of some 72 million visitors with respect to the previous year. Meanwhile, spending by these tourists sank to €19.74 billion (Spain's National Statistics Institute (INE)). This situation was repeated to a greater or lesser extent around the world, and it is calculated that international tourism levels fell by 74% (World Travel & Tourism Council, 2021). The nights spent in tourist accommodations in 2020 with respect to 2019 also plummeted, at the maximum point collapsing by 95.1% across Europe as a whole and nearly 100% in Spain (in April 2020) (Eurostat, 2021). Figure 2 shows the graphic representation of nights spent in tourist accommodations as a percentage compared to the figures for the same period the previous year.

Type	No. of establishments	Beds
Hotels	3,040	313,788
Camp sites	351	271,908
Rural tourism	2,465	19,527
Tourist apartments	18,463	92,148
Total	**24,319**	**697,371**

Table 1. Type of Tourism Establishments and Number of Beds (IDESCAT Statistical Institute of Catalonia and the Work and Production Model Observatory – Government of Catalonia)

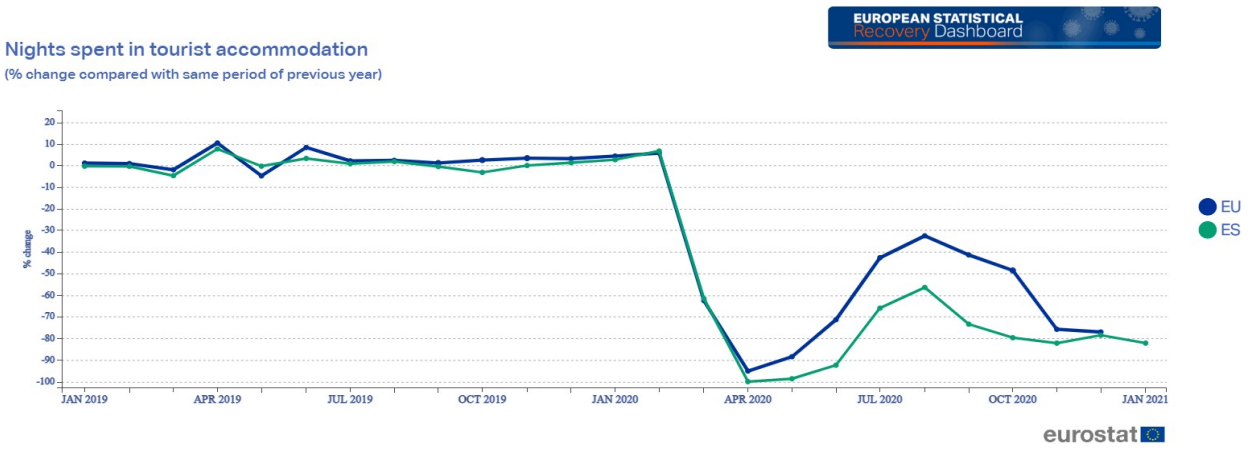

Figure 2. Nights spent at tourist accommodation establishments (% change compared to same period the previous year). (Eurostat – European Statistical Recovery Dashboard.)

Despite this drastic decrease due to the major health crisis of the past couple of years, the present recovery scenarios for international tourism range from 2.5 years to four years, in order to return once again to 2019 levels (World Tourism Organization (UN), n.d.). Figure 3 shows the graphic representation of these estimated recovery scenarios.

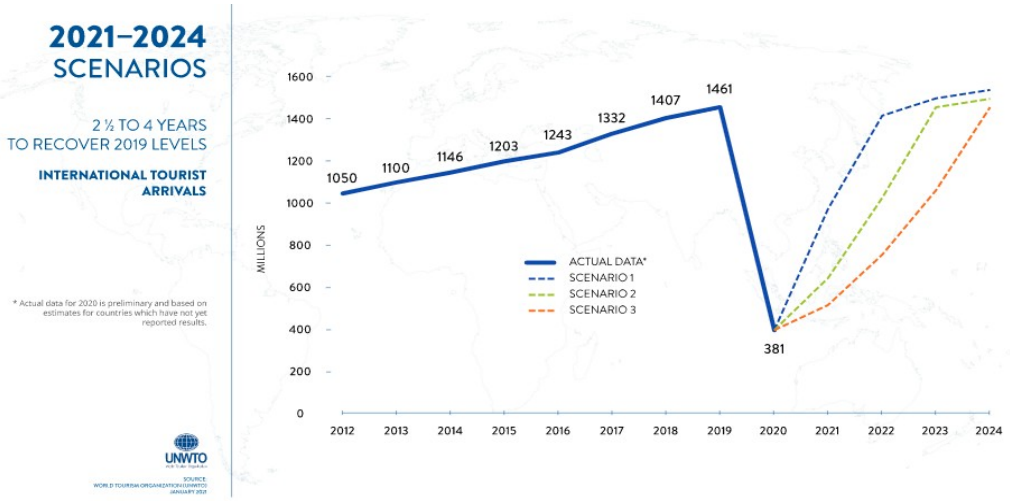

Figure 3. Covid-19 and Tourism. Recovery Scenarios 2021-2024 (World Tourism Organization)

The environmental impact of tourism, particularly in regions such as Catalonia, is a multifaceted issue that merits close examination (Regional Government of Catalonia, 2017). An analysis of the figures in the previous sections reveals that the tourism sector is a driver of the global economy and, more specifically, of that of Catalonia, where it boosts the economic system and is a major contributor of value for people in terms of both the

economy and employment. The figures also suggest that, despite a poor performance during the pandemic, tourism will continue to be a major driver in the future.

As can be observed, the tourism figures have a strong impact on the world economy, meaning that its environmental impact is also very strong.

More specifically, tourism accounts for approximately 8% of global greenhouse gas emissions (Lenzen, Sun, Faturay, Ting, Geshke & Malik, 2018), which is why analyzing the environmental impact and increasing the sustainability of the tourism industry is a key part of successfully delivering on the 2030 Agenda for Sustainable Development Goals. The tourism industry has the potential to directly or indirectly contribute to each of the SDGs.

One of the priorities of the World Tourism Organization (UNWTO), a specialized agency of the United Nations, is to promote the sustainable development of tourism, supporting policies and practices to achieve a triad of objectives. Firstly, it emphasizes the optimal utilization of environmental resources, recognizing their critical role in the development of tourism. Secondly, the UNWTO advocates for the preservation of socio-cultural authenticity within host communities. Finally, the organization seeks to ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are equitably distributed.

Achieving sustainable tourism requires all the different channel stakeholders, from owners, tourist agents and users, to be well informed about responsible use. It is also important for the scientific community to investigate and determine systematic methods to ensure the optimal use of water and other environmental resources.

