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Measurements of Sustainability Performance in Hotels

Case Study – InterContinental and the Green Key Certification

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Abstract

This work project's individual parts present an overview of sustainability certifications used by hotels from different brands worldwide, their motivations, and sustainability indicators as well as tools to measure these indicators. Moreover, best practices in hotel operations and their implementation are discussed. Lastly, the influence that green practices have on guests' behavior when choosing a hotel is explored. The case study is based on this research and stresses the importance of sustainability certifications in the hotel industry. It explores the topic of such certifications for a five-star luxury hotel, the InterContinental Lisbon, identifies the most suitable certification for this hotel, and gives recommendations for its achievement.

Keywords: Sustainability, InterContinental, Lisbon, Green Key, Portugal, Certifications, Ecolabels, Best Practices, Hotel Operations, IHG, Bookings, Hotels, Accommodation Providers

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1. Introduction

In recent years amid the global pandemic, it is clearly believed that today's people are more conscious than ever about traveling in a responsible way. Since issues on environment have been alarming in the hotel industry, global hotels have taken actions by adopting sustainability initiatives in their facilities and operations, continuously checking their sustainability performance, and measuring their indicators. This paper assesses the measurements of sustainability performance in the hotel industry. IHG Hotels & Resorts carried out a consumer survey in 2021 that reported 60% of global consumers were shown to have expressed their interest in more responsible travels during the pandemic, 82% of them were most likely to pick a purpose-driven hotel brand oriented to sustainability which is committed to protecting the planet and species, and 57% of them agreed that sustainability remained as one of their top priorities for travel (InterContinental Hotels Group PLC 2021).

Sustainability becomes ever more significant to IC Lisbon and needs to be considered as it might contribute to the overall success of its hotel business. From making its daily operations more effective to using the finest sustainable practices, IC Lisbon will have the opportunity to make guest stays responsible, incentivize guests to conserve water and energy wisely, and utilize cost savings to invest in better new equipment for the hotel such as solar panels or a food composter. Measuring its annual sustainability progress against the annual projected targets of each indicator is crucial to ensure that the hotel does make a positive contribution to the planet and reaches its sustainability goals. Energy conservation, carbon emissions reduction, water conservation and minimal waste are used to aid the hotel to measure its environmental performance.

Identifying and measuring key performance indicators (KPIs) is essential to obtain the Green Key Certification. The key environmental indicators IC Lisbon is already tackling are carbon emissions reduction, energy usage reduction, waste management and water

conservation. IHG Hotels & Resorts (2021a, 27) stated that only 1% of carbon emissions across the globe accounted for the hotel industry, therefore it is imperative that the carbon emissions from all hotels and resorts be reduced by 46% in the next eight years. Not all hotels and resorts have yet switched to renewable energy sources, accounting for 0.11% of renewables and 61% of total energy consumed (IHG Hotels & Resorts 2021b, 14). It is crucial for all hotels and resorts to reduce their energy usage by more than 25% every year (IHG 2022b). The objectives for reducing energy consumption and carbon emissions to be achieved by 2030 are to promote the use of renewable energy for all resorts and hotels, increase energy efficiency, select future hotels that have low or zero carbon emissions, and reduce the existing carbon emissions of the hotels and resorts (IHG Hotels & Resorts 2021a, 27). General waste is the world's biggest issue that is very difficult to manage effectively, accounting for 70% in the hotel industry (IHG Hotels & Resorts 2021b, 16). Around 33% of world food had been wasted every year while the hotel industry accounted for 18% (IHG Hotels & Resorts 2021a, 31). Waste management will achieve the following objectives of diminishing the single-use items, switching bathroom toiletries to dispensers, minimizing food waste by taking part in "prevent, donate, divert" plan, and reusing commodity items (IHG Hotels & Resorts 2021a, 30-32). Even those in the least developed countries do not have access to safe clean water, hotels are taking actions to conserve water wisely and help those communities to give them water access. IHG Hotels & Resorts (2021a, 33) briefly details that the objectives for water conservation would be to find ways to reduce water usage in all hotels and resorts' operations and manage the water supply effectively.

2. Literature Review

As issues on environment have been significantly contributed caused by the hotel industry, global hotels have taken their full commitment to taking sustainability initiatives to better improve their environmental impact by monitoring their continuous performance of sustainability indicators on a regular basis. Therefore, the research question will focus on "What

are the indicators and tools IC Lisbon currently measures and assesses its sustainability progress with?".

Reem et al. (2022) is a review paper that briefly discusses the literature on sustainability indicators within the context of hotels. Organizations should use tools which are vital to measure sustainability indicators linked to the environment. Indicators should be clearly defined as being simple, measurable, transparent, accessible, and reliable (Valentin and Spangenberg 2000; Mariosa et al. 2019). From a hotel perspective, sustainability indicators aid hotels evaluate and monitor their continuous performance and provide them with information to take corrective actions and initiatives (Reem et al. 2022, 154). Reem et al. (2022, 155) used a Scopus database to search all academic papers and journals in English with the keywords of indicators, hotels, and sustainability. Only 29 articles from 19 international journals had been reviewed and most of them (86.2%) were published from 2013 to 2020 (Reem et al. 2022, 155-156). These articles identified 356 sustainability indicators that are categorized as economic, management, environmental and socio-cultural (Reem et al. 2022, 172). 40% of these indicators focused more on environment compared to 27%, 18% and 15% for economic, socio-cultural and management. A comprehensive list of 143 environmental indicators from 16 out of 29 articles was identified and reviewed but most of these indicators are not accessible with data nor measurable as per defined mentioned above (see Appendix 2). Among these indicators are pollution avoidance, normative environment, green marketing, conserving biodiversity, global warming, river indicators and many others (see Appendix 2). The most common environmental sustainability indicators shown in that list include the consumption for energy and water, the use of renewable energy sources, the resource consumption, the amount of carbon emissions and the waste generation, and hotels can also consider the number of staff members that participated in training environment-related programs, the number of environmental initiatives they implemented for and the cost savings of energy and water (Reem et al. 2022, 158-159).

The results reported that hotels that implement sustainable practices mainly concentrated on conserving water and energy and reducing carbon emissions and waste. Thus, there is a lack of research on tools for measuring sustainability indicators and evaluating the hotel's progress against projected targets of each indicator in the hotel context. No previous studies and academic papers had examined these tools in hotels. For this reason, this paper aims to explore the sustainability indicators measured along with the useful tools in the hotel industry.

3. Identification and Selection of Indicators

3.1. Description of each Indicator and Overview of all Indicators for Sustainability

To earn the Green Key Certification, all KPIs must be clearly identified. Every indicator should be objective on such reliable information, accessible with available data and measurable (Mariosa et al. 2019). IC Lisbon is already keeping track of lowering carbon emissions, reducing energy use in all its guestrooms and its entire property, saving water for necessary use, and minimizing waste. To reduce the carbon footprint, the hotel can measure and calculate the total amount of carbon emissions per year using a carbon measurement tool. In terms of reduction in energy consumption, the hotel can also calculate the total energy being consumed per year, per guest and per guestroom, determine how much energy being consumed costs per month and per year, and measure the amount of renewable energy sources used per year. With the purpose of reducing water consumption in all facilities of the hotel, the hotel can both measure and calculate the total water being consumed per year, per guest and per guestroom, the amount of water being reused for other purposes such as irrigation or watering outdoor garden and estimate how much water that had been used by a guest costs per month and per year. Given the fact that the hotel had already separated waste into different categories by paper, cardboard, glass and many others, the hotel can measure the total waste production per year, the amount of food that had been wasted per guest, per guestroom and per year, the amount of food that had been composted per year and determine the waste recycling rate per year. The

hotel could also consider other indicators namely the amount of resource consumption per year, the number of staff members that received annual training programs on environmental concerns, and the number of existing and new environmental initiatives that had been set by the hotel manager (França et al. n.d.; Reem et al. 2022, 159). As a responsible-business-to-be that cares about doing no harm to the planet and local communities, the hotel can consider cost savings from electricity, water and gas. The cost savings from gas and electricity could be used for investing in new renewable energy equipment for the hotel building like solar panels, whilst the water cost savings for repairing shower leaks and dripping taps.

3.2. Criteria for Selection of Indicators Required by the Green Key Certification

The most prominent indicators must be taken into consideration for the hotel to earn the Green Key Certification. According to the Green Key's criteria and explanatory notes (2022a), it is a requirement for the hotel to measure how much energy had been consumed every year and estimate the total carbon footprint per year as well as the amount of carbon emissions per guest (Green Key 2022a). The carbon footprint of the hotel is calculated from year to year by utilizing a carbon measurement tool. It should be noted that the carbon footprint calculation must include both direct and indirect emissions (Green Key 2022a). The direct emissions are the emissions that have controllable sources such as emissions from the fuel burning while indirect emissions are produced from the purchased energy (IHG Hotels & Resorts 2021, 13). Moreover, it is recommended for the hotel to record the total energy consumption per month and more than once a month (Green Key 2022a). This will provide the hotel with more data to compare the energy usage rate between the previous month and the next month. Measuring the total monthly amount of water being consumed is also required for the hotel to register on a regular basis (Green Key 2022a). The hotel must also carry out a water risk assessment which would help the hotel to manage serious water issues including water disruptions or dripping taps and

unclean water supply. Another required indicator the hotel should bear in mind is the total amount of waste generated per month (Green Key 2022a).

3.3. The Least Preferred Indicators to Not Be Undertaken for Further Analyses

Other indicators that have not been rigorously mentioned in the Green Key's criteria should not be included for further data analyses. These indicators are the number of environmental initiatives the hotel had implemented for, the annual amount of resource consumption and how many staff members participated in annual training programs to learn more about the main big issues the planet currently suffers (França et al. n.d.; Reem et al. 2022, 159).

4. Usefulness of Tools

There are various tools the hotel can use to measure KPIs and register their consumption data every month. These tools are free of charge which allow the hotel to gain better insights on how they can better improve its area of the environment by figuring out some sustainable solutions that will do good for the local community, planet, and species.

4.1. IHG Green Engage Platform

InterContinental Hotels Group, as a hospitality company and abbreviated as IHG, does have its own environmental management system named "Green Engage" (IHG 2022a). This platform enables more than 6,000 hotels and resorts across the globe under the same company to obtain annual data reports regarding their impact on the environment and to see how well they performed in terms of carbon emissions reduction, energy and water conservation, and reduced waste (InterContinental Hotels Group PLC 2022). It would also allow them to set annual projected targets for reducing consumption of each indicator, know how much each indicator had been consumed per month in a year and compare these results with the previous years. The bar charts of each indicator are shown once the report is generated. Any hotel can choose any year to report the data results. Moreover, the platform gives hotels and resorts suggestions on

choosing among 200 solutions to meet their goals and to substantially minimize their negative impact on the environment (IHG 2022a).

4.2. Hotel Carbon Measurement Initiative (HCMI) and Hotel Water Measurement Initiative (HWMI) Tools

Sustainable Hospitality Alliance, also abbreviated as SHA, implemented two tools named "Hotel Carbon Measurement Initiative", abbreviated as HCMI, and "Hotel Water Measurement Initiative", abbreviated as HWMI (Green Key 2022b; Green Key 2022c). The first tool recommended by the Green Key would give every type of hotel across the globe the opportunity to determine the amount of carbon emissions of the guest stays in its property as well as to set carbon emission reduction targets per year (Green Industry Platform 2020). Over 24,000 global hotels are involved in utilizing this tool (Green Key 2022b). The tool would enable the hotel to estimate the total amount of carbon emissions for the respective year and the amount of carbon footprint per guestroom per day and per conference room area per hour (Green Key 2022b; Green Industry Platform 2020). In addition, the hotel can compare its performance based on carbon emissions against how much carbon emissions had been reduced on average by region of the country. More than 18,000 hotels of all types and sizes across the globe measure and calculate how much water had been consumed per year, per guest and per guestroom utilizing the second tool suggested by the Green Key which would allow the hotel to set annual water reduction targets as well (Sustainable Hospitality Alliance 2022b). Furthermore, the hotel can determine the total amount of water being consumed for the respective year and how much water had been used per guestroom per day and per conference room area per hour (Green Key 2022c).

4.3. Hotel Energy Reduction Opportunities (HERO) Tool

"Hotel Energy Reduction Opportunities", also known as HERO, is a brand-new tool that was recently launched this year by IHG in collaboration with Arup (IHG Hotels & Resorts 2021a,

28). It enables the hotel to analyze how much energy had been consumed per month and per year, have access to additional data on energy efficiency measures and a complete review of the energy initiatives the hotel implemented (IHG Hotels & Resorts 2021a, 28). Furthermore, the hotel can obtain further information regarding the energy cost savings and compare its energy consumption performance with other hotels under the same company but in different locations. The tool would also suggest which energy efficiency measures seem to be the most acceptable for the hotel.

4.4. Additional Tools

A few tools that could be used for measuring food waste and waste recycling rate include "Hotel Waste Measurement Methodology", "Zerowasteometer" and "Recycling Rate Calculator" by London Recycles. Greenview and WWF-US implemented a methodology named "Hotel Waste Measurement" which enables the hotel to both measure and estimate the total amount of waste per year, the total amount of food waste per year and the diversion rate as a percentage of food waste and waste, and set targets for minimizing waste (Sustainable Hospitality Alliance 2022c). "Zerowasteometer" is another tool that the hotel can use if its aim is to be zero-waste and track its performance related to waste in seconds by filling out the fields that ask for waste amount in tons for each category (Reconomy 2022). This tool will give the hotel a complete report of how far the hotel had minimized waste over the years and would also allow the hotel to compare its waste performance against its competitors (Reconomy 2022). One tool to calculate waste recycling rate developed by London Recycles is "Recycling Rate Calculator". In this tool, the hotel needs to fill out all fields related to its personal details and waste collection information to calculate its waste recycling rate (London Recycles 2020).

