

Sustainable Innovation in Hospitality with a Case Study of FIVE Hotels and Resorts

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ABSTRACT

This paper reviews how FIVE Hotels and Resorts uses sustainable innovation to reduce its environmental impact without losing sight of guest experience and profits. By exploring their efforts in saving energy and water, cutting waste, and training staff, I share insights from interviews and reports. While they've made real progress, challenges like upfront costs and shifting company culture still exist. The case shows that with the right approach; luxury hotels can grow their business while being sustainable.

Keywords: Sustainable Hospitality; Hospitality; Hotels; Eco-Tourism; Sustainability; Green Buildings; Tourism

INTRODUCTION

The hospitality industry is currently facing the key challenge of aligning operational practices with the growing demand for environmental sustainability. This shift is driven by both the increased awareness of global climate and evolving consumer expectations. Hotels, which are usually known for their high consumption of water, energy, and food, now face pressure to adapt their practices to reduce environmental impact. This is increasingly intertwined with profitability and long-term viability. In many different businesses, including the hotel industry, environmental responsibility is becoming a key part of company strategy. Recently, climate change has clearly proven that the “business as usual” approach can

no longer work in the modern era. Stricter environmental rules and growing water, energy, and material prices are altering the hotel industry. This paper investigates the significance of sustainable innovation in the hospitality industry using an important case study of FIVE hotels and resorts, and by looking at present initiatives, strategies, difficulties, and new developments

LITERATURE REVIEW

Sustainability is defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs. There is a clear global trend toward this, partly due to the public's growing desire for eco-friendly solutions as well as increased knowledge of climate change. This shift is evident in a variety of businesses and industries. According to “Environmental Entrepreneurship” by Lenox et al (1), within the hospitality industry, the high consumption of water, energy, and food has made hotels a key focus point for sustainability discussions. Changes can also be

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seen in consumer behavior, especially among younger generations who are willing to pay an additional cost for sustainable experiences. Research has shown that Millennials and Gen Z prioritize environmentally friendly options, and the surveys suggest that these demographics increasingly consider a company's environmental, social, and governance (ESG) profile in their decisions when buying retail, staying in hotels, and more (2-4). In addition to consulting firm data, peer-reviewed academic studies such as Bohdanowicz's research on environmental awareness in European hotels also support the idea that sustainability initiatives improve guest satisfaction and operational efficiency (5).

For hotels, the message is very clear: to stay relevant and competitive, they must integrate sustainable practices that resonate with eco-conscious consumers. Sustainable hospitality is now not only a moral obligation but also a strategic business choice. It can truly enable hotels to attract and retain clients who respect strong environmental standards.

In the hospitality industry, adopting sustainable initiatives and practices comes with both positive and negative aspects. While these practices allow hotels to differentiate themselves in a competitive market, there are still significant barriers. For many hotels, the high upfront costs of technologies like solar panels or energy-efficient lighting are major financial challenges, especially for smaller-scale operations (6).

Logistical challenges, such as training staff and helping them adjust to new sustainable practices, add complexity to these efforts. Despite these hurdles, many hotels are leading the way by adopting innovations that not only cut down on resource use but also improve profitability. Common strategies include installing energy-efficient lighting, implementing water-saving programs, and reducing waste through measures like low-flow showerheads, greywater recycling, and advanced HVAC systems. Jones et al. also highlights that integrating such technologies can lead to reputational gains and long-term cost savings, and reinforcing the case for sustainability from both economic and ethical perspectives (7). These sustainable features have become essential in modern hotel design, attracting eco-conscious guests and meeting investors' growing emphasis on strong Environmental, Social, and Governance (ESG) standards, ultimately benefiting the hotel as a whole (8).

The move towards sustainability is not only a cost-reduction strategy for hotels but also creates new business opportunities. Applying the circular economy concept already practiced by some hotels means that resources are

used, reused, and repurposed instead of being discarded. For instance, when food and materials are purchased from within the locality, hotels cut down emissions and assist local communities simultaneously. This kind of approach not only benefits the earth but is also favored by tourists and investors (9). Where water is an issue, using innovations such as greywater systems enables hotels to save resources, cut down expenses, and be part of a better economy. As the concern for the environment increases, there is a growing feeling that hotels are one of the best-positioned industries to champion corporate responsibility. Thus, being a leader in sustainable practices is consistent with what customers want and demonstrates concern for the environment and adheres to the best practices of the industry (10). It's a way of addressing climate issues and making a positive impact, as sustainability forms the core of doing business in the hospitality sector today (11).