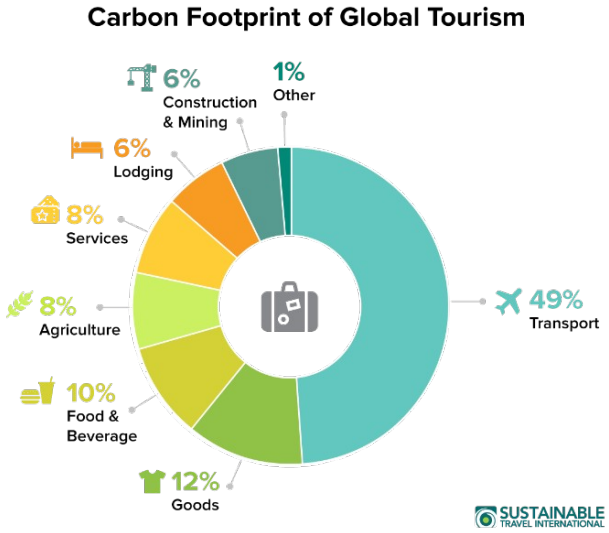

Figure 4. Tourism activities and their contribution to the carbon footprint. (Sustainable Travel International, taken from the article 'Carbon Footprint of Global Tourism' (Lenzen et al., 2018))

As can also be seen in the previous graph (Figure 4), of the total carbon footprint of 4.5 Gt of CO_2 equivalent generated by tourism (Lenzen et al., 2018), the specific weight of lodging accounts for 6% of the total. The hotel industry not only supplies lodging, but also offers services (8% of the total), food and beverages (10% of the total) and goods (12%) that tourists can buy, meaning the impact on the carbon footprint produced by the hotel sector is larger than the 6% represented solely by lodging.

This study aims to analyze the commitment of the hotel industry in Catalonia to environmental sustainability and how this involvement is communicated through the review of their websites. By comparing information and indices with other establishments and groups in the sector, the study ultimately seeks to aid in improving all involved processes, leading to a reduced overall impact. Although the Catalonian hotel sector has already adopted the intention of improving its environmental impact, this is a process of continuous improvement, aimed at making their products and services more attractive to stakeholder groups.

In consideration of the extensive context provided above, this study is guided by the following objectives:

1. To extract comparable data to perform a benchmarking of the hotel sector in Catalonia
2. To compare these figures among the different hotels and against the *Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water* study conducted by Cornell University (Ricaurte & Jagarajan, 2020).
3. To determine the values and reporting on environmental matters by the different companies in the sample.
4. To determine improvement possibilities around the reporting of environmental impact data by the hotel sector.

After the introduction, the work proceeds to provide a literature review, followed by an empirical study and the corresponding results and conclusions.

2. Literature Review

The literature review considers relevant aspects that influence the sustainability of tourism and the changes in the hotel sector.

The literature review, focused on the period 2011-2020, begins with a search for the following keywords in the Scopus database by Elsevier:

- sustainability AND tourism AND hotel
- water OR energy OR footprint OR "environmental impact"
- sustainability AND reporting AND hotel AND tourism

In the initial phase, 108 records that met all the search parameters were identified. This was followed by the identification and review phase, in which the article's title, keywords, number of citations, and abstract were specifically analyzed. According to this method, 50 records were excluded, leaving 51 records.

Subsequently, a total of 20 records pertaining to related and referenced research in the previously analyzed articles were added, resulting in a total of 71 records that met the requirements for eligibility and classification. The content was analyzed, and a classification was created based on the main topic of the research. In total, seven thematic fields of study were found, as described here:

- **Carbon footprint**: Research focused on the carbon footprint of tourism and the hotel industry, in order to make it more sustainable. A total of 8 references dealing with this topic were classified.
- **Climate change**: Elements related to climate change and its impact on tourism and the hotel industry. Six articles were classified in this category.
- **Energy**: Elements that primarily focus on energy management in the hotel industry, in order to make it more efficient and sustainable. Ten articles dealing with this topic were collected.
- **Environmental impact**: Articles dealing with the environmental impact of tourism and the hotel industry and how to manage this impact, in order to make tourism more sustainable. In total, there are three research articles focused on this classification.
- **Hotel industry sustainability**: This theme classifies academic studies dealing with the management of the hotel industry and how to make it more sustainable. In total, there are 26 references that have this subject as the focal point of study.
- **Sustainable tourism**: This category includes research that, in addition to analyzing the sustainability of tourism, is also focused on the hotel industry. In total, there are nine articles dealing with this subject.
- **Water**: Water management is a key element for tourism and the hotel industry. In this classification, there are 16 article references that focus on this as the main topic.
- **Reporting on hotel sustainability**: The way in which hotel companies report sustainability management and the transparency of this communication to stakeholders is vital for enhancing ESG practices. In this category, there are a total of 7 articles.

The usual way to analyze company performance is through the indicators and reports that these companies provide. Normally, these indicators are categorized into financial indicators that analyze the accounting aspects of companies; however, especially in the case of larger companies, they often must report non-financial indicators. To analyze the performance of the hotel industry with regard to these aspects of sustainability and environmental impact, it is necessary to examine these non-financial indicators, which are increasingly considered by company stakeholders in their evaluation and in the selection of their products or services, and their decision to associate with a particular corporation.

Although some time ago financial indicators were the most commonly consulted and analyzed indicators, non-financial indicators are increasingly considered by corporate stakeholders in assessing and choosing products or services, or deciding whether to associate with a particular firm. Furthermore, certain authors suggest that the possession of an environmental management system, along with a corporate responsibility strategy and its effective communication to all relevant stakeholders, have been identified as principal factors that contribute to success within the hotel industry (Alvarez-Ferrer, Campa-Planas & Gonzales-Bustos, 2018).

As previously discussed, the tourism industry is a very important driver of the global economy and has a huge impact on the environment, with strong growth in both economic terms and in relation to said impact (Gössling & Peeters, 2015). In accordance with one study (Lenzen et al., 2018) the global carbon footprint of the tourism industry rose from 3.9 to 4.5 Gt of CO_2 equivalent between 2009 and 2013, four times more than the estimated forecast.