5. Methodology

The main research question for this paper would be "What are the indicators and tools IC Lisbon currently measures and assesses its sustainability progress with?". Thus, the scope of the paper

is the identification of indicators revolved around sustainability that are relevant to assessing the hotel's progress against annual projected targets of each indicator. These indicators include energy and water consumption, waste management and carbon emissions reduction. The main purpose of the study is to evaluate how IC Lisbon measures its sustainability progress by specifying which tools are valuable for this function and to pinpoint what indicators the hotel keeps track of to become certified in Green Key.

A one-to-one interview with the chief engineer of IC Lisbon, José Lebre, was carried out for this study that took place on the 21st of September at IC Lisbon. It was an unstructured interview with a duration of 55 minutes. The interview consisted of 18 open-ended questions that were divided into two parts (see Appendix 1). The first ten questions of the first part, named Part A – Sustainability & Green Engage Platform, focused on the importance of sustainability to IC Lisbon, sustainability awareness of the guests and employees, the implementation of sustainable practices at the hotel, the Green Engage Platform and its awards for recognizing the hotel's commitment, and other sustainability tools if there were any. The second part, Part B – Data Collection, required the interviewee to specify which indicators the hotel measured and to provide with data of those indicators along with their projected target goals for this year. The gas, electricity and water bills and the cost savings were also taken into consideration for further analyses. The data regarding the sustainability indicators have been collected from the Green Engage Platform during the interview (see Appendix 7). Their main purpose for collection was to obtain the exact values of each month and year for each indicator presented in that platform.

6. Data Findings

Regarding the sustainability importance to IC Lisbon, José stated that "our mission focuses on giving a boost to sustainability" and recalled that "every day we talk more about sustainability and finding solutions to make our hotel even more sustainable in order to be able to operate in a cleaner and greener way". About six years and a half ago, the hotel first cared about

environmental issues and doing what is best for the planet and the local community. Thus, their very first sustainability action took place in March 2015 which was "zero use of incandescent lamps in circulation spaces". This marked the beginning of their sustainable practices' implementation that happened long before the pandemic. HERO tool is rarely used by IC Lisbon that allows them to collect energy consumption and efficiency measures data and compare its energy performance with other hotels. The hotel has been preferring to use Green Engage for more than seven years because at the time there was no other tool to measure the indicators. It is proven to be a tool that helps the hotel collect sustainability data and reproduce its ecological footprint to reduce the natural resources and track the consumption demand. The main indicators shown in the Green Engage Platform are water, energy, carbon, and waste. The hotel only measures the amount of carbon emissions per month and per year, the amounts of energy and water consumption per month and per year, the total amount of waste generated per month and per year, and the amount of waste diverted from landfills per month and per year (see Appendix 3). The hotel received two awards from Green Engage for its commitment to respecting the environment and two sustainability and social responsibility seals (see Appendices 4-6). Since the hotel first initiated sustainable practices long before the pandemic, the analysis will consider the data for 2019 and 2022.

6.1. Data Collection and Analysis

Regarding the data on carbon consumption measured in kgCO2e, no data was provided for 2022, thus the analysis will focus on 2019 data. In 2019, the hotel presented to have high levels of carbon emissions from 154,500 kgCO2e in May to 156,000 kgCO2e in October due to the high travel demand during summer holidays and regular use of air conditioning especially on warm days, whereas carbon emissions ranged lower from 141,700 kgCO2e in January to 126,400 kgCO2e in February and from 137,700 kgCO2e in November to 131,100 kgCO2e in December (see Appendix 8). The carbon emissions totaled 1,734,858 kgCO2e in 2019. The

carbon consumed on average 135,400 kgCO2e from January to April, 153,500 kgCO2e from May to August, and 144,800 kgCO2e from September to December.

In terms of energy being measured in kWh, the data showed stable levels of energy consumption of 2019 and 2022 (see Appendix 9). In 2019, energy increased significantly from 486,000 kWh in May to 525,00 kWh in August due to the high travel demand during summer holidays whilst February and April recorded lower energy being consumed, 404,000 kWh and 427,000 kWh. As of 2022, the hotel consumed more energy, 432,200 kWh, 443,400 kWh and 442,200 kWh in January, July and August, due to the high travel demand during holidays whereas February and June consumed much less energy, 330,900 kWh and 325,300 kWh respectively. The energy being consumed accounted for 5,567,656 kWh in 2019 and 2,741,429 kWh from January to August 2022. The data presented a -15% of energy reduction from 2019 to 2022. On average the energy consumed 388,900 kWh from January to April 2022 and 407,000 kWh from May to August 2022. The target of reducing energy for 2022 was projected to be -0.3% which seemed to be a very small percentage change, leading the hotel unable to substantially minimize its energy usage in areas with significant increase of energy being consumed and become more energy efficient by choosing more energy-saving appliances.

The data from Appendix 10 showed very similar levels of water consumption of 2019 and 2022. The water consumption is measured in m^3. From January to May, the water being consumed grew tremendously from 1,800 to 3,800 m^3 in 2019 and from 1,300 to 3,500 m^3 in 2022. But then, from July to August, the hotel suffered a decline from 3,900 to 3,100 m^3 in 2019 and from 3,900 to 3,500 m^3 in 2022. Since the Portuguese government lifted the restrictions of mask wearing last April, the travel demand increased higher during summer holidays. This could explain why the water was consumed a lot more between May and August 2019 and 2022 than in the first four months. The water being consumed totaled 37,355 m^3 in 2019 and 22,421 m^3 from January to August 2022. From 2019 to 2022, the water decreased by

-9%. On average the hotel used 2,000 m^3 of water from January to April 2022 and 3,600 m^3 of water from May to August 2022.

The hotel separates waste into different categories, namely paper, glass, cardboard, food waste, cooking oil and metal. These categories together are called waste diverted. The waste is measured in lb. There was no data provided for 2019, so the analysis will focus on 2022 data instead. As of 2022, the total waste collected increased slightly from 55,800 lb in February to 68,000 lb in August (see Appendix 11). On the other hand, the waste diverted increased slowly from 6,500 lb in January to 7,600 lb in August compared to total waste collection. In 2022, the hotel produced more total waste than waste diverted and recorded on average a +12% waste diversion rate. From January to August, total waste accounted for 494,100 lb whereas waste diverted amounted to 57,100 lb. From January to April, the hotel produced on average 58,800 lb of total waste and 6,700 lb of waste diverted. From May to August, the hotel produced on average 64,800 lb of total waste and 7,600 lb of waste diverted.

6.2. Financial Costs and Cost Savings

The hotel pays a fortune for gas, electricity and water. Thus, the electricity, gas and water prices vary per month and per year. About three years ago, the hotel decided to sign a contract with Axpo/Goldenergy, a local energy supplier company, to reduce the prices on electricity for three trimesters of May, June, July, August and September. This company has gained a reputation for being the top chosen renewable energy supplier by the Portuguese customers with its mission being “Faster, Better, Cheaper” that gives customers the opportunity to buy green energy and opt for sustainable options to reduce energy consumption in their households (Kistner 2021a; Kistner 2021b). With this contract, the prices on electricity had dropped tremendously from €47,000 in January 2022 to €21,000 in June 2022 (see Appendix 12). The hotel did not sign any other contract to cover water and gas bills. As of 2022, the hotel spent on average €53,333 per trimester in electricity from January to March without the contract and

€15,000 per trimester from April to June with contract (see Appendix 13). On average, the hotel spent €6,333 per trimester in water from January to March and €11,667 per trimester from April to June, €17,500 per trimester in gas from January to March and €17,000 per trimester from April to June (see Appendix 13). While from January to June the water prices had increased slowly by +€7,500 and the gas prices had decreased slowly by -€9,500, the prices on electricity had decreased a lot by -€26,000. The electricity was demonstrated to have the highest bills in the first three months compared to water and gas (see Appendix 12). The hotel tends to use the remaining cost savings from electricity, water and gas to make smart investments in more efficient equipment like chillers, frequency inverters and solar panels for the roof of the building, and to repair dripping taps and shower leaks.

6.3. Challenges

After collecting the data from the Green Engage Platform, there are a few challenges presented in it. Firstly, the hotel mostly uses one tool for measuring its sustainability indicators, Green Engage, but only four indicators, including water consumption, energy consumption, carbon emissions and total waste production, are shown. Thus, it lacks some data availability for these important indicators, namely renewable energy sources, reused water for other purposes, food waste, composted food, waste recycling and composition of waste per category (e.g., paper, glass, cardboard, metal, etc.). During the interview, José said that as of now the hotel does not use any renewable energy source nor has a food composter. This justifies their reason for not measuring the monthly and annual amounts of renewable energy sources and composted food.

Secondly, there was no accurate information provided to measure each available indicator of that platform per guest and per guestroom. The hotel was only able to measure each indicator per month and per year and generate annual reports from the platform. Nor did the platform provide any available data for both waste generation for 2019 and carbon consumption for 2022 per month and per year. Missing data on these specific years did not give the

opportunity to compare the performance of the current waste generation with 2019 nor the carbon consumption with 2022.

Thirdly, as José clearly mentioned that the projected target goals, expressed as percentage, to reduce the consumption of each indicator for this year would have been displayed in that platform, but only the target goal of energy reduction for 2022 was shown, -0.3% respectively. The forecast targets of carbon, water and waste for this year were not explicitly mentioned nor visibly shown on the platform.

Lastly, the hotel does not register the amounts of carbon emissions and water per guest nor the amount of energy consumption more than once a month. These additional indicators would have been required for the hotel to measure to be certified in Green Key and none of these indicators are available on the Green Engage Platform nor provide data as well.

7. Conclusions and Recommendations

Sustainability plays an important role at IC Lisbon because it does impact positively on the success of its business. In response to answering the proposed research question, IC Lisbon mainly uses the Green Engage Platform which measures the four key environmental indicators, including carbon, energy, waste, and water, and registers their consumption data on a monthly and annual basis. Performing a continuous evaluation of the annual sustainability progress against annual forecast targets of each indicator would be vital to ensure that the hotel is committed to attaining its sustainability goals, in other words, making the planet safer from potential damaging issues related to environment.

The findings gathered from the platform illustrated that, due to the high travel demand especially during summer holidays and lifted restrictions on mask wearing since this April, from May to August 2022 the hotel recorded the highest energy consumption, averaging 407,000 kWh, the highest water consumption, averaging 3,600 m^3, and the highest total waste collection, averaging 64,800 lb. From 2019 to 2022, the water and energy reduced by -9% and

-15%. Despite the prices on electricity grew quickly until March 2022 and then decreased dramatically until June 2022, the electricity bill amounted to €205,000 compared to €103,500 and €54,000 in gas and water bills (see Appendix 14). Electricity is thus seen as the highest consumed cost after water and gas. With missing information on this year's forecast targets for carbon, water and waste, the conclusion could not be drawn on whether the hotel performed well or not in terms of attaining its goals to reduce more the consumption of each of these indicators.

To become certified in Green Key, it is recommended for the hotel to measure the amounts of carbon emissions and water per guestroom per day and per conference room area per hour using HCMI and HWMI tools. Having access to these tools can be found on the website of the Green Key. The hotel must fill out two separate forms, one for water and the other for carbon. When filling out, the hotel must be a member of the Green Key and gather information related to its property size, total number of rooms available for guests and number of rooms being occupied per year. For the carbon form, the hotel will be required to submit information regarding energy-related data such as energy consumption, transportation, refrigeration, laundry, and renewable energy. For the water form, the hotel must also gather water-related information including the sources of water and unmetered water and laundry. It is also recommended for the hotel to use HERO tool more often so it can compare its energy consumption performance with other hotels and receive suggestions on the best energy efficiency measures to implement. Three other tools are also suggested but not required, Hotel Waste Measurement Methodology, Zerowasteometer and Recycling Rate Calculator by London Recycles. These tools would enable the hotel to compare its waste performance against its biggest competitors, generate a complete annual report of its waste performance, estimate the calculation of waste recycling rate per year and the total amount of food waste per year as well as set projected targets of reducing waste for the respective year.

1. Introduction

People's travel habits have changed dramatically over the last decades and especially since the pandemic. Technology has long been revolutionizing industries, customers' expectations are increasing, and climate change as well as resource shortages have led to increasing awareness for the topic of sustainability. More and more businesses are realizing their responsibility to act sustainably and adapted their operations and routines to cause as little harm as possible to their local environment and stakeholders. With legal requirements, pressure from employees and guests' awareness for such efforts growing, a lot of hotels are getting their sustainability work and initiatives validated and made publicly visible through certificates. A project with four master's students was brought into being to assist InterContinental Lisbon (IC Lisbon) before and during the application process for the Green Key, a well-known international hotel sustainability certification (see Executive Summary in the appendices).

The work at hand illustrates the status quo of IC Lisbon's current efforts in the area of sustainability and describes and evaluates the tools and measures in place today (Chapter 2). With the tourism industry still recovering from the pandemic, IC Lisbon tasked itself with an exciting, yet complex challenge as described in Chapter 3. This work was created to support the hotel during its endeavor and explores a number of aspects (Chapter 4): Its aim is to inform about the characteristics of the chosen certification program, the Green Key, so that benefits can be leveraged, and potential disadvantages accounted for. Moreover, through comparison with other hotels and their initiatives as well as elaborate research on guests' perspectives, best sustainable practices were explored, and recommendations built. The overall purpose of this work is to facilitate and expedite the achievement of the Green Key for IC Lisbon. Key findings and recommendations are summarized in Chapter 5.

2. About InterContinental Lisbon

2.1. The Hotel

InterContinental Lisbon is a five-star hotel that falls under the category of luxury and is located among the most cosmopolitan and busiest European cities in the world, Lisbon. It belongs to the prestigious hotel brand, InterContinental Hotels & Resorts, and is owned by one of the world's largest hospitality companies, InterContinental Hotels Group (IHG). The company originates from the UK and currently owns 17 different hotel brands with over 6,061 hotel properties around the world including 888,000 rooms (Au 2022; InterContinental Hotels Group PLC 2022). As of 2022, InterContinental Hotels & Resorts manages at least 209 hotel properties operated in 67 countries (Au 2022). The majority of these properties belongs to the luxury category and offers excellent customer service along with a wide variety of exquisite, luxurious experiences.

