

Smart Hospitality: Technology-Driven ESG Integration at The Royal Garden Kowloon East

Introduction

The hospitality industry is increasingly recognised as a significant contributor to global carbon emissions and resource consumption. Hotels are responsible for approximately 1% of global carbon emissions, generating approximately 363 million tonnes of carbon dioxide in 2021 alone (HKGCC, 2024). Characterised by high energy demand, continuous operations, intensive water use and food waste generation, this industry faces significant pressure to adopt sustainability strategies (Sun & Nasrullah, 2024).

In Hong Kong, the urgency of ESG integration has been reinforced by public policy and regulatory developments. In 2022, Hong Kong recorded 33.5 million tonnes of greenhouse gas emissions and has since committed to reducing carbon emissions by 50% before 2035, under its Climate Action Plan (HKGCC, 2024). Regulatory measures, including the municipal waste charging scheme and the ban on disposable plastic tableware and plastic products introduced in 2024, directly impacted hospitality operations. These measures have pushed Hong Kong hotels to adopt renewable energy systems, water filtration technologies, food waste recycling programs and digital energy management systems.

Beyond compliance, guests increasingly expect businesses to demonstrate environmental responsibility, safe food sourcing and community engagement (Yu et al., 2024). Moreover, Millennials and Gen Z travellers demonstrate a greater willingness to pay more for sustainable experiences. As a result, industry leaders in Hong Kong have started embedding ESG within core business strategies, supported by structured reporting systems, certification schemes and technology-enabled optimisation tools. The Hong Kong Hotels Association further institutionalised this shift by launching an ESG development programme in 2021, reflecting a sector-wide move toward measurable and standardised ESG implementation (HKGCC, 2024). These standards have established ESG as a key component of successful corporate strategy.

The evolution of ESG in the hospitality sector has occurred alongside the advancements in digital technology. As hotels face growing pressure to reduce environmental impact and improve accountability, technology has become central to operationalising ESG initiatives. In the environmental sector, digital systems are used to optimise energy consumption through HVAC controls, LED automation, building management and real-time monitoring platforms. Beyond environmental performance, digital tools also support the social dimensions of ESG through online training platforms, digital compliance models, and data-driven HR systems that formalise diversity, equity and inclusion (DEI) initiatives in recruitment processes. From a governance perspective, digital platforms streamline ESG reporting, KPI tracking, centralise data management and enhance transparency across different corporate structures (Sun & Nasrullah, 2024). Technology has shifted ESG in hospitality towards more measurable, data-driven performance management systems.

The Royal Garden Kowloon East is a contemporary resort-style hotel located in Tseung Kwan O, in Hong Kong. The hotel positions itself as an “urban resort”, offering easy access to Hong Kong's vast urban landscape, while providing coastal views and mountain scenery. The hotel

comprises 366 guest rooms and seven private villas. Its resort branding differentiates the property from a more traditional city centre business hotel, offering a more hybrid model that allows for both leisure and corporate hospitality services (Royal Garden, 2025).

It is important to note that until the end of 2025, the hotel operated as Crowne Plaza Hong Kong Kowloon East under the global InterContinental Hotel Group (IHG) brand, while simultaneously being owned by Sun Hung Kai Properties (SHKP), one of Hong Kong's largest property developers. Under IHG management, the hotel implemented an extensive portfolio of ESG initiatives embedded within international sustainability frameworks, supported by digital reporting platforms, structured training systems and corporate-level governance mechanisms. ESG integration during this period was shaped by access to global sustainability standards, monitoring infrastructure and formalised accountability systems.

Since early 2026, the property has transitioned to operate under the Royal Garden Group, representing a significant rebranding and a significant shift in governance structure and operational autonomy. While this change provided more independence in decision making, it also introduced uncertainty regarding continued access to IHG's ESG systems.