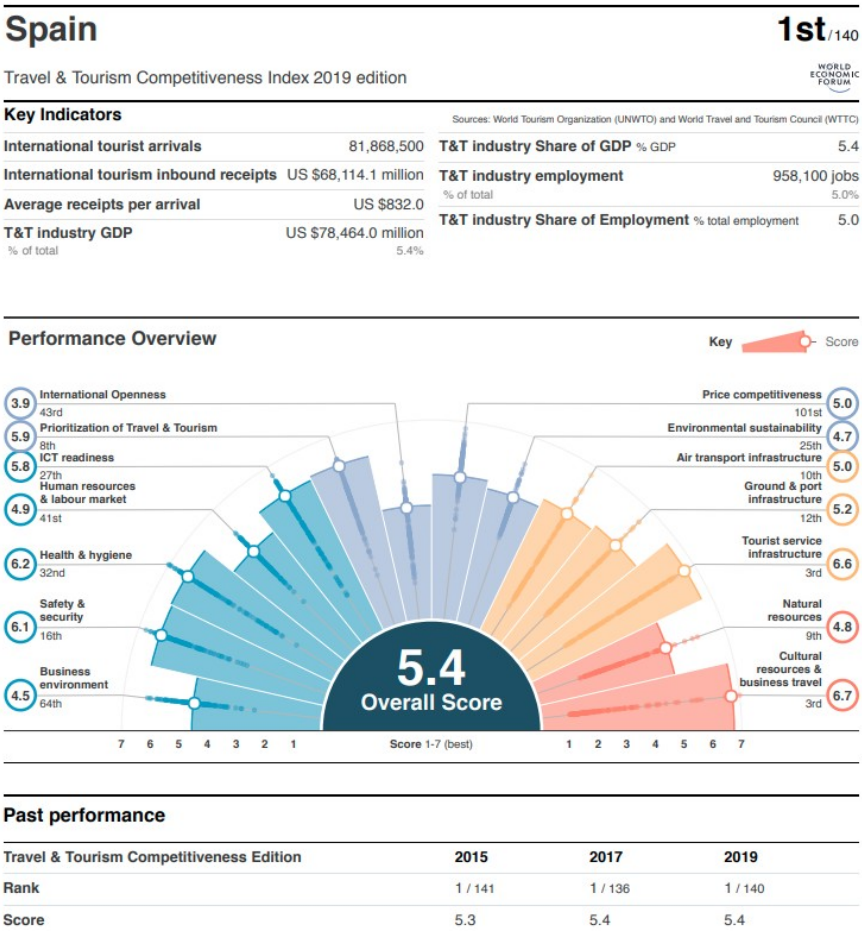

Figure 5. Travel & Tourism Competitiveness Index, 2019 edition - Spain (World Economic Forum, n.d.)

As indicated in Figure 5 above, Spain is a tourism powerhouse. It has consistently been among the top 5 countries in terms of tourist arrivals in recent years, and according to the data shown in Figure 5, it received close to 82 million international tourists in 2019. Furthermore, in terms of competitiveness in travel and tourism,

it came in first in the ranking prepared by the World Economic Forum in 2019, and it has led the 140 countries on the list since the 2015 edition (World Economic Forum).

Spain's typically Mediterranean climate can also suffer great stress with the arrival of so many international tourists. This explains the abundance of studies on Spain, such as "Potential impacts of climate change on tourism; a case study for Spain" (Hein, Metzger & Moreno, 2009), which examines the sustainability of the Spanish climate for tourism 50 years from now, based on climate models and different scenarios. Other authors also relate tourism to its environmental impact (Scott, Gössling & Hall, 2012). The paper "Inventory Analysis and Carbon Footprint of Coastland-Hotel Services: a Spanish Case Study" (Puig, Kiliç, Navarro, Albertí, Chacón & Fullana-i-Palmer, 2017) leverages the life cycle analysis (LCA) method to calculate the carbon footprint, using 14 coastal hotels in Spain as a reference. Furthermore, as previously noted, the Mediterranean Basin is particularly vulnerable to the effects of climate change, with associated problems that require changes in the tourism and hotel industries (Torres-Bagur, Palom & Vila-Subirós, 2019; Dinarès & Saurí, 2015).

Focusing on Catalonia, a recent study assessed the carbon footprint of tourism activity in Barcelona. The city of Barcelona is the place that receives the most international visitors every year, and it is usually featured on lists of the most visited cities in the world. It placed 17th in the Global Destination Cities Index 2019 (MasterCard, 2019), with over 9 million visitors in 2018, up 4.78% over the previous year. The study entitled "Carbon footprint of tourism in Barcelona" (Rico, Martínez-Blanco, Montlleó, Rodríguez, Tavares, Arlas et al., 2019) analyzed various aspects of the environmental impact of tourism in Barcelona. This comprehensive analysis included the carbon emissions related to the arrival and departure of tourists, including not only those staying overnight, but also day travellers from other parts of Catalonia and cruise ship passengers who visit the city. In addition, the study evaluated the environmental impact of tourist accommodation, as well as the carbon footprint generated by the tourists' leisure and professional activities. Moreover, it considered the emissions from the intercity transport used by tourists within Barcelona. This investigation provided a detailed overview of the different facets contributing to the tourism-related carbon footprint in Barcelona, highlighting the city's environmental challenges in this sector.

Figure 6 shows the distribution of hotel establishments in Catalonia, and the areas with the greatest tourism stress are the coastal regions. Climate change and its effects are perceived differently by coastal, city and inland establishments, but they all face the problem of a lack of water, a problem that also concerns governments and sustainable tourism managers. Clear and innovative water management (Gössling, 2015) is therefore needed in hotels and other types of accommodation, considering the shortage of water and its savings, reuse and recycling (Kasim, Gursoy, Okumus & Wong, 2014).

Specifically, the parties responsible for managing tourist accommodations must be aware of the risks of climate change and implement clear strategies in this regard to make the industry more resilient (Torres-Bagur et al., 2019). Other studies speak to the crisis in the quality and quantity of the water supply and the repercussion on tourism and hotels (Kasim et al., 2014). More specifically, water stress is an important environmental challenge for many hotels, and good water management practices are a necessity, along with water-saving strategies (Styles, Schoenberger & Galvez-Martos, 2015). On the other hand, the intensification of droughts, increasingly more frequent due to climate change, raises concerns in the tourism industry. The Barcelona hotel industry has responded to this by promoting technical and behavioral changes in this regard, derived from government regulations to control the effects of drought (Dinarès & Saurí, 2015).

Water consumption is one environmental indicator to be improved, but an improvement in consumption would also cut operating costs in the hospitality industry. To illustrate this scenario in monetary terms, certain researchers have estimated the savings in water and energy for hotels with 100 rooms (approximately 16,000 cubic meters of water and 200,000 kilowatt-hours of energy) would correspond to a financial savings of around €60,000 (Styles et al., 2015). When this model is extrapolated to a European context, the potential water savings could amount to 422,000,000 cubic meters per year (Styles et al., 2015). However, other researchers do not detect a positive relationship between sustainability and financial performance, despite finding that sustainability is associated with a minimum measure and positive effects at the economies of scale level, which affect margins (Aznar, Sayeras, Galiana & Rocafort, 2016).

The outcome is that greenhouse gas emissions associated with this activity account for 9.6 million tonnes of CO_2e, in other words, 96.93 kg CO_2e per visitor, per day in the study year 2015. The conclusion is that policies must be created to reduce the impact and speed up offsetting.

Other researchers have used structural equations to analyze the environmental certifications of Catalonian hotels with fewer than 50 employees, finding significant differences in hotels without certifications that voluntarily commit to ecological policies, and which end up delivering better results. Governments therefore need to regulate and promote awareness among small and medium-sized tourist enterprises to improve the environment for the benefit of everyone (Bagur-Femenias, Celma & Patau, 2016).