IC Lisbon is the second largest Portuguese hotel under InterContinental Hotels & Resorts and opened its doors to the public in 2014 (InterContinental Lisbon 2022). There are two more properties in Cascais and Oporto, making up a total of three InterContinental hotels operated in mainland Portugal. IC Lisbon is conveniently located in the city center which attracts thousands of tourists from all over the world and has breathtaking views from each guestroom, overlooking Praça do Marquês de Pombal and Parque Eduardo VII. Many fashion stores, restaurants, bars and coffee shops are located within a short walk from the hotel.

The hotel has 331 guestrooms along with 14 rooms for business meetings and group events (Conference Hotel Group 2022). All guestrooms and suites have been fully renovated in 2019. In total, there are 225 single rooms, 106 double rooms, and 17 suites (Cvent Supplier Network 2022; InterContinental Lisbon 2022). The size of all suites ranges from 43 to 157 m^2 whereas the size of guestrooms is between 34 and 70 m^2 (InterContinental Lisbon 2022). The rates of the guestrooms and suites vary depending on season and demand. IC Lisbon's high

season includes the months of May, June, September and October whereas January to March, July, August and December are off-season months (Conference Hotel Group 2022). The normal rate for a single room with breakfast is between €214 and €504 per night; a double room costs between €226 and €543 per night. The rates for suites range from €486 to €1,098 per night.

Figure 1. The InterContinental Lisbon (IHG 2022).

Figure 2. Hotel Room (Meetings In Portugal 2022).

The property offers free access to Internet all over the entire building, laundry service, 24-hour room service and reception, babysitting and pet services, transfer shuttles from and to the airport, luggage storage, concierge, valet parking, a parking garage, and gym (InterContinental 2022).

There is a restaurant on-site called Akla where guests can try a wide variety of local and international dishes prepared by Chef Eddy Melo; the normal rate for a single person is €16.50 and €29 for a brunch on Sundays. Uptown Bar is a cosmopolitan bar with live music and a large drinks selection (InterContinental Lisbon 2022). An International Club Lounge is reserved only for exclusive guests that benefit from the services of personalized check-in and check-out times, special delicious breakfast, the business center, a private meeting room for up to ten people and a happy hour with drinks and appetizers (InterContinental Lisbon 2022).

2.2. The Team

Thoughts and actions around the topic of sustainability are present in all departments and areas of the hotels. In fact, at IC Lisbon, management believes it is a team job to create operations as sustainable as possible. Eventually, physical changes around the property as well as changed

routines will affect all employees working there. Therefore, the responsibility is shared between several different department heads, forming IC Lisbon's six-person core team. With decades of combined experience in the industry, all six are well aware of the trends that are currently disrupting hospitality and the expectations they need to meet to keep their hotel competitive.

Vítor is the Human Resources (HR) Manager of both InterContinental Lisbon and Crowne Plaza Porto. He has been working at the hotel for more than seven years and is mainly responsible for making sure that everyone in the workplace maintains a great work-life balance, ensuring that every employee is rewarded for his or her hard work and receives a compensation bonus, as well as recruiting and selecting ideal candidates for specific job roles. José is the hotel's Chief Engineer and has been working there for six years. He ensures that all operations within the hotel property are working properly, holds meetings with the maintenance staff to discuss the status of maintenance issues, conducts inspections around the property to guarantee that the premises are safe for guests, and measures sustainability indicators on the Green Engage Platform. This year, Elisário got promoted to taking over the job of Head of Security, Recruitment & Development (Lopes 2022). His role consists of managing the security around the premises of the hotel property as well as adopting inclusive practices of diversity in the hotel and recruiting the right employees for the training programs (Lopes 2022). Artur has been the Rooms Division Director for eight years. His responsibilities include supervising the front office and reception teams to facilitate the check-in and check-out processes, and checking on whether all rooms of the hotel are not only neat but also clean to be ready for use before a new guest checks in. Pierre is the Food & Beverage (F&B) Manager and mostly in charge of offering high-quality food and drinks to the guests, making sure all employees of the F&B department comply with important safety rules, checking the food inventory on a regular basis, and making menus stand out in order to retain guests. Maarten is the Cluster General Manager of both InterContinental Lisbon and Cascais-Estoril and has been working with the brand for a year.

His main role is to make sure that all services provided at the hotel are up to guests' anticipated needs and to check whether all operations of both hotels run smoothly to guarantee the experience for each guest is pleasant and enjoyable throughout their stay.

2.3. Sustainability Efforts

Around the six-person core team, IC Lisbon currently assembles a Green Engage Team, consisting of 21 staff members from all departments. Together with the hotel manager, this group holds regular meetings to discuss environmental matters, keep the staff informed of new changes and environmental initiatives as well as to hear new suggestions on sustainable practices from the staff. In 2021, IHG introduced its ten-year sustainability action plan called "Journey to Tomorrow" which advises people to travel responsibly and hotels to deliver "True Hospitality for Good" to all guests and employees (InterContinental Hotels Group PLC 2021). This action plan highlights the hotel's long-term sustainability ambitions and actions as well as its commitment to being a responsible business in the long-term. In order to increase awareness on environmental issues and environmental protection initiatives, the hotel encourages relevant stakeholders, namely ANP-WWF and local government authorities, to get involved in promoting the environmentally friendly practices as well as safeguarding important historical sites. The hotel also has a code of conduct where all staff members must abide by its regulations and standards. The following tools are currently in use:

- *"IHGMyLearning"* is an online platform for staff members where they have access to resources and learning tools regarding environmental issues.
- *"Green Engage"* is the main tool that enables the hotel to measure and keep track of sustainability indicators and set target reduction goals for the respective year. As of now, the hotel calculates the amount of carbon emissions, the amounts of energy and water consumption, as well as total waste generated on a monthly and annual basis.

- The corridor of the staff area on the ground floor, internally called *"Heart of House",* displays signage on environmental and sustainability initiatives to remind staff members of the importance of minimizing water and energy usage as well as avoiding the use of paper and plastic water bottles.
- *"Colleague Heartbeat"* is an engagement survey that requires staff members to give feedback on the environmental performance of the hotel.
- The hotel also uses "*Infraspeak",* a platform that manages water maintenance for regular inspections on leaks from the showers and dripping taps.

2.3.1. Environmental and Economic Level of Sustainability – Water

To prevent excessive water consumption, all hand showers of each guestroom from the model "Radiance Select S" do not exceed nine liters of water per minute and the taps from the brand "Hansgrohe" do not exceed eight liters of water per minute either. Water sensors are installed in every bathroom of the property and so are the grease traps for the kitchen. The hotel property is connected to a sewage system and does not have any domestic dishwasher or laundry machine on its premises. A water risk assessment was carried out by an external company in 2015. The hotel does not yet have water meters installed in areas with high water consumption, namely the kitchen.

2.3.2. Environmental and Economic Level of Sustainability – Waste

The hotel's waste segregation system includes the following categories: paper, cardboard, glass, metal, food waste, and cooking oil. Instructions on how to sort waste correctly are clearly signaled and easy to read for both members of staff and guests. Single-use tableware products are used only for take-aways. Fruits, vegetables, and fish are delivered in reusable plastic boxes. The hotel does not yet have a food composter to convert food waste into soil for gardening purposes, but all eatable leftovers are collected by Refood Association. Moreover, the hotel uses the DOCMX program to reduce the use of paper in all its facilities and operations.

2.3.3. Environmental and Economic Level of Sustainability – Energy

Heating, ventilation and AC (HVAC) systems are controlled by Siemens Desigo CC BMS. More than 90% of light bulbs in every area of the property are LED bulbs. Grease filters are cleaned four times a year whereas HVAC systems are cleaned once a year. The refrigerators and fridge countertops are defrosted only if there are issues occurring. The heating and cooling temperatures in every guestroom and meeting room are controlled by BMS Fidelius. To minimize energy consumption, timers are used for controlling outside lighting. All windows of the property are energy efficient with double gazing and 3M film to minimize heat transfer. The hotel carried out an external energy audit in 2017. This audit helped the hotel identify the specific areas of its property that had substantial increases in energy consumed and actions were suggested to reduce the use of energy in these areas. The hotel should continuously look for ways to save energy and could additionally consider renewable resources, for example, by installing solar panels. This would substantially decrease spending on electricity.

2.3.4. Social Level of Sustainability

Regulations regarding the areas of health, labor, safety and environment are strictly followed by the hotel which must naturally be compliant with local and international legislation. Child labor is strictly forbidden, and the hotel must abide by the IHG standards and local law. All disabled people, guests and staff members, can ask for special requests on-site and have access to all public areas of the building. The hotel ensures that its HR policies are transparent and treats every employee equally with respect and dignity. The hotel fully supports animal welfare guidelines and a social community activity named “Plantar uma Árvore Association” to help and promote nature conservation activities. Activities in other areas such as diversity, wellness, philanthropy or volunteerism, for example, could be considered in the future.

3. The Challenge: Certifications

Amid the ongoing pandemic, tourism rebounds tremendously, being the most accelerated sector and the biggest revenue income source for Portugal. As of July 2022, Portugal had recorded nearly 1.8 million tourists in comparison with only 1.78 million in July 2019, representing a +1.1% growth since the pandemic (Y-Axis 2022). Despite the Portuguese tourism sector having a strong total GDP of 15% prior to the pandemic, Portugal experienced the highest projected GDP growth at 6.5% for the summer of 2022 being the only European country to ever achieve this rate (ECO News 2022; Y-Axis 2022). According to the World Travel & Tourism Council (2022), the tourism sector in Portugal is anticipated to grow at an average rate of 3.4% annually and will contribute to a total GDP of 16.2% by the end of 2022. These figures demonstrate that the country and its tourism sector are experiencing a strong recovery from the pandemic and support the idea of investing in marketing and sustainability, for example in the form of a certification pursuit.

With the tourism sector booming for years, concerns about the environmental impacts of the hotel business have surged. These impacts include the consumption of enormous amounts of water and energy, production of ever more waste and the dramatic increase of carbon emissions every year. Therefore, hotels all over the world increasingly started to take action and effectively developed sustainable practices to significantly decrease their detrimental environmental impact. To acknowledge their sustainability efforts and especially their desire to do no harm to our species and planet, an increasing number of hotels have applied for and been awarded a sustainability certification.

A few of the most renowned sustainability certifications used by hotels all over the world are Green Key, Green Globe, BREEAM, EarthCheck and Travelife. Around 3,700 hotel properties from 60 countries have been awarded the Green Key Certification (Green Key 2022). More than 500 hotel properties across 80 countries have become members of Green Globe,

1,500 hotel properties in 50 countries are recognized by Travelife, and EarthCheck awarded over 1,300 hotel properties from more than 60 countries (Bensaude Hotels Collection 2022; Green Globe 2022; Memmo Baleeira Hotel 2022). According to BREEAM (2022) and the statistical data collected from its online platform, 85 hotel properties across 13 countries have achieved the BREEAM Certification. In comparison to other countries around the world, Portugal has a rather low rate of awarded hotel properties with the above-mentioned sustainability certifications. As can be seen in Table 1, only 3.9% of all Portuguese hotels hold a Green Key Certification, 0.2% of hotels are Green Globe members, 3.6% of hotels are certified by Travelife and 4.7% of hotels have the BREEAM Certification.

Certifications	No. of Hotels Worldwide	No. of Hotels in Portugal	Percentage
Green Key	3,700	145	*3.9%*
Green Globe	500	1	*0.2%*
Travelife	1,500	54	*3.6%*
BREEAM	85	4	*4.7%*

Table 1. Portuguese Certified Hotels Compared to Certified Hotels Worldwide (Own Work)

The city of Lisbon always had and still has a strong vision for sustainability long-term and is determined to better position itself as a green city among European cities. Even though Lisbon is not the greenest in comparison to other cities within Europe, it has been awarded "European Green Capital 2020", proving its commitment, significant progress, and future promise (European Commission 2020). Lisbon's sustainability journey began a long time ago during the financial crisis and the city has since invested in numerous green projects and policies which motivated countless European cities to follow its leadership and share its sustainable practices. Amongst its most prominent achievements are the following: it achieved a 42% of carbon emissions reduction in 2014 and additional 28% of energy conservation in 2017; it managed to effectively reduce water consumed by 50% in 2018 and increased the use of public transportation by 20% in 2019 (European Commission 2020). Following these achievements, Lisbon has set new targets to further improve its sustainable image such as reducing carbon

emissions by 60% by 2030; reusing 20% of water for irrigation purposes by 2030; and reducing water consumption by 20% by 2025 (European Commission 2020).

With tourism contributing immensely to the Portuguese economy, especially in Lisbon, accommodation providers are asked to support these governmental efforts. Interestingly, despite Lisbon having a global reputation for being a sustainable city, only 6.9% of hotels based in Lisbon hold a Green Key Certification (Green Key 2022). In comparison, 34.5% of the hotels located on Madeira, for example, are Green Key holders (see Table 2). However, of all certified hotels in the Lisbon Metropolitan Area, most chose the Green Key (55.6%) as can be seen in Table 3 (Green Key 2022). The Green Key seems to be the preferred certificate for local hotels.

Region	**Green Key**	**Pct.**
Azores	5	*3.4%*
Madeira	50	*34.5%*
North	22	*15.2%*
Central	19	*13.1%*
Lisbon City Center	10	*6.9%*
Outside Lisbon	15	*10.3%*
Alentejo	5	*3.4%*
Algarve	19	*13.1%*
Total	**145**	

Table 2. Total Number of Green Key Hotels in Portugal (Green Key 2022)

Certifications	**Lisbon City Center**	**Pct.**
Green Key	10	*55.6%*
Green Globe	1	*5.6%*
EarthCheck	2	*11.1%*
Travelife	1	*5.6%*
BREEAM	4	*22.2%*
Total	**18**	

Table 3. Total Certified Hotels in Lisbon (Own Work)

Six four-star luxury hotels and three five-star upscale hotels are located within a short distance of IC Lisbon. Among those hotels, several are Green Key certified, namely Lisboa Marriott Hotel, Sheraton Lisboa Hotel Spa and DoubleTree by Hilton Lisbon Fontana Park, all represented by the world's largest international hotel chains, thus having a great global reputation in the hospitality industry. Hotel Tivoli Avenida Liberdade Lisboa and Pestana Lisboa Vintage are certified by both BREEAM and Green Key. Competing with these well-known and perfectly located sustainable hotel brands may be challenging for IC Lisbon – especially considering guests' perception of price as well as their personal awareness of their own responsibility regarding sustainable travel.