METHODS AND MATERIALS

FIVE Hotels and Resorts works as a case study in successfully combining sustainability with profitability in the hospitality industry. FIVE has locations in Dubai, UAE; Ibiza, Spain; and Zurich, Switzerland, and they have certainly reduced their environmental footprint but also strengthened their brand reputation, appealing to a luxury clientele that values both opulence and eco-consciousness. The chain operates a number of high-end properties and focuses on creating memorable, vibrant experiences for guests, positioning itself as a leader in combining luxury with responsible practices (12, 13).

David Shepley, FIVE's Director of Sustainability, explained that the company takes sustainability seriously, using green finance tools like bonds and regular ESG audits to keep track of its progress. "We collect data from all departments, compile it into reports, and disclose it transparently," Shepley explains. By collaborating across departments, such as engineering, marketing, and kitchen operations, FIVE integrates sustainability into every aspect of its operations, ensuring that environmental practices align perfectly with its guest experience (14).

In this study, we use multiple data sources to explore how sustainability practices are applied within FIVE Hotels and Resorts. The data was gathered from sustainability reports, interviews with key people in the hotel, like Shepley, and more.

Two structured interviews were conducted using purposive sampling to ensure participants had direct involvement in sustainability efforts. Quantitative data focused on reductions in carbon emissions, water

usage, and waste between 2020 and 2023, allowing for an objective view of the hotel's progress in resource conservation using physical numbers. The ESG reports used were externally audited by third-party firms to ensure accuracy and accountability. Specific ESG indicators analyzed included energy consumption per guest night, food waste volume, and greywater reuse percentage; these were tracked using FIVE's internal dashboards and cross-referenced with audit data.

To complement the quantitative data, qualitative insights were gathered from interviews to understand the internal challenges of embedding sustainability, particularly the roles of staff training and guest participation. While interviews provide depth and a human view of the scenario, they could come with limitations, such as personal bias or perhaps someone only recalls an event partially, for example. Although this study is centered on a single hotel group, it highlights practical approaches to balancing environmental efforts with profitability, offering a roadmap for other luxury hotels aiming to adopt sustainable practices.

RESULTS

By 2024, FIVE Hotels reported a 65% reduction in its carbon footprint at its Dubai properties compared to 2020, as well as a 45% reduction in water usage and a 44% reduction in waste. To further promote a "sustainable culture" within the internal side of the hotel, FIVE offers training programs and rewards employees who innovate sustainable practices (15).

Despite success, implementing these types of sustainable practices is sometimes difficult. Hotels, especially large chains and luxury resorts, often struggle to balance the costs of sustainability with long-term gains. One of the main issues is the usually vast financial investment required for technologies like solar panels, energy-efficient lighting, and advanced water systems. These high upfront costs can be particularly overwhelming for smaller hotels with limited budgets, raising questions within the leaders about how much time it will take for these investments to get financial returns. However, focusing only on financial concerns misses the long-term operational benefits these technologies can provide. An example of this is energy-efficient systems, even though they can be quite expensive initially, they can result in a lot of cost savings over time. Similarly, water-saving technologies like low-flow fixtures and greywater recycling systems can help conserve water, an increasingly critical resource in some regions.

Beyond only the financial challenges that come with making a hotel greener, hotels must also engage staff and guests in sustainability initiatives. Many employees may not be familiar with new sustainable practices, so it could require a lot of training and time for them to adapt to the new working culture. For example, housekeeping staff might need to adopt new waste management practices or eco-friendly cleaning methods. The success of these initiatives depends on management's ability to communicate the importance of sustainability and create a shared vision among staff and guests. The success of FIVE Hotels in terms of sustainable goals is partly due to its emphasis on staff training and engagement. This ensures that every single employee in every single hotel thoroughly understands their role in the company's green goals.

FIVE Hotels has been very successful in achieving its sustainable goals. The data in Figure 1 shows a significant 65.35% decrease in carbon intensity from the 2020 baseline, reflecting sustained efforts toward operational sustainability and carbon efficiency.