Within the indicators on the environmental impact of any business activity, the principles considered in most cases include energy and water consumption because of the impact that improving their efficiency has on corporate operating costs. However, it is crucial to remember that there are indicators on waste generation that should be considered when calculating the environmental impact and its improvement.

Environmental indicators include indicators of energy consumption, water consumption and waste generation. It should be noted that environmental indicators have a direct impact on the company's operating costs, and their economic and environmental impact must be analysed in a comprehensive manner.

3. Methodology and Empirical Study

According to the SABI database, in 2020 a total of 2,640 companies operated (i.e., had establishments or local branches) in Catalonia under National Classification of Economic Activities (CNAE) code 5510: Hotels and Similar Accommodation. These companies include hotels and hotel groups, many operating both nationally and at the international level. These 2,640 companies collectively generate operating revenues of €8.776 billion. This figure is for individual hotels and hotel groups present not only in Catalonia, but also in the rest of Spain.

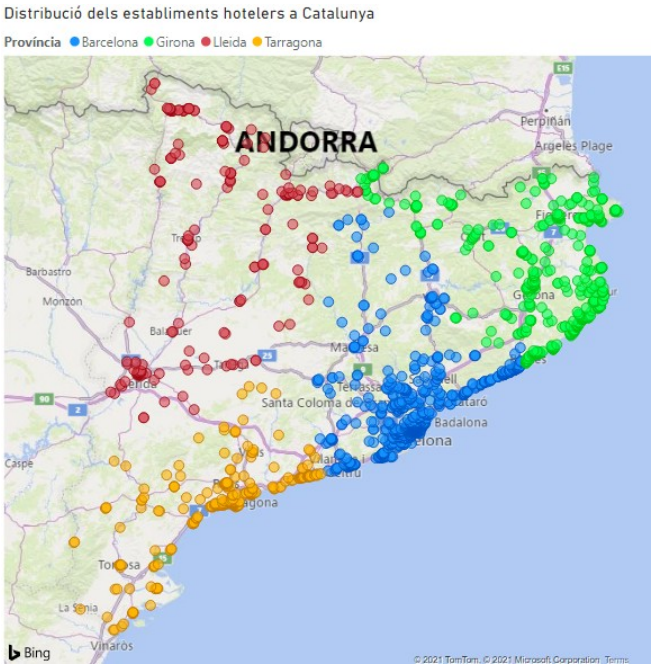

Figure 7. Distribution of hotel establishments in Catalonia (SABI geolocation figures)

As can be seen in Figure 6, the area with by far the highest concentration of hotels is Barcelona, followed by the two leading beach tourism areas in Catalonia: the Costa Daurada and the Costa Brava. These three areas are the ones with the greatest environmental stress.

Figure 6 shows the total distribution of hotel establishments in Catalonia, according to the SABI (SABI, n.d.) database. The colours identify their location within the four provinces.

Of the total hotel companies taken from the SABI database with a presence in Catalonia, the selected sample corresponds to companies that must file annual accounts in the regular format, i.e., companies that meet two of the following three criteria:

1. They have over €11.4 million in total assets.
2. They post a net turnover of more than €22.8 million.
3. They have an average of more than 250 employees during the year.

The selection criteria employed are in alignment with the stipulations of Spanish Royal Decree 602/2016, dated December 2, which revises the General Accounting Plan sanctioned by Royal Decree 1514/2007, dated November 16; the General Accounting Plan for Small and Medium Enterprises established by Royal Decree 1515/2007, dated November 16; the Standards for the Formulation of Consolidated Annual Accounts set forth by Royal Decree 1159/2010, dated September 17; and the Standards for the Adaptation of the General Accounting Plan to Non-Profit Entities, as per Royal Decree 1491/2011, dated October 24.

There are only 48 companies that meet these requirements. This constitutes 1.8% of the total number of 2,640 companies. Collectively, these 48 companies generate a global turnover of 4.19 million euros, accounting for 47.8% of the total turnover.

The companies in this sample were used to perform a descriptive analysis with the information they report on their environmental impact. This information was taken from the websites of the companies themselves or the groups they belong to, as well as their annual reports and other information provided on ESG (Environmental, Social and Governance) and CSR (Corporate Social Responsibility) policies. The numerical data provided therein refer to the impact, applied policies and different environmental quality seals the companies reported via the above mentioned sources.

The study extracts the following data, taken from the websites of the hotel companies present in Catalonia, grouped as follows:

1. Data on the offering of hotel businesses.
2. Number of employees in each company or group.
3. General data on environmental, ESG and CSR policies.
4. Information on the contribution of the companies' social and environmental commitments to the 2030 Agenda for Sustainable Development Goals (Annex 1).

The extracted and processed data are presented in Tables 3 to 8, which provide a detailed analysis of the relevant variables, findings and topics within the framework of the study.

With regard to environmental indicators, we drew on those indicated by the Spanish Accounting and Business Administration Association (AECA; see Annex 2). These indicators can be seen in Table 2 below:

Environmental Sustainability Indicators		
Energy Efficiency and Emissions	Energy consumption	Energy **(MWh)**
	Water consumption	Volume of water **(thousands of m3)**
	Polluting emissions **(Scope 1, direct emissions)**	Total Scope 1 **(t CO_2e)**
	Polluting emissions **(Scope 2, indirect emissions)**	Total Scope 2 **(t CO_2e)**
	Polluting emissions **(Scope 3, indirect emissions not included in Scope 2)**	Total Scope 3 **(t CO_2e)**
Waste Management Efficiency	Waste management	KPI_E7 **(t)**
	Managed waste	KPI_E8 **(t)**
	Reused waste	KPI_E9 **(t)**

Table 2. Environmental impact indicators (Spanish Accounting and Business Administration Association) (AECA, n.d.)

4. Discussion and Results

The data extracted from the websites is then presented and subjected to a review and analysis. This is followed by a comparison of the above data with the benchmarks reported in Cornell University's (Ithaca, New York) 'Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water' (Ricaurte & Jagarajan, 2020).

4.1. Results of the General Data on Environmental, ESG and CSR Policies

The first step, as outlined earlier, was to review the websites of the companies to verify whether they had CSR and/or ESG policies and which indicators they communicated.

After collecting the necessary data sets from the websites of the respective hotel companies, an analytical assessment was carried out to determine the reliability of the data, using established statistical measures. Cronbach's alpha and the Kuder-Richardson formula 20 (KR-20) were used for this purpose, both of which are considered to be robust indicators of internal consistency for scale-based and dichotomous items.

Cronbach's alpha was 0.8. These results are in line with empirical references in the literature (Nunnally, 1978; Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011) who report that alpha values above 0.7 indicate satisfactory reliability.

In the case of the Kuder-Richardson KR-20 formula, the result was 0.81; according to the academic literature (Cleary & Linn, 1968; El-Uri & Malas, 2013; Ferguson, 1951), a KR20 of 0.8 is the minimum acceptable value.

These results support the credibility of the data collected from these digital platforms.

Table 3 shows the frequency of the companies that reported whether they had a general environmental policy management system in place.