Consumers' travel habits have changed drastically since the beginning of the pandemic and their awareness for and incorporation of sustainable practices into their daily lives is ever increasing. People are becoming more conscious of responsible travel and choose more green options than ever when it comes to travelling and accommodation. Booking.com conducted an extensive online survey on sustainability travel in February 2022 for which data had been gathered from 30,314 global travelers from over 30 countries (Booking.com 2022). Among the most important findings were the following: 81% of respondents believe that traveling more sustainably is important for them, 53% of them would rather choose a sustainable hotel property with a mission centered on respecting the environment and adding value to local communities, 38% of them search for sustainability efforts of a hotel before making a reservation, 57% of them would be content if they stayed at a hotel property recognized with a sustainable certification, and 54% of them would even filter for hotel properties with a sustainable certification on Booking.com (Booking.com 2022). Based on these findings, too, it seems most advantageous for a hotel to be certified as a sustainable property nowadays.

The pressure to operate in a sustainable way and to make one's efforts visible by getting them approved through a certifying organization is clearly increasing. However, at the moment, IC Lisbon does not yet have any sustainability certification to acknowledge its efforts. To stay competitive in a city like Lisbon, surrounded by strong brands with great reputation, this will need to change. Vítor and his team at IC Lisbon are tasked with a challenging mission.

Their main question is "Which certification should IC Lisbon try to achieve and how can they best achieve it?". Based on previous research findings, this case study explores a potential certification of a five-star luxury hotel in Lisbon, the IC Lisbon. The sustainability certifications that are most awarded to hotels around the world were identified and characterized and their relevance for IC Lisbon evaluated (see Certification Overview in the attachments). The following chapter will explore the most suitable certification option for IC Lisbon, identify

the strengths and weaknesses of the indicators and tools IC Lisbon uses to measure its sustainability progress, in particular the Green Engage Platform, describe the process of identifying the current practices that do not fulfill the Green Key requirements and, more importantly, determine how the best practices should be implemented in order for the hotel to become certified. Moreover, this next part's aim is to outline to what extent a sustainability certification may influence guests' buying behavior when choosing a hotel property to stay at. This case study's research sub-questions are as follows:

1. Which certification is most suitable for IC Lisbon and what should the hotel know about it?
2. What are the potential advantages and downsides of the sustainability tool IC Lisbon currently uses?
3. What best practices should be applied to meet the terms to obtain the certifications?
4. How can IC Lisbon expect a certification to influence guests' decision-making process and maximize the positive effect it can have on bookings?

4. Teaching Notes

4.1. The Green Key – A SWOT Analysis

IC Lisbon would like to receive an internationally recognized certification that satisfies the expectations of its own local management and the corporate offices of IHG. Given there are no well-established national certificates in Portugal while a number of global certifications have become quite popular with hotels, especially in the Lisbon area, the following was concluded: On its mission to meet expectations and keep up with local competitors, the Green Key was found to be the most suitable option for IC Lisbon. Other InterContinental hotels have already had good experiences with the Green Key, it is recommended by several large hotel chains (e.g., Radisson) and, given IC Lisbon is already quite knowledgeable in the field of sustainability, not least because of the Green Engage Platform and other initiatives of its head offices, the brand and the hotel itself, the hotel is considered well prepared to go through Green Key's high-quality, demanding, and complex process.

The Green Key eco-label was established in 1994 by the Association of the Hotel, Restaurant and Tourism Industry in Denmark, the Outdoor Council and Association of Danish Tourism Executives (Green Key 2022). Since 2014, tourism businesses in all countries are eligible to apply and two years later, the certificate became approved by the Global Sustainable Tourism Council (GSTC). The past decades have allowed the organization to gain experience, industry knowledge, and awareness for national conditions as well as a high profile worldwide. The following SWOT analysis will characterize the certification in more detail. Table 1 provides an overview of its key aspects:

Strengths	Weaknesses
• Most geographically widespread tourism ecolabel in the world • Recognition by GSTC, UNWTO, UNEP • Extensive choice of voluntary criteria • High credibility • National operators in 40 countries • Non-profit and non-governmental nature	• Validity of 12 months only • No consideration of business-specific circumstances • No proof of repeated business or attraction of new business • Lack of quality of marketing opportunities

• Comparably low participation costs • Promotional opportunities • Long-lasting experience	• Tedious and inflexible application and renewal processes • Significant presence in Portugal already
Opportunities	**Threats**
• Different levels of certification • Regular updates of criteria catalogue • Candidate for future quality indicator besides hotel star rating	• Strong competition and new entrants • Confusion of applicants and guests • Overcrowding • Low awareness among travelers

Table 4. SWOT Analysis of Green Key (Own Work)

4.1.1. Strengths

The Green Key operates in 65 countries and, thus, is one of the most geographically widespread tourism ecolabels in the world (Green Key 2022; see Figure 3). It has been awarded to around 3,500 sites worldwide (2,700 of them are accommodation providers); the countries holding the highest number of certificates are European: Netherlands (673), France (614), and Greece (512) (Green Key 2022). In Portugal, 225 businesses have been certified to date. One of its main competitors, the Green Globe, currently only has around 500 members (Green Globe 2022).

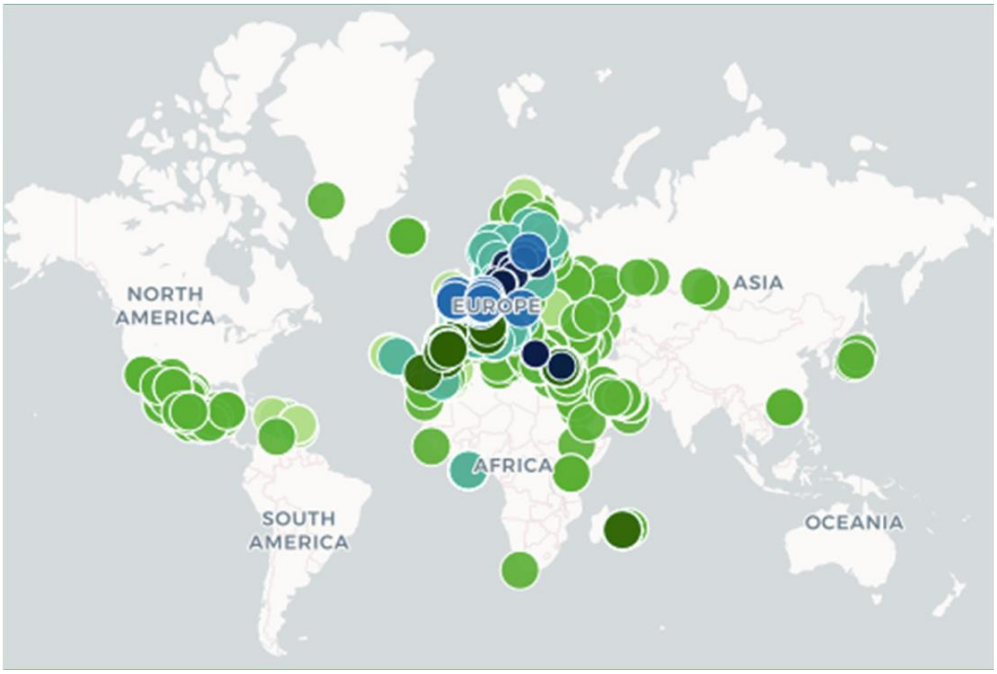

Figure 3. Distribution of Green Key Certified Tourism Establishments Worldwide (Green Key 2015).

A survey conducted by the organization a few years ago showed that its international recognition and branding are, in fact, some of the strongest points of the program (Green Key 2015). Over time, the program was recognized by the GSTC, UNWTO and UNEP.

The current criteria catalogue includes imperative as well as guideline criteria with compliance for the latter being voluntary to a large extent. Businesses do not immediately have to fulfill all of the requirements, and, in fact, most managers that responded to the survey in 2015, found the criteria of all 13 areas manageable or easy to comply with (Green Key 2015). Nevertheless, the organization is perceived to have high standards and the juries are respected, consisting of representatives from ministries, NGOs, and industry professionals. Compliance is verified by well-trained Green Key auditors and third-party auditors, ensuring high credibility. The Green Key currently has national operators in 40 countries, so many of the businesses going through its process can receive support in their own language and their contacts are familiar with the national legislation, customs, and practices (Green Key 2022). The non-profit and non-governmental nature of the backing organization, the Foundation for Environmental Education, provides for additional credibility and is highly appreciated by many hotels looking to get certified (Jaecker 2022).

Because of the organization's non-profit nature, participation costs are comparably low. For example, while hotels of more than 300 rooms in Portugal only pay €1,000 annually for the Green Key, membership fees of the Green Globe are at €4,500 (Green Globe 2022; Green Key 2022). The Green Key fee includes several different marketing tools and opportunities. A certified business is promoted on social media and its website, through a newsletter, and has the chance to participate in the best practice competition (Green Key 2022). Moreover, awarded establishments are added to a database for different Online Travel Agencies and will receive the eco-labeled symbol from Google when looked up online – again an aspect appreciated by certified hotels (Jaecker 2022). Green Key's long-lasting experience is also among its major strengths and quality features. Its continuously growing knowledge base is shared with applicants and certified businesses on a regular basis. For the above-mentioned reasons and

many more, 97.3% of the surveyed managers stated they will continue with the Green Key scheme (Green Key 2015).

4.1.2. Weaknesses

Some certified businesses complain about the certificate being valid for 12 months only. Given the process of achieving all requirements usually takes time, many businesses can only hold the certified status for a few months each year (Jaecker 2022). Moreover, although the organization and national operators try to take into account national circumstances and country-specific realities, they cannot consider every aspect of a business' situation. Businesses that are situated on islands, for example, are still expected to comply with the same criteria as all others, even though some are harder for them to satisfy.

Some managers also shared that the certification was not followed by creation of repeated business, improvement in the relationship with the local community, and attraction of new customers (Green Key 2015). With other programs, hotels may be able to experience these benefits much sooner. In addition, although there are quite a few marketing opportunities, their quality was criticized; 10% of the survey respondents said the visibility of the label (online/media) was very poor (Green Key 2015). In fact, Green Key site managers felt that, in general, marketing and visibility could be improved – "they are missing publicity on a national and international level" one of them claimed (Green Key 2015, 11). A comparably high number of respondents was dissatisfied with the promotional tools such as brochures and flags and the communication tools such as press releases or videos (Green Key 2015). The procedure was also taken issue with. 11.8% of the respondents and some of the hotels interviewed for the individual work project mentioned that the application and renewal process is too long, too complex, too bureaucratic, and not flexible enough (Green Key 2015; Jaecker 2022). However, weaknesses relating to marketing and visibility can be compensated by increased promotional efforts of the awarded hotels.

Although global recognition and Green Key's wealth of experience represent strong benefits, it is a little unfortunate that with the Green Key certification IC Lisbon will not be able to state they are the first or only hotel in Portugal or Lisbon that has been awarded this particular certificate. With other programs and certificates this may be the case and would make for great marketing material.

4.1.3. Opportunities

A great opportunity of the Green Key Program is that a business can work its way up different levels, Bronze, Silver, and Gold, and that way, set itself apart from competitors. Its current catalogue includes 13 categories and 130 criteria – compliance will help hotels prepare for the future and regular revision of the catalogue ensures a hotel keeps up with new trends, expectations and standards without having to do extensive research itself. Moreover, the recent release of new criteria and explanatory notes (2021) indicates that the effects of the pandemic were already taken into account. Other organizations have not yet updated their standards.

The research that this work is based on has shown that certificates of global reach and recognition, such as the Green Key, have one major advantage over other, less known certifications. Issuing organizations are hopeful that proof of sustainable business such as certifications will become quality displays to an extent where they may complement hotel star rating, thus enhancing visibility and desirability of such a label. If this were to come true, global standards and certifications are more likely to get chosen for display.

4.1.4. Threats

One of the largest threats that the Green Key currently faces is fierce and increasing competition (e.g., Green Globe, Travelife, EarthCheck). It is already difficult for hotels to keep an overview over the different schemes and programs and to select the right one for themselves. Especially the certifications which cover a broad set of areas may be challenged by other general labels

and programs. Just as much as existing competition, new entrants launched on the global market pose a threat to the success of the Green Key and certified hotels.

Overcrowding is another risk that Green Key pursuers will have to consider. With more than 3,500 businesses being certified already, at some point in the future, hotels may be expected to be certified and will not be able to distinguish themselves from others by achieving the Green Key. The fact that the certificate is available everywhere in the world and that holiday parks, restaurants, attractions, and other tourism establishments are also eligible for the Green Key further enhances this risk.

Unfortunately, so far, guests do not seem to be much aware of the Green Key (Green Key 2015). While they may care about the hotel having a label and the measures that they can observe themselves, all non-visible requirements a hotel needs to fulfill in order to get the Green Key, will not positively influence their booking decisions. Although the segment of eco-friendly travelers is growing, it may be a while until it is large enough and there is potential it may grow a hotel's business. Expected financial benefits because of water and energy savings, may also not get achieved as planned. Therefore, return on investment is not yet certain nor foreseeable.

4.2. Green Engage Platform – A SWOT Analysis

To get certified by Green Key, it is crucial to measure environmental indicators and evaluate the hotel's sustainability progress against the annual forecast targets of each indicator. Among these important indicators are reduction of carbon emissions, water consumption, energy consumption, and waste management. IC Lisbon uses Green Engage as its main tool for measuring sustainability indicators. Another tool that is used by the hotel, although not on a daily basis, is HERO which was launched by IHG this year. With this tool the hotel not only collects data of energy consumption, the tool also recommends the most suitable energy efficiency measures and compares the hotel's energy consumption performance with other

hotels of the chain. To evaluate the key strengths and weaknesses of IC Lisbon's main existing sustainability tool, a SWOT analysis was conducted. An overview is given in Table 5.