Looking ahead, FIVE Hotels has plans to implement new technologies in their buildings, such as heat pumps that increase the external air temperature for heating, which leads to a further reduction in carbon emissions. They are also exploring smart irrigation systems to detect leaks in systems, which could increase water efficiency. "It's about constantly finding ways to maintain luxury while becoming more sustainable," Shepley concludes.

DISCUSSION

Engaging staff and guests in sustainability initiatives is crucial to creating a truly sustainable hospitality environment. Financial investments in eco-friendly technologies and resource-saving systems are significant, but without employees and guests being onboard with the entire idea, these efforts might not reach their full potential impact. A main challenge is that many hotel employees have gotten used to traditional methods that prioritize efficiency and speed rather than sustainability, meaning that implementing new, eco-friendly practices can disrupt routines that have already been established (16). For instance, housekeeping staff, accustomed to certain cleaning agents or processes, might initially find it challenging to adapt to eco-friendly alternatives that require different handling or application times. Adjustments like these might seem small, but when scaled across departments and large hotel operations, they represent a shift in mindset that overall increases the

CARBON INTENSITY	MtCO ₂ e/ Revenue in AED Mn	% change from 2020 baseline
2020	82.17	
2021	48.87	-40.53%
2022	28.76	-65.00%
2023	29.92	-63.59%
2024	28.47	-65.35%

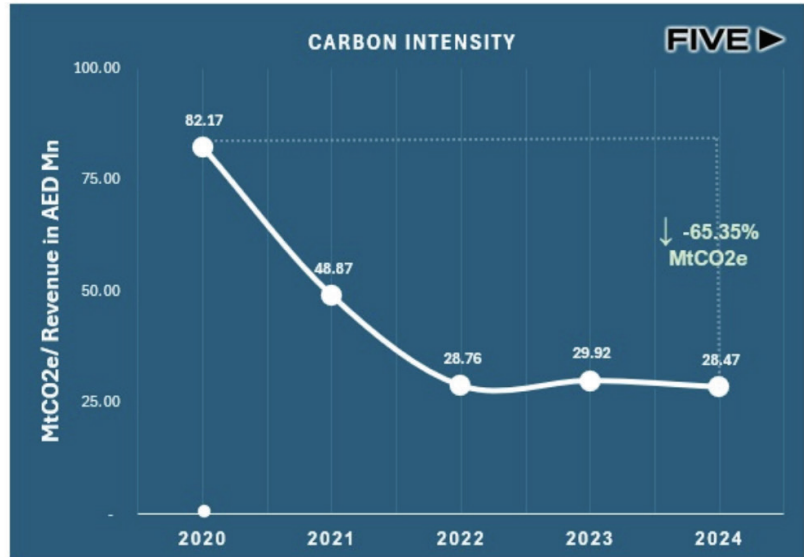


Figure 1. Year-on-year reduction in carbon intensity (measured in MtCO₂e per AED million revenue) from 2020 to 2024 at FIVE Hotels and Resorts.

sustainability of the hotel.

Hotel management should ensure that their staff undergo thorough training, which not only provides knowledge on the new techniques but also education on sustainability, as these changes cannot be made without the two. There is a need for the employees to appreciate the reason for the initiative if they are going to be a part of the process. This understanding is nurtured by management, which is able to disseminate relevant information about sustainability. This includes assisting employees with the impacts of their actions as a part of the hotel and a part of the global phenomenon of environmental consciousness. Tailoring sustainability in vision can also work in creating an 'ownership' mentality among the staff, which increases the chances of commitment towards the cause and practices.

FIVE Hotels and Resorts demonstrate the importance of staff training and engagement in achieving sustainability goals. To increase consistency and foster an environmental awareness culture among its employees, FIVE Hotels incorporates sustainability in all training programs for all positions in the organization, including entry-level housekeeping. This training encompasses some workshops and information sessions, and even sustainability strategies that revolve around their duties within the organization. For example, kitchen staff receive guidance on reducing food waste and sourcing locally whenever possible, while engineering teams focus

on optimizing energy systems and reducing refrigerant leaks. By tailoring training to each department, FIVE Hotels makes sustainability relevant to all employees, reinforcing the idea that sustainability isn't just a top-down mandate but a collaborative effort.