Concept	Affirmative reporting N	% of total (n=48)
Energy and/or emissions efficiency	22	46%
Waste management	20	42%
CSR and/or ESG policies	16	33%
ISO certifications		
ISO 14401	13	27%
ISO 50001	3	6%

Table 3. Results of the general data on environmental, ESG and CSR policies

Only a 46% of the companies have energy efficiency and/or greenhouse gas emission control measures and a waste management system.

Furthermore, as would be logical, 33% of those that had a Corporate Social Responsibility and/or Environmental, Social and Governance policy also had energy and/or emission control systems and a waste management system in place.

The ISO 50001 energy management system is a standard aimed at enabling ongoing corporate improvement in energy efficiency, security, usage, and consumption, with a systematic approach. The standard makes it possible to improve efficiency, energy costs and greenhouse gas emissions. This was the concept least addressed by companies. Only the top 3 had such a system in place, namely, those with the largest turnover and which are listed on the stock exchange.

4.2. 2030 Agenda for Sustainable Development Goals (SDGs)

A total of nine companies, 19% of the sample, reported the contribution of their social and environmental commitments in relation to the 2030 Agenda for Sustainable Development Goals (SDGs).

The previous table uses a grey background to show the top five commitments aligned with the Sustainable Development Goals of hotel industry companies in Catalonia.

SDGs	Total of 48 Companies		Companies with CSR and/or ESB policies		Companies without CSR and/or ESB policies	
	No. of Companies N	% of Companies (n=48)	No. of Companies N	% of Companies (n=16)	No. of Companies N	% of Companies (n=32)
1. No Poverty	4	8.3% 4	25.0%	0	0.0%	
2. Zero Hunger	2	4.2%	2	12.5%	0	0.0%
3. Good Health and Well-being	**8**	**16.7%**	**6**	**37.5%**	**2**	**6.3%**
4. Quality Education	6	12.5%	5	31.3%	1	3.1%
5. Gender Equality	6	12.5%	4	25.0%	2	6.3%
6. Clean Water and Sanitation	5	10.4%	5	31.3%	0	0.0%
7. Affordable and Clean Energy	7	14.6%	6	37.5%	1	3.1%
8. Decent Work and Economic Growth	**9**	**18.8%**	**7**	**43.8%**	**2**	**6.3%**
9. Industry, Innovation and Infrastructure	1	2.1%	0	0.0%	1	3.1%
10. Reduced Inequalities	5	10.4%	3	18.8%	2	6.3%
11. Sustainable Cities and Communities	**8**	**16.7%**	**6**	**37.5%**	**2**	**6.3%**
12. Responsible Consumption and Production	**9**	**18.8%**	**7**	**43.8%**	**2**	**6.3%**
13. Climate Action	**10**	**20.8%**	**8**	**50.0%**	**2**	**6.3%**
14. Life Below Water	3	6.3%	2	12.5%	1	3.1%
15. Life on Land	3	6.3%	3	18.8%	0	0.0%
16. Peace, Justice and Strong Institutions	5	10.4%	4	25.0%	1	3.1%
17. Partnerships for the Goals	7	14.6%	6	37.5%	1	3.1%

Table 4. 2030 Agenda 17 SDGs with the number of companies referencing their commitment in their digital media and annual reports

The Sustainable Development Goals (SDGs), or Global Goals, were adopted by the United Nations in 2015, signifying a universal call to action to terminate poverty, preserve the planet and ensure that all individuals achieve peace and prosperity by 2030. Society and the corporate sector have increasingly rallied behind these objectives in recent years, justifying the growing corporate commitment to these goals. Nevertheless, the pursuit of excellence in this field necessitates ongoing effort and dedication.

4.3. Environmental Sustainability Indicators

A total of 20 companies, i.e., 41.7% of the total of 48 companies in the sample, provided information either in figures or in a general fashion (in other words, reporting that they had a management system for environmental sustainability indicators in place, but not providing any figures for the indicator).

Table 5 shows these 20 companies, out of a total of 48 companies in the sample, divided as follows:

On the other hand, companies with numerical values in the indicators can be seen in Table 6, which shows the percentages of indicators most used by the hotel sector. All figures and percentages are calculated based on the total of 48 companies in the sample.

The two previous tables show that the environmental sustainability indicators most commonly controlled by hotel industry companies are energy and water consumption, followed by direct pollutant emissions (Scope 1). However, although 10.4% of the companies claimed in a general sense to have some sort of a control mechanism in place for waste management, when it came to providing a figure for this indicator, the percentage fell slightly.

In order to compare the indicators, and given the fact that the size of the hotel companies differed greatly, and to be able to compare them with the *Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water* study by Cornell University (Ithaca, New York), we used relative indicators per occupied room. In other words, we

used a relative value for nights spent at the establishment to show the impact of each stay that occurred throughout the analysis period.

Environmental Sustainability Indicators			Total of 48 Companies		Companies with CSR and/or ESB policies		Companies without CSR and/or ESB policies	
			No. of Companies N	% of Companies (n=48)	No. of Companies N	% of Companies (n=16)	No. of Companies N	% of Companies (n=32)
Energy and Emissions Efficiency	Energy consumption	General information	8	16.7%	6	37.5%	2	6.3%
	Water consumption	General information	8	16.7%	6	37.5%	2	6.3%
	Polluting emissions	General information	7	14.6%	7	43.8%	0	0.0%
Waste Management Efficiency	Waste generation	General information	5	10.4%	3	18.8%	2	6.3%

Table 5. Companies that indicated having a general environmental-sustainability indicator control system in place

Environmental Sustainability Indicators			Total of 48 Companies		Companies with CSR and/or ESB policies		Companies without CSR	
			No. of Companies N	% of Companies (n=48)	No. of Companies N	% of Companies (n=16)	No. of Companies N	% of Companies (n=32)
Energy and Emissions Efficiency	Energy consumption	KPI_E1 (Energy) (Mwh)	12	25.0%	9	56.3%	3	9.4%
	Water consumption	KPI_E2 (Volum of water) (thousands m3)	11	22.9%	9	56.3%	2	6.3%
	Polluting emissions (Scope 1, direct emissions)	Total Scope 1 (t CO_2 eq.)	11	22.9%	8	50.0%	3	9.4%
	Polluting emissions (Scope 2, indirect emissions)	Total Scope 2 (t CO_2 eq.)	5	10.4%	5	31.3%	0	0.0%
	Polluting emissions (Scope 3, indirect emissions not included in Scope 2)	Total Scope 3 (t CO_2 eq.)	4	8.3%	4	25.0%	0	0.0%
Waste Management Efficiency	Waste management	KPI_E7 (t)	4	8.3%	4	25.0%	0	0.0%
	Managed waste	KPI_E8 (t)	2	4.2%	2	12.5%	0	0.0%
	Reused waste	KPI_E9 (t)	2	4.2%	2	12.5%	0	0.0%

Table 6. Number of companies giving a number value to any of the general environmental sustainability indicators

This is reflected in Table 7, where the environmental sustainability indicators by occupied room at hotels in Catalonia can be observed.