Strengths	Weaknesses
• Used by over 6,000 hotel properties • Strong reputation of international scale • Enables IC Lisbon to manage its impact on the environment and set projected targets for each year • Access to annual reports • Data collection on sustainability indicators • Carbon, energy, waste and water are listed on the platform with available data provided	• Exclusive for all global hotels and resorts under the company IHG • Only four indicators are shown on platform and measured per month and per year • Lack of data availability on measuring each indicator per guest, per guestroom, per guestroom per day and per conference room area per hour • Missing data of waste generation for 2019 and carbon consumption for 2022 • Only the projected target of energy for 2022 was displayed on the platform • Missing information regarding other hotels' statuses on the platform
Opportunities	**Threats**
• Complete overview of all measurements • Easy data comparison • Consumption data inserted by the hotel into the platform • Comprehensive list of 200 innovative green solutions shown on the platform	• Emerging competitive tools • Unforeseen technological outages

Table 5. SWOT Analysis of Green Engage Platform (Own Work)

4.2.1. Strengths

Green Engage is an online environmental management system owned by IHG. Over 6,000 hotel properties from 100 different countries currently use this tool to measure and manage their impact on the environment. The tool has gained a strong reputation of international scale that promises hotels to make their services offer greener, run their daily operations in a more efficient and eco-friendly way, choose the best sustainability actions for their facilities, and increase the loyalty of their customer base interested in responsible travel.

Another advantageous strength is that Green Engage enables IC Lisbon to manage its impact related to environment by giving access to detailed annual reports generated on the platform and allowing the hotel to see how well it performed with regards to reducing the consumption for each environmental sustainability indicator. Using this tool, the hotel can

collect data on sustainability indicators and evaluate their performance on a monthly and annual basis. Thus, the hotel can choose any year to generate and analyze the report. The indicators, namely carbon, energy, waste, and water, are listed on the platform with respective data from the current and previous years. The hotel currently measures indicators per month and per year such as the amount of carbon emissions, the amount of energy being consumed, the amount of water being consumed, the total amount of waste produced, and the amount of waste diverted from landfills. All these indicators demonstrated to be objective, measurable and reliable with accessible data.

Besides obtaining a complete report for each year and collecting data from the platform, the hotel can set concrete projected targets, expressed as percentages, aimed at reducing the consumption of each indicator available on that platform for each year and keep track of their performance in order to attain those targets. Given the fact that global hotels contribute significantly to a large amount of waste generated every single year as well as massive amounts of both energy and water being consumed and a tremendous increase in carbon emissions, setting realistic targets would certainly aid the hotel in achieving its sustainability goals in the long-term, adopt more sustainable practices in all its facilities and areas of the hotel, and develop new innovative sustainable solutions to achieve a positive contribution to the people and planet. One competitive tool that does not include the target-setting feature is Hilton's "LightStay", for example. Hilton designed this environmental and social management system so all Hilton hotels can measure and keep track of their sustainability performance regularly, generate reports regarding their performance metrics, measure the social impact based on volunteer work and charities, and compare their performance against other hotels of the same brand (Stories From Hilton 2019; Hilton 2020). However, "LightStay" does not allow hotels to set targets for further improvement.

4.2.2. Weaknesses

Green Engage is exclusively for all hotels and resorts across the globe under the company IHG. IC Lisbon uses it as the main and preferred tool for measuring its sustainability indicators and keeping track of its sustainability performance over time. Unfortunately, the four main indicators listed on the platform are measured only per month and per year. Thus, the tool lacks the data to measure each indicator per guest, per guestroom, per guestroom per day and per conference room area per hour. These would have allowed for deeper insights and comparisons, for example, of how much is consumed per guest and per guestroom with the consumption of each indicator per month.

Energy consumption, general waste and waste diverted from landfills, water consumption, and carbon emissions are the most common indicators seen on the platform. But other recommended indicators, such as the amount of renewable energy sources per year, the amount of food waste per month and per year, the amount of food being composted per month and per year, the amount of reused water for other purposes, and the waste recycling rate per year, are not clearly shown nor measured on the platform.

Regarding the waste generation data, the hotel was able to measure the total waste generated as well as the waste diverted from landfills per month and per year. However, the tool did not indicate the composition of waste per category (e.g., food waste, paper, glass, metal, cardboard, and cooking oil) which could be relevant for further analyses. The data of waste generation for 2019 and carbon consumption for 2022 were not available on the platform. As a result, no comparison with the waste performance of 2022 and carbon performance of 2019 was possible. As stated by José during an interview, the annual projected targets to reduce consumption of each indicator should have been displayed on the platform, but only the target of energy reduction for 2022 was shown, -0.3% respectively. The annual forecast targets for carbon emissions, waste and water had not been explicitly displayed on the platform as well.

This led to the hotel being unable to see whether its performance is on the track to a better future or not, in other words, if it is contributing positively to the environment and community.

Another weakness is that some hotels have not yet uploaded their status regarding their sustainability performance for the current year. Some were unable to attain their own targets or are still missing their consumption data for one or more months. Since there is no severe punishment for uploading data at a later stage, the platform will never force those hotels to submit their status information into that platform. With the incomplete information on the platform from the hotels' side, it would be more difficult to compare IC Lisbon's sustainability performance with other hotels from IHG. Moreover, as the tool is IHG specific, comparison with hotels from other brands is also difficult.

4.2.3. Opportunities

As previously said, the hotel has access to information on data consumption of each indicator per month and per year. The platform provides a complete overview of the current and forecasted reduction targets of each indicator for each year, the variation change expressed as percentage per month from the previous year to the actual year, and the year-to-date variance percentage that goes from the beginning of the current year to the date at the latest. Moreover, it shows the total usage amount of each indicator per year, the total consumption of each indicator per month for the respective year, the maximum usage amount target of each indicator for the specific year, and the consumption amount target of each indicator per month. When generating a report for each indicator of any particular year, the data provided on the platform are shown as simple bar charts which gives the hotel the opportunity to easily compare the performance of each indicator between the current month with the previous month and the monthly usage target as well as assess the progress made from the previous year to the current year. All indicators are measured in their own metric units. The hotel can insert its current

monthly consumption data of each indicator into that platform which would then be used to analyze and evaluate its progress over time.

Moreover, the platform offers the hotel a comprehensive list of innovative green solutions that summarizes realistic actions the hotel can take to be greener and more eco-friendly as well as to reduce its impact on the environment. To be exact, there are 200 solutions in total suggested; the hotel can pick the ones most effective to implement in all areas and facilities of the hotel (Better Buildings n.d.). At least eight areas of hotel operations are covered in those solutions, namely energy, water, site, building envelope, mechanical, operations and processes, materials and products, and waste (Better Buildings n.d.). Great examples of suggestions are to provide all staff members with regular training programs on environmental issues, encourage staff members and guests to use alternative public transportation modes instead of cars, reduce paper use at the reception, and to install leak-detecting water systems and solar panels for the roof of the hotel building. As a result, the platform and its content serve as a guideline for a hotel's actions. Those managing it are always presented with new ideas on how to further improve the hotels' operations and will be able to evaluate efficiently what action and measure will have the greatest effect at a specific point in time.

4.2.4. Threats

One of the threats for Green Engage is emerging well-recognized competitive tools with more technological advances that allow the hotel to discover more indicators in further detail and to analyze them more deeply. "Hotel Carbon Measurement Initiative" and "Hotel Water Measurement Initiative", both abbreviated as HCMI and HWMI, would further enable the hotel to indicate how much carbon emissions and water have been consumed per guest, per guestroom per day and per conference room area per hour. These indicators are recommended for the hotel to measure and evaluate its sustainability progress and help to achieve and maintain the Green Key certification. The hotel can also compare its carbon emissions performance with

the average carbon emissions by region utilizing the HCMI tool. Both these tools are internationally recognized; over 24,000 global hotels use the HCMI tool, whereas the HWMI tool is currently used by more than 18,000 hotels across the globe. These figures are much higher than those of Green Engage which is only used by around 6,000 hotels. Other tools, such as the "Hotel Waste Measurement Methodology" and the "Zerowasteometer", would also allow the hotel to compare its waste performance against its main competitors, determine the total annual amount of food waste, and set realistic projected targets for reducing waste for the respective year.

Another possible threat are unforeseen technological outages. Although the hotel has been using Green Engage for more than seven years without any technological issue, unexpected outages could result in internet issues and platform downtime. Whenever there is an internet issue, it becomes more difficult to sign in on the platform to update the hotel's data and it may take some time to fix that issue. If the platform crashes or its server is unavailable at a time, the hotel may be forced to shut down all programs and restart all computers. This could potentially lead to the loss of important data, namely the consumption data, bar charts, reports, and projected targets. To prevent these unplanned outages, it is recommended for the hotel to have a recovery plan in place and for data to be stored in a safe pen drive or a portable hard drive.

4.3. Best Practice Implementation Process

To select the best sustainable practices for IC Lisbon, it is necessary to find out all the information about the Green Key certification. Most of it is displayed online on their website: www.greenkey.global. There you can find not only the requirements for the certification but also all necessary steps that must be considered to achieve the desired results. For each country, the application process might differ. Therefore, the applicant should focus on the procedure

defined for the country where his or her business is located. The general application process consists of three parts:

1) Sending the application documents,
2) Receiving on-site audits,
3) A decision by an independent entity (third-party verification) (Green Key 2022).

These teaching notes focus on the best practices that should be applied at the hotel to pass the on-site audit. To understand which action the hotel needs to take, the Green Key organization created six different categories of establishments which are displayed below:

1) Hotels and hostels,
2) Campsites and holiday parks,
3) Small accommodations (BBs, eco-lodges, eco-farms, etc.),
4) Conference centres,
5) Restaurants,
6) Attractions (museum, visitor/ interpretation centres and theme parks) (Green Key 2022).

IC Lisbon belongs to the first category, hotels and hostels. For these types of establishments, there are requirements centered around economic, social and governance problems. They are divided into 13 areas: (1) Staff involvement, (2) Guest information, (3) Water management, (4) Washing and cleaning management, (5) Waste management, (6) Energy efficiency, (7) Food and beverage, (8) Indoor environment, (9) Green areas, (10) CSR, (11) Administration, (12) Green activities (see appendix).

In each area, numerous requirements must be fulfilled to obtain the certification. The requirements are also divided into two types: imperative and guideline. This case study focuses primarily on imperative criteria (I) because they must be met before getting the certification. Which guideline requirements (G) need to be completed depends on the number of years that a business is involved in the Green Key program. Since this is the first time IC Lisbon is going

apply for the Green Key, the hotel does not have to focus on all guideline requirements at once, but it should be ready to comply with them in the near future to not lose the certification.

4.3.1. Internal Audit

As it is already predefined what must be achieved or met, the applicant should make an internal audit based on that. This means that IC Lisbon should create a custom framework based on the Green Key requirements for a better overview of its current status, improvements to be made (applications of best practices) and final status. For this process, Excel by Microsoft is recommended for ease of use. The table with all the requirements in the application should be like the table in Appendix 17. Moreover, applicants who are more tech savvy can use applications like Trello or Notion for better project management. The reason why the company should analyze its current practices in this way is to be able to clearly identify areas of improvement and take the correct actions necessary for the certification.

4.3.2. Framework for Best Practice Implementation

After completion of the internal audit, the establishment should be able to recognize which requirements are not fulfilled by its current practices. The ones that are not currently accepted as fulfillment should be replaced by the practices that will meet the criteria. For the process of selection and implementation of the practice, a new framework based on the factors of the PESTEL analysis was created. Although it is not applied to a specific product or service, it incorporates the same factors as all these dimensions need to be considered before measures are taken. It is used in this case study for the analysis of the best practices and their limitations in the following areas: political, economic, social, technological, environmental and legal. In each area, the internal and external factors are going to be investigated. An example of how this framework could be applied is displayed in Appendix 18.

4.3.3. Analysis of the Best Practice

Political factors

The first factor to be aware of is the political one. In hotel companies, one of the internal political factors might be brand standards. These internal policies must be followed by all the hotels within the same company's brand in every country they are operating. One of the best examples is the soap bars in the InterContinental hotels. It is a standard that the company's highest executives only can change; therefore, the managers of the hotels might not be in the position to withdraw them from daily usage. Due to this fact, the managers responsible for the best practice implementation have to bear in mind that their actions are limited by and need to respect all internal policies even though the soap bar may not be very sustainable.

In terms of external political factors, various international political agreements like the Parisian one have the greatest influence when it comes to the implementation of sustainability practices (UN 2022). These agreements have a big influence on the government's view of ESG. Thanks to this, they can subsequently create various policies on restrictions or make an incentive in order to achieve the set ESG goals. The best example is electric automotive company Tesla and their use of regulatory credit in the USA, which they can get by selling only electric vehicles. These credits help them in increasing revenues because they can sell them to automotive companies that are not selling electric vehicles (Kharpal 2021). Another example are incentives in the form of subsidies for the purchase of an electric car in France or Germany (Hurst 2022).

Economic

Nowadays, almost every company has set as a goal to not only provide a good product or service but, most notably, to be economically sustainable. That means being able to cover all the costs but to also make a profit. In order to be able to do that, every decision that costs money should be thoroughly analyzed first. An example of an important business decision is the investment

in solar panels or heat pumps. Even though the initial investment might seem overwhelming, the outcome of this decision can be very beneficial in the long run. Energy costs can be reduced significantly, and the hotel can become energy self-sufficient. However, first of all, there must be sufficient capital, so this can be considered an internal factor. In terms of external economic factors, there is the price of solar panels, which can increase based on demand, and the hotel should monitor this.

Social

The social factor is another crucial aspect of the custom framework. It is clear that every service and product provided by the establishment should be approved by guests. With that being said, the best example might be modern technologies like tablets in the CitizenM hotels that can control the whole room and also be a source of all essential information. They can replace every button in the room and every information card. Thus, implementing such devices can be a more sustainable and practical practice that a lot of guests might welcome. Still, the establishment should analyze and ask their audience before implementing. IC Lisbon guests might not accept it because they differ from CitizenM guests in characteristics like age, lifestyle, and income level. We can assume that there are, for example, older guests at InterContinental hotels and resorts that are not as tech-savvy. This might represent an external social factor that needs to be considered.