This case study evaluates the ESG initiatives and technology adoptions implemented during its operational period as the Crowne Plaza Hong Kong Kowloon East under IHG management. This timeframe is important, as it reflects a time when ESG integration was shaped by international brand standards, sustainability reporting standards and digital systems embedded within the IHG network.

ESG Strategy and Governance Structure

At the Royal Garden Kowloon East, ESG is more than just a marketing initiative; it is a long-term strategic commitment embedded within the hotel's operational philosophy. ESG in prioritisation in the hotel means long-term values and goals are not only linked to financial and performance metrics, but also to environmental responsibility, social contribution, and institutional integrity. The hotel frames ESG as a principle that informs decision-making, risk management and cross-department coordination.

Their ESG vision is organised around five core pillars: environment, people, community, customers and supply chain. The environment pillar extends beyond regulatory compliance, emphasising resource optimisation, energy efficiency and low-carbon technologies embedded within daily operations. The people pillar focuses on creating a supportive and inclusive work place, with options for professional development, fair opportunities and employee well being. At the community level, the hotel aims to create long-term partnerships with local organisations, positioning itself as an active contributor to local social value creation. The customer pillar prioritises health and safety, protection of consumer rights and the continuous improvement of service through innovation and responsible practices. Finally, the supply chain pillar reinforces the importance of sustainable sourcing and the development of mutually beneficial, long-term supplier relationships.

ESG considerations are embedded within the hotel's broader risk management and internal systems, including decision-making processes and operational oversights. This ensures that sustainability objectives are integrated into core business functions.

The governance of ESG initiatives is supported by a cross-departmental ESG committee, with representatives from engineering, finance, marketing, human resources and food and beverage departments. This structure allows for coordination across operations and for ESG responsibilities to be distributed across the hotel. These initiatives help foster an ESG and sustainability culture within the hotel. Moreover, the hotel's ESG model is influenced by the sustainability frameworks of both IHG and Sun Hung Kai properties. This dual alignment means that ESG initiatives are guided by both international brand standards and local corporate governance principles.

Drivers of Technology Adoption in ESG Implementation

The use of technology to support ESG initiatives at the Royal Garden Kowloon East hotel has been shaped by operational pressures, corporate accountability requirements, strategic positioning and leadership values. Technology was introduced as a practical tool to improve regular hotel operations.

One of the most immediate drivers was rising energy costs. As a large hotel operating 24 hours a day, the hotel uses a large amount of electricity across guest rooms, kitchens, lighting systems and HVAC infrastructure. In particular, the restaurant located on the 47th floor is exposed to significant solar heat gain, especially during the summer months. As a result, it requires high cooling demands, leading to high energy consumption. Therefore, technology-enabled interventions were implemented as a strategic response to both cost and sustainability concerns.

In addition, the hotel aimed to reduce its carbon footprint in alignment with broader environmental commitments. These carbon reduction targets require a measurable decrease in resource consumption, which cannot be achieved without technological support. Digital monitoring systems and energy-efficient installations allow the hotel to quantify savings, optimise resource use and demonstrate environmental impact in tangible terms.

Moreover, corporate reporting and accountability obligations further reinforced the need for technological integration. As the hotel operates under two leadership structures, it is required to submit energy, water and waste metrics to both corporate offices to maintain their respective ESG reporting frameworks. Therefore, technology is essential to allow for accurate data tracking and monitoring, to streamline reporting processes and ensure compliance with two separate corporate sustainability standards.

Leadership values and ethical considerations also influenced the use of technology adoption for ESG initiatives. The hotel frames ESG as a responsibility, reflecting a deeper commitment to their local community and wider environment. Technology was viewed as a practical tool to transform these values into measurable actions.

Long-term operational efficiency was another incentive. Investments in energy saving resources and resource optimisation technologies were not only seen as environmental interventions, but also as strategies to reduce costs and performance stability over time. Finally, participation in ESG benchmarking programs and receiving industry recognition also encouraged the exploration of innovative digital tools. Adopting new environmental technologies allowed the hotel to stand out within a competitive hospitality market and

demonstrate leadership in sustainability practices. The hotel has received various awards and certifications validating its efforts and strengthening its reputation.