Environmental sustainability indicators per occupied room of hotel present in Catalonia								
KPI	**N. comp.**	**Min**	**Quartile 1**	**Average**	**Median**	**Quartile 3**	**Max**	**Std deviation**
Energy consumption (kWh/occupied room)	9	24.7	42.1	**79.9**	56.6	89.6	234.4	64.6
Water consumption (l/occupied room)	9	351.6	396.0	**1037.6**	492.1	1136.4	2940.0	1006.4
Direct emissions of pollutants - Scope 1 (kg CO_2 eq/occupied room)	7	1.7	4.7	**10.4**	9.3	12.4	27.3	8.5
Direct emissions of pollutants - Scope 2 (kg CO_2 eq/occupied room)	4	7.1	8.5	**17.1**	14.5	23.1	32.4	11.7
Other indirect emissions of pollutants - Scope 3 (kg CO_2 eq/occupied room)	3	0.3	8.9	**18.8**	17.4	28.0	38.5	19.1
Waste generation (kg/occupied room)	3	2.1	2.3	**2.7**	2.4	3.0	3.6	0.8

Table 7. Environmental sustainability indicators by occupied room over the year for hotels in Catalonia

These values are compared to the benchmark indicators established by Cornell University, with the following correlations:

- **Energy consumption (kWh/occupied room) => MEASURE 5: Hotel Energy Usage per Occupied Room (kWh)**
- **Water consumption (l/occupied room) => MEASURE 8: Hotel Water Usage per Occupied Room (L)**
- **Direct polluting emissions - Scope 1 (kg CO_2 e/occupied room) => MEASURE 3: Hotel Carbon Footprint per Occupied Room (kgCO_2e)**
- Indirect polluting emissions - Scope 2 (kg CO_2 e/occupied room)
- Other indirect polluting emissions - Scope 3 (kg CO_2 e/occupied room)
- Waste generation (kg/occupied room)

The first three measures of Table 7 above have a direct equivalence with the benchmark (Annex 2) of the Cornell University Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water. Table 8 shows these variables, together with the values of hotel establishments in Spain, comparing the values of both studies.

Environmental sustainability indicators per occupied room of hotels present in Catalonia		**Cornell University Indicators per occupied room Hotel Sustainability Benchmark Index 2020 (Spanish Hotel Sector)**	
Indicator	**Average Value**	**Indicator**	**Average Value**
Energy consumption (kWh/occupied room)	79.9 kWh/occupied room	MEASURE 5: Hotel Energy Usage per Occupied Room (kWh)	71.4 kWh/occupied room
Water consumption (l/occupied room)	1037.6 l/occupied room	MEASURE 8: Hotel Water Usage per Occupied Room (l)	490.5 l/occupied room
Direct emissions of pollutants - Scope 1 (kg CO_2 eq/occupied room)	10.4 kg CO_2 e/occupied room	MEASURE 3: Hotel Carbon Footprint per Occupied Room (kg CO_2 e)	18.7 kg CO_2 e/occupied room

Table 8. Comparison of Indicators of Hotel Establishments in Catalonia with the Cornell University Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water, for Hotel Establishments in Spain

Table 9 below shows the comparative indicators of hotel establishments in Catalonia, as compared to the Cornell University Hotel Sustainability Benchmarking Index 2020 benchmarks: Carbon, Energy, and Water, specifically for hotel establishments in Barcelona.

Environmental sustainability indicators per occupied room of hotels present in Catalonia		Cornell University Indicators per occupied room Hotel Sustainability Benchmark Index 2020 (Barcelona Hotel Sector)	
Indicator	**Average Value**	**Indicator**	**Average Value**
Energy consumption (kWh/occupied room)	79.9 kWh/occupied room	MEASURE 5: Hotel Energy Usage per Occupied Room (kWh)	72.5 kWh/occupied room
Water consumption (l/occupied room)	1037.6 l/occupied room	MEASURE 8: Hotel Water Usage per Occupied Room (l)	440.4 l/occupied room
Direct emissions of pollutants - Scope 1 (kg CO_2 eq/occupied room)	10.4 kg CO_2 e/occupied room	MEASURE 3: Hotel Carbon Footprint per Occupied Room (kg CO_2 e)	18.6 kg CO_2 e/occupied room

Table 9. Comparison of Indicators from Hotel Establishments in Catalonia with the Cornell University Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water

In both cases, similar values are observed for energy consumption and direct pollution emissions (Scope 1), but the value for water consumption is different, possibly due to a lack of information from the analyzed sample.

5. Conclusions

Tourism is a major driver of the global economy and international tourist flows and increased stakeholder pressure requires companies to be transparent about their CSR practices (Font, Walmsley, Cogotti, McCombes & Häusler, 2012). However, this goal has yet to be satisfied (Dutescu, Popa & Ponorîca, 2014). As well as a source of wealth for the recipient country, tourism also entails an environmental impact, the effect of which can be calculated in greenhouse gas emission equivalence in order to monitor and apply suitable environmental policies to reduce this impact (Lenzen et al., 2018).

The most commonly used environmental variables are energy and water consumption (Deyà-Tortella & Tirado, 2011), since, apart from their environmental effect, improving them has a direct repercussion on the operating costs of the company. These are precisely the current challenges and barriers in the tourism sustainability (Pan, Gao, Kim, Shah, Pei, & Chiang, 2018). Another indicator, slightly less commonly used than the others because it does not have such a great impact on operating costs, is waste generation. It is, however, also a very important indicator for improving the environmental sustainability of both the industry as a whole and a particular company (Sun & Gao, 2012).

The field of the environmental sustainability of the hotel sector is increasingly important to all industry stakeholders, including owners, investors and, increasingly, customers (Hunter, 2002). Issues surrounding what and how the industry reports will become a critical element in conveying environmental policies to these stakeholders (Iraldo & Nucci, 2016).

A common endpoint of the analysed literature is that climate change is a negative outcome for warm destinations, regardless of which methodology is used (Hein et al., 2009). Indeed, the motivation of finding a more comfortable climate is one of the main reasons behind global tourism movements (Rosselló-Nadal, 2014).

This is why this study concludes that it is in the hotel industry's best interest to calculate its environmental impact, so it can implement policies to reduce it (Iraldo & Nucci, 2016). People are increasingly sensitive to these issues, so the control and transparency of hotel environmental sustainability strategies, easily accessible and understandable to everyone, is very important in all senses and across all levels of industry stakeholders, from owners, investors, employees, suppliers and agents to the public at large (Mak & Chang, 2019). Tourism is recognized as a highly climate-sensitive sector (Scott et al., 2012), and the climate is an issue everyone is interested in and one everyone must engage in, in order to mediate the related challenges.

In terms of operational improvement, hotels that voluntarily commit to green policies obtain better results than other hotels (Bagur-Femenias et al., 2016).