In terms of internal factors, the culture of the organization is very important. Therefore, whenever a new practice is implemented at the hotel, every employee should be made aware of it and this practice should also be in line with their values.

Technological

The fourth factor is based on technological incentives and innovations. The establishment should be aware of the fact that there is no end to innovations. This means that every best practice implemented today can be outdated even in the matter of few months. That is why

every company wanting a competitive advantage must be actively researching new technologies or best practices. It is not enough to just implement the best solution that is available at present based on the competitor that you are comparing yourself with; it is more important to be continuously invested in a given problem and to get ahead of the competition. One example is online check-in platforms for guests. There are still a lot of hotels without this technology that can help with long lines at the reception. For this technology, the external factor might be a lack of support from application developers for editing language mutations for a given country. Internal limitations arise, for example, through an outdated personal management system (PMS) that does not support the integration of new technologies.

Environmental

The fifth aspect is centered around the environment. Every implemented practice should align with changing climate and, therefore, sustainability. For instance, the establishment cannot implement heat pumps or solar panels in an environment where the outcome of this integration would be ineffective. For better imagination of an external factor, it is not adequate to implement solar panels in an environment with no sun for most of the year. Nor should solar panels be built on a building that is not facing the sun.

Legal

Lastly, suppose the establishment is going to do a huge reconstruction to implement solar panels. In that case, it is imperative to comply with local legislation and apply for all necessary permits to prevent fines and new renovation attempts later on. This is especially a problem when it comes to construction work. Sometimes it might seem that if you want to install new technologies in your building, you do not have to ask anyone, but that is not the case in most countries. Even though the building is in the company's freehold, in every developed country, it is necessary to obtain building permits to change the disposition of the building and many

changes need to be inspected afterwards. As for legal internal limitations, it is mainly the consent of all important company bodies such as the board.

4.4. Expected Influence of the Green Key on Guests' Booking Behavior

To understand the influence of a certification on guests' decision-making process, multiple studies were conducted (Peiró-Signes et al. 2014; Font 2002; Lamb et al. 2006; Peiró-Signes et al. 2012; Crespo et al. 2018). For mid-priced and luxury hotel guests, it was found they are more willing to pay a premium for a hotel's green practices than economy hotel guests (Kang et al. 2012). Considering IC Lisbon belongs to the luxury category, these findings are very reassuring. However, to understand what IC Lisbon can expect from the Green Key Certification in terms of guest engagement and possible adherence, specific factors should be taken into account. Firstly, the main factor is the average profile of an IC Lisbon guest. Considering the hotel usually accommodates business and leisure travelers, both within the luxury category, these are the main two segments to be addressed in this study. Especially within the leisure segment, most guests belong to the "Baby Boom" and "X" generations, which is why they will be discussed more deeply. Baby Boomers are those born between 1940 and 1964, while Generation X apprehends those born from 1965 to 1980 (Wan and Abdullah 2015). Moreover, one of the reasons IC Lisbon wishes to obtain the Green Key Certification is so they can more easily establish partnerships with corporate travel departments, particularly with airline companies, which often demand hotels to be certified before they book hotel rooms for their respective crews.

4.4.1. Business Travelers

Most business travelers represent a company when traveling for work. Those companies, in turn, might have Corporate Social Responsibility policies that demand the hotel in which its employees stay to operate within these policies. In that sense, a certification, in this case the Green Key, acts as a stamp on how the hotel's corporate values match the organization's values.

As for the business traveler per se, a study on the outlook of business travelers towards a green hotel found that the majority of guests agreed that hotels should promote and are willing to participate in green practices. However, only one fourth of the respondents would pay a premium for green products and has a strong preference for being accommodated in a green hotel (Gaibee 2014). There seems to be, in this segment and according to that study, a certain resistance: although the respondents agree with hotels going green, they are not willing to renounce comfort and luxury.

Moreover, the fact that a business traveler may represent a sustainable company does not necessarily translate to greener behavior as a hotel guest. It has been shown that context plays an important role in influencing pro-environmental behavior (Dodds et al. 2022), meaning business travelers might not have the same sustainable attitude outside the workplace. However, there is contradicting evidence implying that business travelers travel more sustainably than leisure travelers (Dodds et al. 2022). This could be tied to the employer's sustainability policies. Considering the inconsistent evidence, research on business travelers' sustainable behavior is still too limited to allow for precise conclusions. This means it is equally unclear how this segment would respond to green certifications, apart from the existing demand from companies with certain CSR requirements, as mentioned in the paragraph above.

4.4.2. Baby Boomers and Generation X

Despite the general assumption that younger generations are more environmentally conscious, studies have shown that sustainability is becoming a common interest across all generations (Ad Age 2020; Ham et al. 2022). Baby Boomers, because of their overall financial capabilities, were found to be "at the heart of green consumption", while Gen X consider themselves now more environmentally aware than they were at a younger age (Coughlin 2018; Ham et al. 2022). Moreover, according to a study on variables affecting hotel customers' eco-friendly decision-making process, older customers have a stronger willingness to pay more for a green hotel (Han

et al. 2009). Baby Boomers, followed by Gen X, have seemingly greater purchase intentions in green products/services, implying that green purchase intention and age have a positive relationship – the older the consumer, the more likely they are to make an environmentally friendly purchase (Ham et al. 2022). However, that could be, again, explained by the fact that older generations possess a higher budget and are, therefore, able to weaken their intention-behavioral gap. This theory is supported by a study that states that younger generations are, in fact, more knowledgeable regarding sustainability concerns and present a sympathetic mindset in regard to green products, but it does not induce actual purchases due to insufficient financial abilities (Cheung and To 2019; Ham et al. 2022).

Although some researchers found that age-related differences in purchasing behavior and decision-making are true (Evanschitzy and Wunderlich 2006; Han et al. 2011), others show that age, among other variables such as education and income, do not influence customers' environmentally friendly intentions as much as gender and eco-friendly attitudes, for example. Because of conflicting evidence, a study suggests that, in a green consumption context, segmentation by age or generation is not compelling (Ham et al. 2022). That being said, despite these inconsistent findings and considering marketing segmentation principles, IC Lisbon should focus on studying the age/generation variable and how to better reach each of them.

Baby Boomers particularly, are found to be more interdependent and present greater ethical standards, which implies that they have a higher tendency to prioritize social causes over green product utilitarian value (Ham et al. 2022). These findings suggest that successfully reaching these segments and influencing their green purchasing behavior could depend mostly on communicating the green attributes and their emotional benefits, a concept that will be further developed in the following subchapters. Therefore, what this subchapter suggests is that it would be wise for IC Lisbon to adapt their green positioning to the discussed segments, by not only resorting to their empathetic tendency, but also by simplifying information in order to

avoid feelings of confusion and disorientation caused by the numerous terminologies associated with sustainability.

Generation X, although aware of and concerned with environmental issues, is said to be more skeptical of eco-labeled products, which leads to a less active role in regard to purchasing green products and services (Ballantyne and Packer 2013; Wan and Abdullah 2015). A solution on how to better reach and motivate this segment is to communicate evident proof of the efforts associated with the eco-label, in this case the Green Key, a subject that will, once again, be more deeply explained in the subchapters to follow.

As for maximizing the positive effect a certification can have on bookings, the discussed consumer segments should be at the center of a green marketing campaign. This relates to the communication of the awarded Green Key to new potential customers, as well as loyal guests. Considering the latter usually present a higher probability of not only returning, but also spreading the word, a case study found that the intention of making positive recommendations and revisiting a hotel is more likely to exist if the hotel presents a green image (Lee et al. 2010). However, as the results of a study from the University of New Hampshire (Barber 2014) suggest, “green” behavior patterns differ in intensity from one green guest to another, and so each “shade of green consumer” should be addressed with a segmented strategy in order to increase marketing outcomes. The same study highlights that there is still a need for educating guests in terms of the changes they will face: what is beneficial about new, more environmentally friendly practices as opposed to traditional practices. This happens because intention does not always incur behavior, especially purchasing behavior. For five-star luxury hotels, such as IC Lisbon, this is particularly true, since they are faced with the dilemma of trying to establish more sustainable practices and, at the same time, pampering hotel guests with unlimited and luxurious services (Barber and Deale 2014). The following sub-chapters

discuss the intention-behavior gap and how to overcome it, the relevance of eco-labels and the importance of educating the guest.

i. Green Positioning: Translating Intention into Behavior

Existing research explored the relationship between green practices, green image, environmental consciousness, and the behavioral intentions of customers in a certified hotel context. It was found that customer perceptions of green practices have a direct positive effect on a hotel's image, which, in turn, positively affects customers' behavior intentions towards certified hotels (Crespo et al. 2018). Moreover, green perceived value also indicates a positive effect on "green trust" and green purchase intentions (Trang et al. 2019; Chen and Chang 2012). However, due to the significant gap between consumers' environmental intention and actual behavior highlighted by many studies, marketing plays an important role in translating one into the other. Considering marketing strategies are divided in three steps - segmentation, targeting, and positioning - and that the first two steps were examined above, this subchapter will discuss the latter.

Considering the greatest challenge for the hotel industry today is to create tangibility from the intangible hotel experience (Kayaman and Arasli 2007; Barber 2014), marketers should appeal to the functional, environmental, and/or emotional benefits of green positioning into hotel operations to create a green hotel image (Barber 2014). Hu (2012) suggests that to direct consumers toward sustainable products, increased information on the offerings and the perceived benefits of choosing these products is critical.

Moreover, the effectiveness of said positioning depends on both functional attributes and emotional benefits (Hartmann et al. 2005; Lee et al. 2010). Functionality alone will not fully secure the green positioning's success, as it is equally possessed by the competition. An emotional-benefit-based approach will be determinant in a green positioning scenario, meaning advertising should appeal to the emotional benefits a guest feels by choosing a greener hotel,

while also proving to them that their decision makes a positive difference in the environment (Lee et al. 2010).

ii. The Importance of Eco-labelling

The communication of green practices can often fail in terms of marketing results due to the lack of credibility. As quoted, consumers will look for tangible demonstrations of the hotel's commitment toward green practices (Barber 2014), and eco-labeling allows customers to identify green products, having, therefore, been used by businesses as a marketing tool (Lamb et al. 2006). Although hotels can appropriately communicate their sustainable practices, there can be a certain skepticism from consumers on whether or not they are truly committed to these promises. In that sense, a certification provides credibility, besides serving as a differentiator that leads to enhanced customer awareness (Schubert et al. 2010; Zhang et al. 2012b; Peiró-Signes et al. 2014). It does not only communicate the implementation of green practices, but also, and more importantly, enables consumers to distinguish actual sustainable efforts from "green-washed" products and services (Crespo et al. 2018).

A study on Spanish hotels shows that one expected benefit from an environmental certification, in that case the ISO 14001, is the improvement of sales by providing a third-party sustainability credential (Peiró-Signes et al. 2014), and another research on the same certification found amplified economic performance in certified hotels when compared to non-certified hotels (Peiró-Signes et al. 2012). Indeed, environmental practices are positively related to performance through the mediating effect of higher customer satisfaction and loyalty (Kassinis and Soteriou 2003; Peiró-Signes et al. 2014). Further developing this concept, a study on the relationship between value and green attributes suggests that customers tend to more positively assess a hotel's value if the hotel presents green attributes, since they are related to a higher quality/benefit perception (Manaktola and Jauhari 2007), which contributes to the findings that perceived green image can enhance perceived brand quality and brand reference

(Liu et al. 2014; Crespo et al. 2018), in turn confirming the mediating effect previously mentioned.

Nonetheless, expressing the existence of a certification is not enough to communicate environmental dispositions. The expressive number of eco-labels and pro-environmental terminology can be confusing, which leads to many consumers preferring to ignore them (Font 2002; Lamb et al. 2006). A case study from green hotels in Vietnam suggests that there are two important factors in the development of pro-environmental intentions, which are customer benefit (e.g., sustainable products) and green characteristics (e.g., green landscape and architectural design), the first being ranked the most determinant factor. Therefore, innovating in these two areas can be an effective measure to communicate visible evidence of environmental practices, enabling guests to clearly identify the benefits (Trang et al. 2019). According to the same study, an eco-label represents and authenticates the level of performance of the hotel's sustainable programs, so hoteliers should aim for a high level of green certification and build their green image by communicating their eco-label. Another study adds that environmental labelling works as a compelling instrument in positioning a green product and creating a competitive advantage (Lamb et al. 2006).

iii. Educating the Guest

Literature says that sharing information about environmental issues and consequences is considered valuable in developing the guests' knowledge, awareness, positive attitude, and participation in green practices (Fukey et al. 2014). Moreover, the effectiveness of environmental programs depends on the customers' engagement and commitment, thus educating the guest is also a tactic of encouraging them to play a part in green initiatives. While eco-labels help customers identify green businesses, environmental awareness and knowledge justify to consumers the commitments attached to the eco-labels, thus guiding them on their decision-making process, whether that may be choosing a hotel or choosing to engage in a

hotel's green practices. It was found that the higher the consumer's awareness of a product's environmental performance, the more likely they are to buy eco-friendly products (Testa et al. 2015; Doksaeter et al. 2019). Additionally, besides not being aware of the positive aspects of green practices in the hotel industry, customers are frequently unacquainted with the negative consequences a hotel without eco-friendly policies can have on the environment, hence the need for hotels to promote environmental consciousness (Chen and Peng 2012; Crespo et al. 2018).

The lack of information will keep customers indifferent between certified and non-certified hotels, whereas familiarity with environmental issues will provide a reason for the guest to make a more sustainable choice. In that sense, a study suggests hotels should organize events, such as conferences, seminars or contests to better inform their guests regarding sustainability issues (Crespo et al. 2018). Besides, these events could act as platforms to not only reveal these issues, but also make known how the hotel is responding to them, thus promoting their efforts and the certification. By becoming certified, hotels position themselves to the environmentally conscious guest. However, to promote their green image and boost customer intentions and behavior, certified hotels should educate and actively make positioning efforts to persuade the less environmentally conscious market as well (Crespo et al. 2018).