Beyond staff, engaging guests in sustainable practices is an additional layer of challenge—and opportunity. Guests bring varying levels of awareness and commitment to sustainability, with some embracing eco-friendly options and others primarily focused on enjoying their stay. To bridge this gap, hotels like FIVE are developing strategies that gently encourage guests to participate in sustainable initiatives without compromising their experience. This might include offering options like towel reuse programs to reduce laundry loads, providing information on local conservation efforts, or showcasing the hotel's own sustainability achievements through in-room materials and digital displays. Engaging guests in this way helps to make them feel part of the hotel's green vision and may encourage them to adopt similar practices in their daily lives.

In the future, FIVE Hotels is taking its commitment to the environment even further by incorporating innovative technologies aimed at reducing the use of resources as well as cutting down emissions. For instance, the introduction of heat pumps, which utilize external air temperatures to support building heating, is an example of how scaling down carbon emissions can

work without compromising comforts. In addition, the hotel group is looking into the possibility of advanced irrigation systems that employ smart sensors to monitor and detect leakages. This sustainable approach to resource management should have every person at FIVE focusing on the bigger picture of sustainability. David Shepley highlights the need to constantly strive towards a balance. "It's about constantly finding ways to maintain luxury while becoming more sustainable," Shepley explains. This method is in accordance with the broader trends in the hospitality industry that emphasize customer satisfaction while taking care of the environment as the most important aspect of a company for future growth. FIVE is focused on sustainable innovation, whether through implementing new green technologies, enhancing staff training, or engaging guests, making it clear that the hotel is cutting edge in the rapidly changing hospitality industry.

Compared to other luxury hotel groups like Marriott, FIVE's more personalized and department-specific sustainability training stands out. While larger chains often roll out generalized sustainability initiatives, FIVE's tailored programs may have a stronger impact on employee behavior and accountability.

However, as sustainability becomes a trend, there is growing concern in the industry over potential greenwashing, when brands market themselves as eco-friendly without substantial action. It is important that hotels like FIVE continue to back up their environmental claims with audited data, measurable goals, and transparent reporting to maintain credibility.

To summarize, the shift towards sustainability in the hospitality industry is both necessary and increasingly expected by consumers and stakeholders. Traditional practices that allow hotels to be run and managed without regard for the environment will not be possible anymore, considering the spiraling costs of running the business, changes in the behaviors of consumers and the realities of climate change. So, sustainability has changed from being considered as an extra to a core part of the business model impacting the profitability, customer experience, and the prospects of the business.

For other hotel groups seeking to follow in FIVE's footsteps, key adaptable principles include integrating sustainability into department-specific training, engaging guests through transparent communication, and using audited data to measure progress. These strategies can be customized based on hotel size, location, and target clientele, making sustainable hospitality a realistic goal across the industry.

CONCLUSION

The experiences of FIVE Hotels provide an opportunity to show both the benefits and the difficulties in the implementation of the adopted sustainable practices. The hotel's effective use of these technologies in its operation and employee education shows how resource-conserving technologies like heat pumps and efficient water systems can form an integral part of the hotel's sustainability operation strategies. However, this approach involves thorough preparation, investment, and the full engagement of both staff and management, revealing sustainable changes to be elaborate and challenging. It might be easier for big chains to implement this kind of initiative, but smaller firms have more logistical and financial limitations, pointing to the need for industry support, flexible finance options, and collaboration.

These early adopters are useful for the broader industry, but every hotel will have to find its own way of moving forward with regard to its specific problems and clientele. Sustainability is not a "one size fits all" model but a flexible model, which if implemented well, can enhance both the business as well as the guest's experience. Key guiding principles could include cross-departmental sustainability integration, transparent data reporting, third-party ESG validation, and staff involvement at all levels. These components can be adapted based on the scale and resources of each hotel.

Nonetheless, as sustainability gains popularity, it is important to stay critical of potential greenwashing. Independent audits, third-party certifications, and measurable performance indicators should be used to validate claims and prevent misleading information. Through steady, scalable practices, the industry as a whole has the potential to drive meaningful change, aligning luxury with responsibility and helping pave the way for a more sustainable future.

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CONFLICT OF INTEREST

I would like to disclose that a close family member is employed at FIVE Hotels and Resorts. This relationship has not influenced my research process, analysis, or conclusions presented in this paper.

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