Collectively, these drivers highlight that digital technology adoption at the hotel was strategically motivated. These tools and innovations allow for environmental responsibility, governance accountability and operational efficiency to develop simultaneously.

Technology Adoption in Environmental ESG

The environmental pillar of ESG measures the company's impact on natural systems, including energy consumption, carbon emissions, water usage and waste management (Krantz & Jonker, 2024). Environmental sustainability represents the most technologically developed dimension of ESG implementation at the Royal Garden Kowloon East Hotel. The hotel has implemented a range of energy, water and waste management technologies designed to lower carbon emissions and optimise resource use within a high-demand hospitality environment.

1. Energy Efficient Technologies

One of the most prominent environmental innovations implemented by the hotel is the installation of iFilm, a thermal insulation film installed on the inside surface of glass windows in the top-floor Cielo restaurant. The film is designed to block ultraviolet (UV) and infrared radiation (IR), while still allowing natural light to pass through. The installation of iFilm directly addressed the high cooling demand experienced in the 47th-floor restaurant, which is exposed to significant heat due to its height and extensive windows. By reducing solar heat penetration, the film lowered the air-conditioning load. This initiative resulted in saving approximately 16,416.72 kWh of energy annually, contributing to measurable reductions in electricity consumption and associated carbon emissions. In addition to the environmental benefits, this project also improved temperature stability, enhancing guest comfort, and also reduced financial costs associated with cooling. As a pilot project, this initiative demonstrated scalability for future implementation across other areas of the hotel. Moreover, because the film is only installed on the inside of the window glass, there are no major construction disruptions associated with the project, making it a practical solution for the hotel. The project has also received various industry recognitions, reinforcing its status as an award-winning sustainability innovation in the hospitality industry.

Beyond iFilm, the hotel also upgraded to LED lighting across the entire property. LED systems consume significantly less energy than conventional lighting and require less frequent replacement, contributing to both energy and maintenance reductions.

The hotel has also upgraded its kitchen equipment through a partnership with CLP (China Light and Power), which provides a 50% subsidy on selected energy-efficient appliances, as well as funding support of up to HKD \$300,000. This collaboration has allowed for the transition to more environmentally friendly cooking systems, while also simultaneously reducing expenditure, demonstrating how technological improvements can be supported through external sustainability funding schemes.

In addition, the hotel has enhanced its Building Management System (BMS) to fine-tune energy performance across mechanical ventilation and air conditioning (MVAC) systems. The BMS integrates lighting and cooling operations, allowing for more coordinated and efficient energy use. Data monitoring and optimised functions allow systems to adjust according to demand, such as automatically turning off the air conditioning after set time intervals to prevent unnecessary energy consumption. Frequency inverters are also installed in air units to further contribute to operational energy savings of 10-15%. These adjust motor speed according to load requirements. The hotel also uses a similar system for water temperature optimisation. The hotel uses a day and night operational model, allowing water cooling systems to match energy outputs with real-time occupancy and demand patterns to save energy used for water heating.

All together, these energy-focused technologies demonstrate how environmental ESG objectives are embedded within hotel infrastructure and daily operations through targeted technological optimisation and implementation.

2. Water Resource Management Technologies

Water management is another key aspect of the hotel's environmental strategy. The implementation of in-room water filtration systems has replaced single-use plastic water bottles in guest rooms. These filters allow guests to access safe drinking water directly from the tap, significantly reducing plastic consumption while also lowering production and waste management costs.

Moreover, water-saving taps have been installed across kitchens and washrooms to reduce overall water consumption. Additionally, chilled water systems are optimised to regulate temperature output based on time of day, ensuring energy is not wasted during lower occupancy periods.