Moreover, if product attributes and product greenness are seemingly independent from each other, consumers tend to choose based on product attributes (Ginsberg and Bloom 2004; Chen and Chang 2012), as they are improbable to compromise on traditional product value and quality for the sake of greenness (Chen and Chang 2012). To avoid this, it is important to make sure the consumer understands that green attributes - in IC Lisbon's case green practices - go hand in hand with the service quality by focusing on both the green and functional attributes. To reinforce what was mentioned in the previous subchapter, although eco-labels are powerful marketing tools, they need to be strategically communicated and followed by reliable, detailed information that guides the customer's purchasing decision (Testa et al. 2015; Doksaeter et al.

2019). There are studies that claim that insufficient or misleading information regarding eco-labels can have a negative impact on the purchasing decision (Kar Yan and Yazdanifard 2014; Doksaeter et al. 2019), as well as too much, too complicated, or unclear information (Doksaeter et al. 2019).

5. Conclusions and Recommendations

One major takeaway of the research conducted for this project is that in order to successfully change routines and processes and to create positive, long-lasting effects, a business needs to involve all its employees and several other stakeholder groups. Given the experience of IC Lisbon's core team and the support provided by the Green Engage team, the hotel was found to be well prepared to take on the challenge of applying for and going through the auditing process of the Green Key certification. The hotel's backing by a strong brand and parent company additionally facilitates the undertaking. Sustainability covers a range of aspects of environmental, economic, and social nature as was touched upon in Chapter 2. So far, IC Lisbon has done a great job attending to them, but will need to further expand its efforts to achieve and maintain the Green Key.

This case study explores several different areas and research questions of interest for IC Lisbon. The Green Key was determined to be the most suitable sustainability certification for this hotel. A SWOT analysis revealed a number of benefits, advantages, and opportunities that IC Lisbon is highly recommended to exploit. Some certified businesses criticize a lack of marketing provided by the organization. However, the hotel can well compensate for this lack by promoting the certification and its effort itself. IC Lisbon is advised to launch a green marketing campaign targeting their main customer segments. Communication of the award of the Green Key to all stakeholders, in particular the hotel's current and potential guests, is essential. As awareness of certifications and labels is still low among guests, educating them about the Green Key and what its pursuit entails is necessary in order to achieve expected

positive impacts. Messages should be kept short and simple to not overwhelm those unfamiliar with the vocabulary around sustainability and should include not just proof of said efforts, but also results that were already achieved. They should address guests' emotions and, at the same time, emphasize that the quality of the service provided remains the same or even improves when adapting procedures and facilities to be more sustainable.

Furthermore, to set itself apart from its competition, IC Lisbon may want to consider applying for other certifications that may complement the Green Key and create additional credibility. Given the Green Key is comparably strict and difficult to achieve, getting certified by other organizations should be easier. Another recommendation is to apply early and to follow defined procedures to reapply for the Green Key every year as well as to nominate someone to oversee the process to avoid the certified status lasting only a few months.

A detailed analysis of the current tools used by IC Lisbon to measure and track its sustainable efforts revealed a few shortcomings that the hotel is advised to address. Missing data for the consumption of carbon emissions of 2022 and the total generation of waste of 2019 should be updated and included in future analyses. To get a full overview of the hotel's sustainability performance and to be able to compare it to previous years, the consumption data of each indicator for the remaining months of 2022 need to be registered. Moreover, realistic targets for carbon, waste, and water for this year need to be set and tracked on the platform. The hotel can thereby evaluate and compare its progress per year regarding each of the indicators. Although the Green Engage Platform already provides great insight, the hotel should consider other measurements, too, i.e., measurement of each indicator per guest, per guestroom and per guestroom per day, to generate a complete report of the respective year and receive deeper insights into how much each indicator has been consumed per guest. In order to get a complete overview of the composition of waste per category, the hotel could calculate how much of its waste is made up of metal, glass, paper, cardboard, cooking oil and food waste.

Lastly, to significantly decrease the prices on electricity, innovative ideas regarding the best energy efficiency measures can be checked on HERO.

To successfully determine and implement the best sustainable practices, IC Lisbon should invest some time in analyzing the Green Key requirements. Once the hotel understands the entire application process and criteria, it can focus on analyzing its status quo and currently used practices to see if all conditions for obtaining the certification are met. If the hotel does not meet certain conditions, it should focus on those and find the most suitable sustainable practices to implement. This does not mean that the hotel should find the best solution currently used in the world. It means finding the best solution that IC Lisbon can implement without any limitations based on the analysis of the factors described in the individual part "Best Sustainable Practices in the Hotel Operations".

In the event that the hotel achieves certification, it must not be satisfied with that and should continue to think about innovation and the implementation of new sustainable technologies in the future. The best sustainable practices can not only help the organization save money spent on efforts and achieving the certification but will also contribute to changing the perspective of people on sustainability matters worldwide.

Through working on this project, we learned a lot about one of the most important and pressing themes of our generation: Sustainability. We were able to further develop our knowledge about the hotel industry and the challenges it is currently facing, from retaining talent, to keeping employees engaged, attracting guests and maintaining loyalty. The InterContinental Lisbon is setting an example for a lot of other hotels in many of these areas. We wish its team all the best as they continue to build and follow their sustainability roadmap.

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D. Appendices

Case Study – Executive Summary

Through elaborate research on a variety of aspects around sustainability certifications, our team built a case study and provided actionable recommendations on how to achieve and maintain an international sustainability certification at the InterContinental Lisbon hotel. Pressured by our global society, current crises, and the competitive hospitality landscape in Lisbon and abroad, the hotel finds itself in need of a widely recognized eco-label that guides its sustainability efforts and serves as strong external signal and proof of its efforts for all stakeholders. More than 60 certifications were reviewed, the Green Key chosen as most suitable and thoroughly analyzed. Four key environmental sustainability indicators were identified, and two progress tracking methods and tools evaluated. To best inform about the implementation of best practices, a framework was developed that includes both the Six Sigma and PESTEL analysis dimensions. Moreover, more than 120 potential guests were surveyed and their perspective on certifications explored. This work informs InterContinental Lisbon of all benefits and risks that come with pursuing certification, characteristics of the Green Key, and tips on how to best achieve and renew it. In addition, the InterContinental Lisbon hotel receives argumentation support for communication with stakeholders, in particular its employees and guests.

a. List of Appendices – Filipa Lacerda

1. Sample Interview Questions Conducted with José Lebre

Part A – Sustainability & Green Engage Platform

1. Why is sustainability important for your hotel?
2. When did your hotel start to care about the environmental concerns – before or during the pandemic?
3. Were the guests and corporate staff more conscious about sustainability before and/or during the pandemic?
4. When did your hotel start implementing sustainable practices that do no harm for the planet – before or during the pandemic?
5. Would you say that the pandemic really changed the hotel's perception in terms of sustainability awareness?
6. If sustainability is the ultimate goal of your hotel, what tools does your hotel use to keep track of its sustainability progress? Ducet Tracker for water and energy? HERO tool? Or Green Engage Platform?
7. When did your hotel start using Green Engage Platform and why - right when things changed during the pandemic?
8. Is Green Engage Platform a useful tool that helps your hotel measure the sustainability indicators and keep track of their monthly performance?
9. What other tools does your hotel also use besides Green Engage Platform?
10. Your hotel has received many awards for Green Engage over the years. How many in total?

Part B – Data Collection

11. Does your hotel measure any of the following indicators:
    a. Amount of carbon emissions per guest, per month and per year
    b. Total energy consumption per guest, per guestroom, per month and per year

c. How much energy being consumed costs per month and per year
d. Amount of renewable energy sources per year if applicable
e. Total water being consumed per guest, per guestroom, per month and per year
f. Amount of water being reused for other purposes such as irrigation or watering outdoor garden
g. How much water that had been used by a guest costs per month and per year
h. Total waste production per month and per year
i. Amount of waste diverted from landfills per month and per year
j. Amount of food waste per guest, per guestroom, per month and per year
k. Amount of composted food per month and per year
l. Waste recycling rate per year
m. Optional indicators: amount of resource consumption per year; number of staff members that received training programs based on environmental issues; number of current and new environmental initiatives that had been set by the hotel manager

12. How much carbon emissions had been reduced by guest per month and per year? What was your hotel's target goal in terms of percentage of carbon reduction for this year?
13. How much energy had been consumed by guest per month and per year? What was your hotel's target goal in terms of percentage of energy reduction for this year?
14. How much water had been consumed by guest per month and per year? What was your hotel's target goal in terms of percentage of water reduction for this year?
15. How much waste had been produced by guest per month and per year? What was your hotel's target goal in terms of percentage of waste minimization for this year?
16. How much were the average gas, electricity and water bills per month and per year? Compare with the previous years: 2019, 2020 and 2021. Which year did the hotel pay

more? The years when the hotel paid less for gas, electricity and water could possibly be due to the pandemic.

17. What does your hotel intend to do with cost savings? To repair leaks from the showers, dripping taps, buy a composter for the kitchen to minimize food waste, or even get solar panels for the roof of your hotel building?
18. Would you say that your hotel had made huge progress in sustainability area before or during the pandemic? Were sustainable practices taken into effect before or during the pandemic? Did these changes impacted by the pandemic influence the guests' opinion concerning sustainability importance to the hotel/local community?

2. A Comprehensive List of 143 Environmental Indicators Taken from a Review Paper on Sustainability Indicators in the Hotel Industry (Reem et al. 2022, 159-163)

Table 2. A summary of environmental indicators

Environmental indicators	Author(s) (year of publication)
• Total fuel consumption • Air pollutant emissions	Li et al. (2020)

Table 2 (con't)

Environmental indicators	Author(s) (year of publication)
• Hotel holds environmental protection awareness programs for the community. • Records of these programs are listed and managed • There is an environmental awareness programme. • Native and endemic plants obtained from sustainable sources have been used in landscaping and decoration, avoiding exotic and invasive species • Chemicals especially those in bulk amounts, are stored and handled in accordance with appropriate standards • Organisation uses green procurement criteria • Total direct and indirect greenhouse gas emissions are monitored and managed	Alipour et al. (2019)
• Normative environment • Specific environmental sustainability policy • Regulative environment • Cognitive environment • Overall commitment • Energy usage • Carbon emissions • Food and catering • Pollution avoidance	Junaedia (2020)
• Reduced resource consumption • Increased recycling of materials • Improved efficiency of raw materials • Increased overall reputation in respect to products and services	Fatoki (2019)
• Green marketing • Green word-of-mouth • Green attitudinal loyalty • Green trust	Mele et al. (2019)
• Pressure per room • Kg CO_2 eq for transport • Water consumption • Waste generation • Kg CO_2 eq for accommodation • Pressure per m^2 • Pressure per guest night	Michailidou, Vlachokostas, & Moussiopoulos (2015)

Table 2 (con't)

Environmental indicators	Author(s) (year of publication)
• Conserving biodiversity • Ecosystems and landscapes • Employee environmental awareness • Reducing pollution • Employee environmental training • Collaboration with NGOs • Conserving resources • Environmental communication	Alipour et al. (2019)
• Nature indicators (Hotel surroundings, clean air, sky, disconnection, nature noise, plants, trees, flowers, rivers, waterfalls) • River indicators (Clean water, hiking, outdoor activities, hiking trails, forests) • View indicators (Rooms, no buildings, landscape, sunrise, mountains, sun) • Local tradition indicators (No urban areas, local products, traditions, local food, local restaurants) • Installation indicators (Ancient, unsustainable, digital documents) • Air indicators (Pure, large spaces, no pollution) • Excursion indicators (Hiking, groups of visits, kayaking) • Noise pollution indicators (Noise, music, people agglomeration) • Sustainable energy indicators (Energy efficiency, empty areas, solar panels, self-efficiency)	Saura, Reyes-Menendez, & Alvarez-Alonso (2018)
• Energy conservation • Recycling • Reduced energy consumption • Water conservation • Use of non-conventional energy sources • Organic product usage • Green certification • Global warming • Reduced water consumption • Local purchasing • Cleanliness and hygiene • Water saving • Pollution control • Greenery around hotel • Recycle bins in guest rooms • Rainwater harvesting • Energy-efficient lighting	Verma & Chandra (2018)

Table 2 (con't)

Environmental indicators	Author(s) (year of publication)
• Total CO_2 emissions • Total guests nights • Kg CO_2 eq/guest night • Carbon footprint per month	Giama, Karakasidis, & Papadopoulos (2018)
• Carbon footprint • Glass [kg] • Number of guest stays per year • Plastics [kg] • Occupancy rate (%) • Number of hotel rooms • Water [m^3/overnight stay] • Electricity [kWh/overnight stay] • Energy sources (fuels for thermal energy) [MJ/overnight stay] • Cleaning product [kg/overnight stay] • Bleach/degreasing chemicals [L] • Dishwashing detergent [kg] • Cleaning chemicals for general purpose [kg] • Lubricants/grease [kg] • Washing detergents [kg] • Pool disinfectants [kg] • Municipal solid waste [kg] • Fertilisers [kg] • Phytosanitary products [kg • Municipal solid waste [kg/overnight stay] • Vegetable oil [L/overnight stay] • Wastewater [L/overnight stay] • Operational season (months) • Overnight stay	Puig et al. (2017)
• Recycling • No chemicals • Sustainable products • Biodiversity • Disposables • Wildlife conservation (natural reserves, programs) • Energy conservation • Invasive species • Water conservation • No harvesting of wildlife • Offsetting carbon /greenhouse gas emissions • Pollution • Wastewater	Brazytė et al. (2017)

Table 2 (con't)