In recent years, the field of non-financial information, particularly in matters of sustainability, has experienced significant and exponential attention and expansion. Companies must integrate CRS into the rest of their business policies and strategies (Arimany-Serrat & Sabata-Aliberch, 2018), and both governments and the

corporate world have demonstrated increased interest in sustainability information, due to the evolving nature of risks facing businesses and the growing awareness among all stakeholders of the implications of these risks.

The path to sustainability and sustainable development was strongly initiated in 2015 with the adoption of the 2030 Agenda for Sustainable Development by the 193 United Nations member states, aiming for global prosperity in harmony with the planet and its inhabitants. A significant turning point at the European level was the European Commission's Green Deal in late 2019, which committed to revising all disclosure provisions concerning non-financial information. This deal has become a pillar of growth for the European Union towards a more sustainable, modern, resource-efficient and competitive economy, with a goal to achieve net-zero greenhouse gas emissions by 2050. Furthermore, 2022 marked a critical year for establishing a common regulatory and legislative framework within the European Union for sustainability. This framework aims to standardize corporate sustainability reporting to enhance the quality and comparability of information, promoting accountability and transparency. The ultimate goal is to improve the quality of sustainability information at the lowest possible cost, ensuring uniform expectations and standards among all companies for easier comparison across industries and sectors, enhancing accountability and transparency in sustainability practices across EU member states. Key developments in 2022 included the approval of the Corporate Sustainability Reporting Directive (CSRD) and the draft of the first set of European Sustainability Reporting Standards (ESRS) by the European Financial Reporting Advisory Group (EFRAG) (Redondo-Alamillos, 2023).

While this research has endeavoured to adhere to a rigorous methodology, it is not without its limitations, which in turn offer avenues for future studies. Firstly, one limitation of the study derives from the fact that most of the hotel companies and groups report data at a group level and not individually for their different establishments. Consequently, for hotel groups with a presence in other geographic locations, specific information is not available for the Catalonia region. Furthermore, another limitation was the reliance on an indirect method of data collection, which represents the most significant limitation. This dependence is not only on whether the company has implemented a sound environmental policy, but also on whether this policy is effectively communicated through its website. This method resulted in the absence of certain data and information, which would have facilitated a more straightforward and reliable comparison with the data from the 'Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water' study conducted by Cornell University (Ithaca, New York). In future research, these limitations will be addressed by adopting a qualitative methodology, using statistically validated questionnaires addressed to the managers of the different establishments of the hotel groups. This approach will allow, first of all, the sample size to be expanded in order to obtain a larger amount of data. At the same time, it will make it possible to evaluate specific environmental indicators and innovations in this context, assessing the possible differences between the different companies and the indicators considered.

Finally, it is important to consider that Catalonia is an area facing significant water stress, as is the case of much of the Mediterranean region, characterized by persistent periods of drought that are further influenced by climate change (Scott et al., 2012). Additionally, being a popular tourist destination, Catalonia experiences a surge in water stress during the peak tourism season, leading to potential crises in both water quality and quantity. In addressing this issue, the hotel industry plays a crucial role by implementing innovative policies to enhance water management efficiency, thereby contributing significantly to improving the situation (Vila, Afsordegan, Agell, Sánchez & Costa, 2018). Through innovative approaches to water conservation and management (Kasim et al., 2014), hotels can not only mitigate the impact of water scarcity during peak tourist seasons, but also contribute to the broader efforts aimed at preserving this precious natural resource in the context of the region's water stress (Styles et al., 2015).

The integration of sustainable practices into various aspects of business operations is clearly advantageous. However, aligning business expectations with sustainable objectives is critical to ensuring effective and meaningful implementation (Hurtado-Jaramillo, Arimany-Serrat, Meijide-Vidal & Ferràs-Hernández, 2018).

In the context of reducing environmental impact within the tourism sector, it is imperative to recognize that awareness must extend beyond the businesses operating in this field. Equally crucial is the awareness of the tourists themselves. The reason for this two-pronged approach to awareness-raising is that, while a variety of sustainable practices and policies can be implemented by businesses in the tourism sector, the overall

effectiveness of these measures depends to a large extent on the active participation and understanding of tourists (Gabarda-Mallorqui, Fraguell & Ribas, 2018).

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Annex 1
UN 2030 Agenda for Sustainable Development Goals

Figure 8. 2030 Agenda for Sustainable Development Goals (UN)

1. No Poverty: End poverty in all its forms everywhere.
2. Zero Hunger: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
3. Health and Well-being: Ensure healthy lives and promote well-being for all at all ages.
4. Quality Education: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
5. Gender Equality: Achieve gender equality and empower all women and girls.
6. Clean Water and Sanitation: Ensure availability and sustainable management of water and sanitation for all.
7. Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable and modern energy for all.
8. Decent Work and Economic Growth: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
9. Industry, Innovation and Infrastructure: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
10. Reduced Inequalities: Reduce inequality within and among countries.
11. Sustainable Cities and Communities: Make cities and human settlements inclusive, safe, resilient and sustainable.
12. Responsible Consumption and Production: Ensure sustainable consumption and production patterns.
13. Climate Action: Take urgent action to combat climate change and its impacts.
14. Life Below Water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
15. Life On Land: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
16. Peace, Justice and Strong Institutions: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
17. Partnerships for the Goals: Strengthen the means of implementation and revitalize the global partnership for sustainable development.

Annex 2

Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water

Table 10 shows the values of the environmental impact indicators for hotel establishments in Spain on the Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water study by Cornell University.

Choose Geography:
Spain
Choose Segment:
All Hotels
Type:
Country
Country:
Spain

HOTEL SUSTAINABILITY BENCHMARKING INDEX 2020: ENERGY, WATER, CARBON (2018 Data Set)

2018 CALENDAR YEAR BENCHMARKS								
MEASURE	Count	Low	Lower Quartile	Mean	Median	Upper Quartile	High	SD
MEASURE 1: HCMI Rooms Footprint Per Occupied Room (kgCO2e)	16	6,19	7,17	20,82	10,68	32,92	77,90	21,04
MEASURE 2: Hotel Carbon Footprint Per Room (kgCO2e)	31	1.437	2.156	4.731	3.746	5.223	16.058	3.718
MEASURE 3: Hotel Carbon Footprint Per Occupied Room (kgCO2e)	43	4,55	6,88	18,70	11,97	20,07	92,47	19,18
MEASURE 4: Hotel Carbon Footprint Per Square Meter (kgCO2e)	34	24,69	38,78	59,79	51,35	75,41	123,79	28,26
MEASURE 4a: Hotel Carbon Footprint Per Square Foot (kgCO2e)	34	2,29	3,60	5,55	4,77	7,01	11,50	2,63
MEASURE 5: Hotel Energy Usage Per Occupied Room (kWh)	43	18,43	27,14	71,39	49,47	78,58	327,93	69,06
MEASURE 6: Hotel Energy Usage Per Square Meter (kWh)	34	97,79	158,63	231,60	205,31	301,04	438,98	101,80
MEASURE 6a: Hotel Energy Usage Per Square Foot (kWh)	34	9,09	14,74	21,52	19,07	27,97	40,78	9,46
MEASURE 7: HCMI Meetings Footprint Per SQM-HR (kgCO2e)	15	0,00143	0,00200	0,01771	0,00341	0,04330	0,06163	0,02297
MEASURE 8: Hotel Water Usage Per Occupied Room (L)	46	171,18	249,20	490,51	320,43	551,05	3.253,54	508,92
MEASURE 9: Hotel Water Usage Per Square Meter (L)	39	135	1.087	1.712	1.415	1.945	4.737	1.002
MEASURE 9a: Hotel Water Usage Per Square Foot (L)	39	13	101	159	131	181	440	93
MEASURE 10: HWMI Rooms Footprint Per Occupied Room (L)								
MEASURE 11: HWMI Meetings Footprint Per SQM-HR (L)								
MEASURE 12: Hotel % Energy From Renewables (%)	34	0,00%	0,00%	0,04%	0,00%	0,00%	1,35%	0,23%