Environmental indicators	Author(s) (year of publication)
• Number of towel change in guest room • Wastewater • Energy reduction • Water reduction • Reusing dirty water • Reducing cleanliness • Cleanliness standard of bathrooms • Maid services • Chemical choice and usage • Reduction of solid waste • Reduction of chemical use • Towel reuse • Flow restrictors • Reduction in the backwash frequency	Baddeley & Font (2011)
• Energy consumption • Recycling waste • Activity related to ecological quality label • Environment quality standards • Environmental activity for guests • Environmental activity for employees • Renewable energy • Water recycling • Quantity of solid waste	Cvelbar & Dwyer (2013)
• Resource saving • Energy management • Environmental loading	Xu et al. (2013)
• Protect the environment • Participate in environmental certifications • Reduce consumption of natural resources • Conduct annual environmental audits • Recycle • Exploit renewable energy in a productive process compatible with the environment • Communicate to customers about environmental practices	Martínez, Pérez, & Rodríguez del Bosque (2013)

3. List of Indicators

IC Lisbon measures	Yes	No
Amount of carbon emissions per month and per year	✓	
Total energy consumption per month and per year	✓	
Amount of renewable energy sources per year		×
Total water consumption per month and per year	✓	
Amount of water being reused for other purposes such as irrigation or watering outdoor garden if possible		×
Total amount of waste generated per month and per year	✓	
Amount of waste diverted from landfills per month and per year	✓	
Amount of food waste per month and per year		×
Amount of composted food per month and per year		×
Waste recycling rate per year		×
Amount of resource consumption per year		×
Number of staff members that received training programs based on environmental issues		×
Number of current and new environmental initiatives that had been set by the hotel manager		×

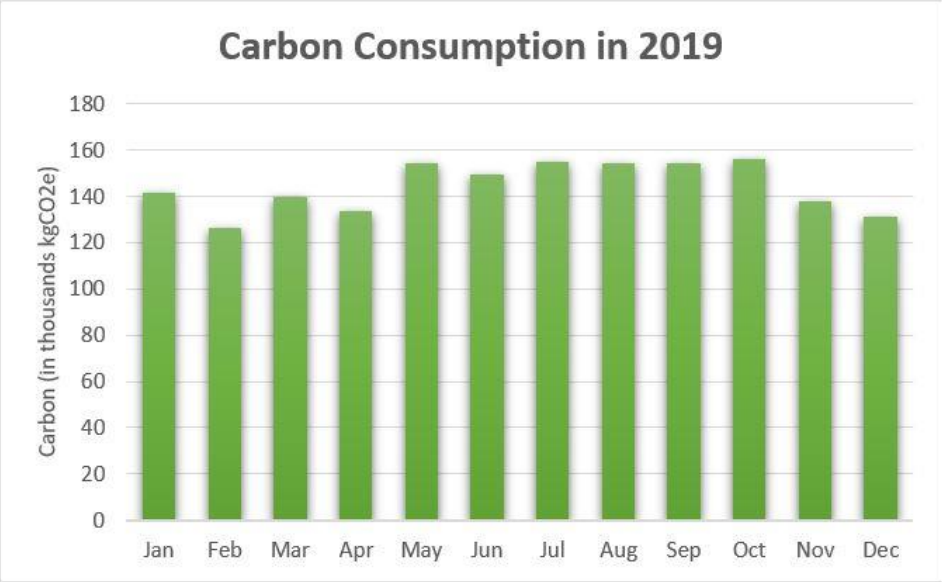
Table 1. List of Indicators Measured by IC Lisbon (Own Work)

4. Photographs of 2 Awards of Green Engage Attributed to IC Lisbon (Lacerda 2022a)

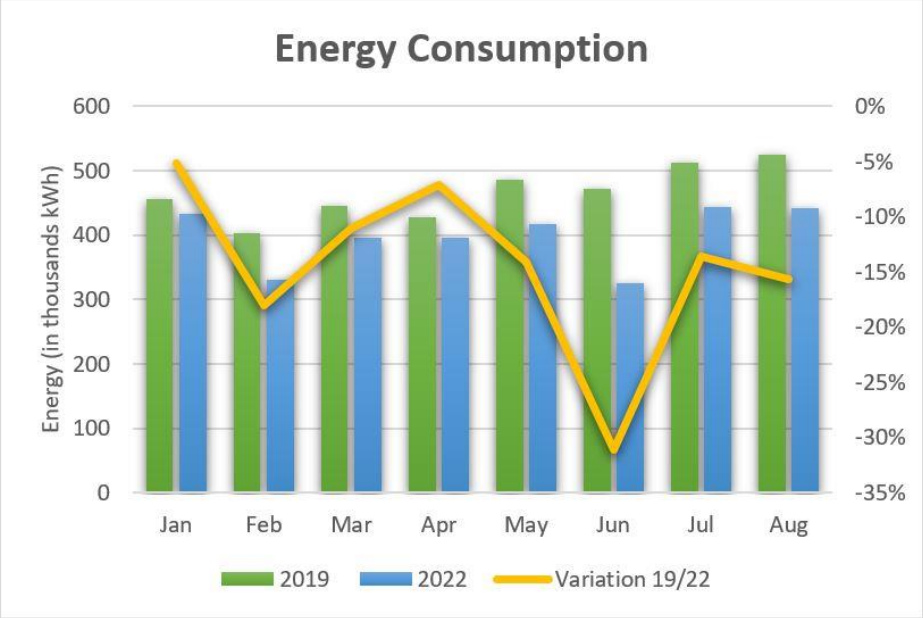
5. Photograph of a Social Responsibility Seal 2020 to IC Lisbon Awarded by AHP – Portuguese Hotel Association (Lacerda 2022b)

6. Photograph of an Environmental Sustainability Seal 2020 to IC Lisbon Awarded by AHP – Portuguese Hotel Association (Lacerda 2022c)

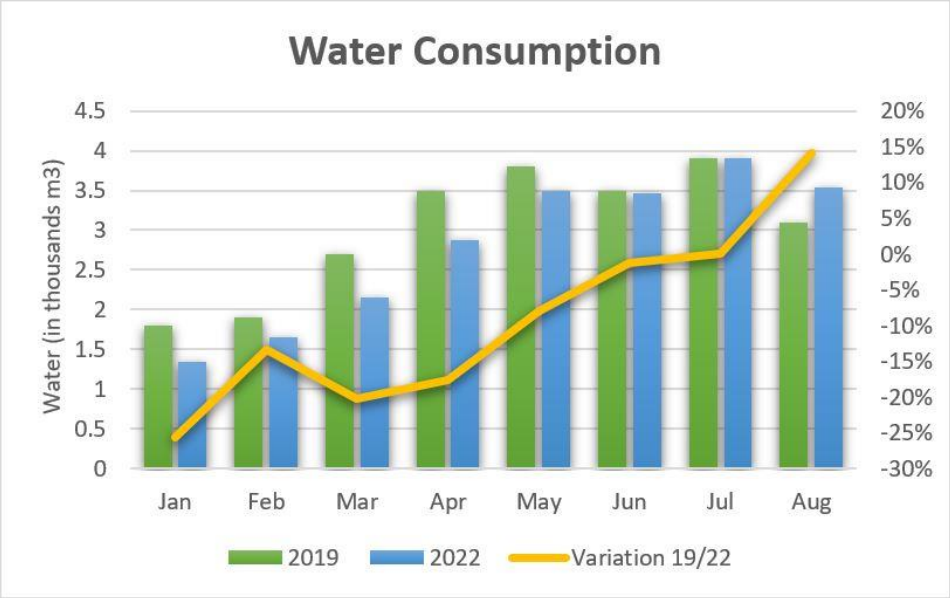
7. Data Collection from the Green Engage Platform and Data of Bills



Appendix 8. Bar Chart of Carbon Consumption in 2019 (Own Work)

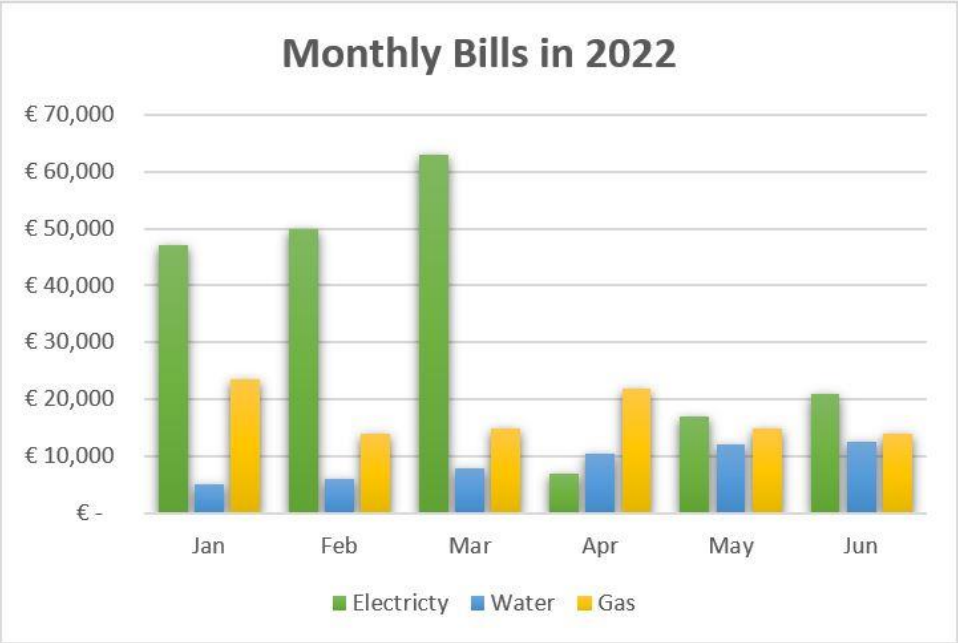


Appendix 9. Bar Chart of Energy Consumption Comparison between 2019 and 2022 (Own Work)

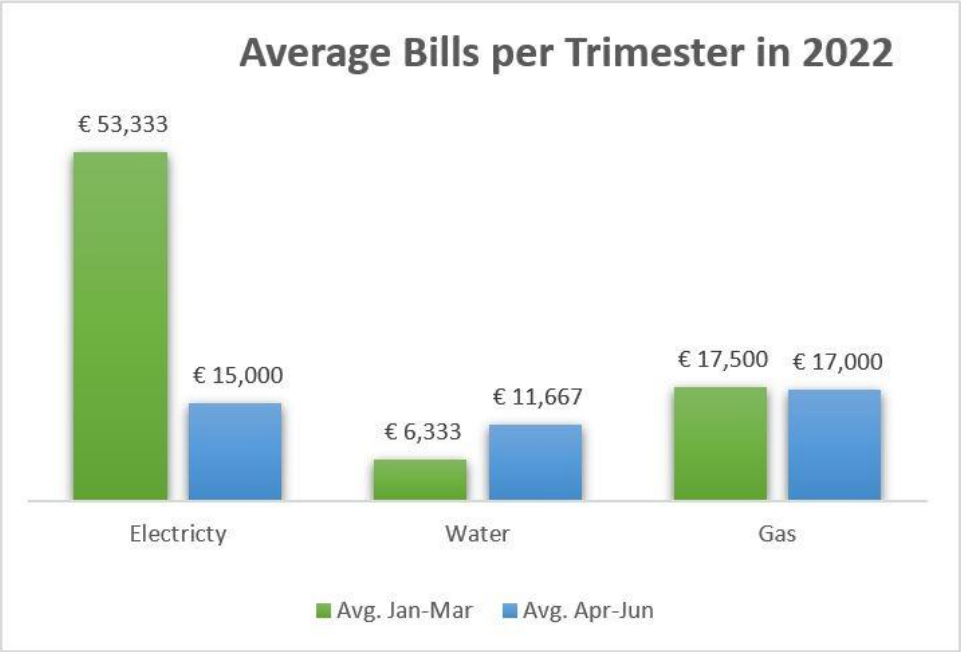


Appendix 10. Bar Chart of Water Consumption Comparison between 2019 and 2022 (Own Work)

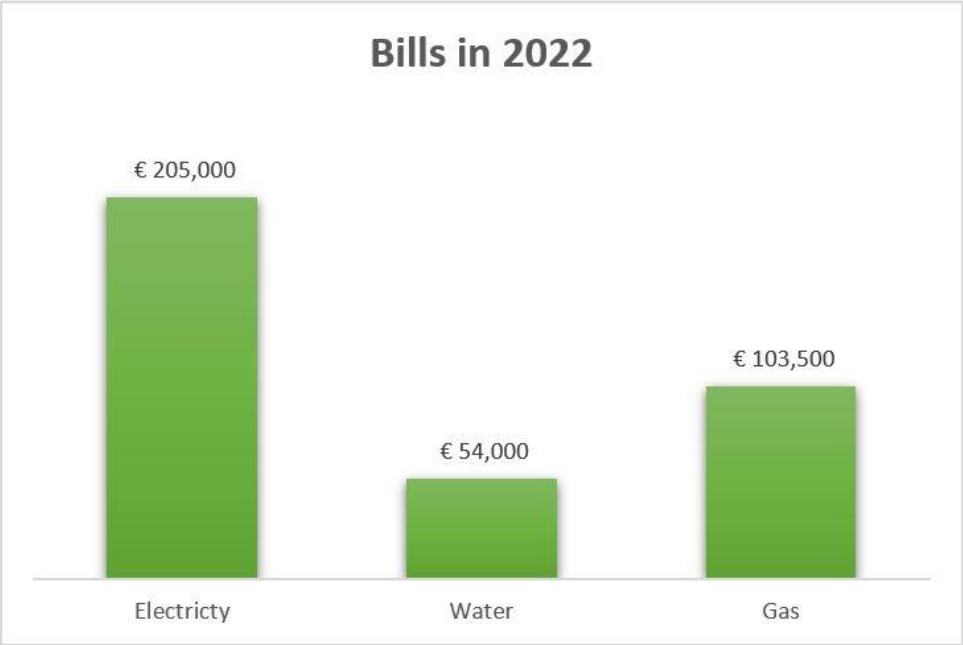
Appendix 11. Bar Chart of Waste Generation in 2022 (Own Work)



Appendix 12. Bar Chart of Bills per Month in 2022 (Own Work)



Appendix 13. Bar Chart of Average Bills per Trimester in 2022 (Own Work)



Appendix 14. Bar Chart of Bills in 2022 (Own Work)