Table 5. Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water for hotels in Spain (Cornell University (Ithaca, New York))

Table 11 shows the values of the environmental impact indicators for hotel establishments in Barcelona on the Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water from Cornell University.

Choose Geography:
Barcelona
Choose Segment:
All Hotels
Type:
Metro Area
Country:
Spain

HOTEL SUSTAINABILITY BENCHMARKING INDEX 2020: ENERGY, WATER, CARBON (2018 Data Set)

2018 CALENDAR YEAR BENCHMARKS								
MEASURE	Count	Low	Lower Quartile	Mean	Median	Upper Quartile	High	SD
MEASURE 1: HCMI Rooms Footprint Per Occupied Room (kgCO2e)								
MEASURE 2: Hotel Carbon Footprint Per Room (kgCO2e)	11	1.852	3.201	5.481	3.971	5.223	15.812	4.030
MEASURE 3: Hotel Carbon Footprint Per Occupied Room (kgCO2e)	13	6,26	11,69	18,61	14,74	19,47	48,38	11,63
MEASURE 4: Hotel Carbon Footprint Per Square Meter (kgCO2e)	12	30,55	41,22	65,83	65,01	93,75	105,71	26,71
MEASURE 4a: Hotel Carbon Footprint Per Square Foot (kgCO2e)	12	2,84	3,83	6,12	6,04	8,71	9,82	2,48
MEASURE 5: Hotel Energy Usage Per Occupied Room (kWh)	13	24,14	46,74	72,46	57,28	77,80	185,61	44,36
MEASURE 6: Hotel Energy Usage Per Square Meter (kWh)	12	117,12	164,46	257,66	252,73	358,07	431,58	105,34
MEASURE 6a: Hotel Energy Usage Per Square Foot (kWh)	12	10,88	15,28	23,94	23,48	33,27	40,09	9,79
MEASURE 7: HCMI Meetings Footprint Per SQM-HR (kgCO2e)								
MEASURE 8: Hotel Water Usage Per Occupied Room (L)	15	180,64	274,71	440,35	353,30	540,60	983,89	229,81
MEASURE 9: Hotel Water Usage Per Square Meter (L)	14	830	1.388	1.844	1.755	2.033	3.782	777
MEASURE 9a: Hotel Water Usage Per Square Foot (L)	14	77	129	171	163	189	351	72
MEASURE 10: HWMI Rooms Footprint Per Occupied Room (L)								
MEASURE 11: HWMI Meetings Footprint Per SQM-HR (L)								
MEASURE 12: Hotel % Energy From Renewables (%)	12	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%

Table 6. Hotel Sustainability Benchmarking Index 2020: Carbon, Energy, and Water for hotels in Barcelona (Cornell University (Ithaca, New York))

Annex 3

Model of Integrated Information from the Spanish Association of Accounting and Business Administration (AECA), Included in the Integrated Scoreboard (CII-FESG) and its XBRL Taxonomy)

Financial Indicators		
Economic efficiency		
KPI_F1	Revenues	€
KPI_F2	Supplier expenses	€
KPI_F3	Added Value	€
KPI_F4	Employee compensation	€
KPI_F5	EBITDA	€
KPI_F6	Financial expenses	€
KPI_F7	Owner retribution	€
KPI_F8	Income tax	€
KPI_F9	Economic contribution to the community	€
KPI_F10	Public Administration expenses	€
KPI_F11	R&D+i investment	€
KPI_F12	Total investment	€
KPI_F13	Profitability	%
KPI_F14	Level of debt	%
KPI_F15	Treasury shares	%
Environmental indicators		
Energy efficiency and emissions		
KPI_E1	Energy consumption	MwH
KPI_E2	Water consumption	m^3
KPI_E3	Pollutant emissions Scope 1	GEI
KPI_E4	Pollutant emissions Scope 2	GEI
KPI_E5	Emissions from transportation and distribution in upstream activities (Scope 3)	GEI
KPI_E6	Emissions from transportation and distribution in downstream activities (Scope 3)	GEI
Waste management efficiency		
KPI_E7	Waste generation	t
KPI_E8	Waste processed	t
KPI_E9	Recovered waste	t

Social indicators		
Human Capital		
KPI_S1	Employees	num
KPI_S2	Gender diversity of employees	num
KPI_S3	Top management positions	num
KPI_S4	Gender diversity of top management	num
KPI_S5	Job stability	num
KPI_S6	Right to parental leave	num
KPI_S7	Right to maternity leave	num
KPI_S8	Disability	num
KPI_S9	Occupational hazard	num
KPI_S10	Absenteeism	days
KPI_S11	Employee turnover	num
KPI_S12	Net employment	num
KPI_S13	Seniority	years
KPI_S14	Employee training	hours
Capital Stock		
KPI_S15	Regulation of customers	num
KPI_S16	Supply chain	num
KPI_S17	Suppliers, conflict minerals policy	num
KPI_S18	Payment to suppliers	days
Human rights, anti-corruption and bribery		
KPI_S19	Respect for Human Rights	num
KPI_S20	Actions in defense of and respect for human rights	num
KPI_S21	Anti-corruption and anti-bribery training	hours
KPI_S22	Corruption and bribery irregularities	num
KPI_S23	Proceedings on corruption and bribery cases	num
Corporate Governance Indicators		
Good Corporate Governance		
KPI_CG1	Board Members	num
KPI_CG2	Independent board members	num
KPI_CG3	Corporate Social Responsibility (CSR) Advisors	num
KPI_CG4	Executive committee	num
KPI_CG5	Audit Committee	num
KPI_CG6	Nominating Committee	num
KPI_CG7	Meetings of the Board	num
KPI_CG8	Total remuneration of the Board	€
KPI_CG9	Gender diversity on the Board	num
KPI_CG10	Corruption and bribery	num