The hotel has also launched linen reuse programs, encouraging guests to opt out of daily towel and bed sheet replacements to reduce water and detergent usage and electricity consumption. Although this program is behavioural in nature, it is supported by operational systems that require technology to coordinate housekeeping schedules and monitor consumer patterns.

3. Waste Management Technologies

Waste reduction technologies further strengthen the hotel's environmental ESG profile. Waste separation systems are implemented to facilitate recycling across the property, while organic waste is diverted offsite for composting and biogas treatments.

The hotel has also experimented with AI-enabled food waste monitoring through Lumitrics systems. This technology uses image recognition to analyse plate waste and identify patterns in overproduction. This has allowed for better menu planning and demand forecasting, which has led to a 46% reduction in food waste. In addition, these digital tools informed the decision to close the budget restaurant model, traditionally associated with high food waste. These changes reflect a technology driven operational shift towards more sustainable food management.

Moreover, the hotel has also introduced an ORCA food waste digester, which converts food waste into liquid waste, diverting approximately 30 tonnes of waste from landfills. This contributes to landfill reduction within Hong Kong's already constrained waste management landscape. The hotel has also reduced its use of single-use plastic tableware and replaced plastic room key cards with wooden alternatives, further reducing plastic waste within guest operations.

Overall, the hotel's environmental ESG approach is characterised by targeted technological solutions, system optimisation and resource efficiency interventions. Rather than solely relying on large-scale structural redevelopment, the hotel demonstrates how incremental and strategic technology adoption can produce measurable environmental impacts.

Technology Adoption in Social ESG

The social dimension of ESG refers to the impact the organisation has on people, culture, and communities, including labour practices, employee wellbeing, community engagement, and human rights (Krantz & Jonker, 2024). Social ESG at the Royal Garden Kowloon East Hotel is operationalised through digital systems that standardise training, reduce bias, strengthen safety monitoring and enhance stakeholder communication. Technology here is used as a tool to ground ESG principles into the hotel's culture, guest and staff wellbeing, and community engagement.

1. Staff and Organisational Culture

Technology plays a key role in embedding ESG values within the hotel's internal culture. Mandatory ESG training is delivered through online learning platforms developed under its formal parent group, IHG. These digital modules ensure standardised ESG education across departments, providing consistent and measurable learning outcomes regardless of role or seniority. At the time of this case study, these training systems were fully integrated into staff onboarding and professional development processes. However, under the hotel's new management structure, it is uncertain if they will continue to have access to these training resources. Regardless, these digital learning platforms allow ESG knowledge to be delivered consistently and updated regularly, reducing reliance on informal knowledge transfer. They also help integrate ESG principles into the onboarding process, daily briefings and department meetings.

At the operational level, ESG-related responsibilities are assigned across departments, with managers monitoring sustainability tasks and compliance through digital reporting systems and ongoing cross-departmental communications. This cross-departmental Green Committee enables coordination of sustainability initiatives and tracking of departmental contributions. The model ensures that ESG implementation is not isolated within a single team, but rather integrated across all organisational functions.

Technology is also used to support fair employment practices. The hotel incorporates diversity, equity and inclusion (DEI) principles into recruitment processes, using digital platforms that standardise evaluation criteria. These systems help reduce subjective bias, promoting fairer access to employment opportunities.

In terms of health and safety, weekly safety results are digitally reported to group safety managers, allowing for oversight and accountability. Occupational risk assessments are conducted frequently, and staff wellbeing initiatives, such as chronic pain relief workshops led by physiotherapists, reflect a broader commitment to employee wellbeing. Although these initiatives are not purely technological, they are supported by digital tracking and communication systems that coordinate participation and event execution.

2. Guest Health, Safety and Inclusion

Technology also underpins the hotel's commitment to guest wellbeing. The in-room water filtration system, while environmentally friendly in impact, simultaneously protects guest health by ensuring access to safe drinking water without reliance on bottled alternatives.

Food safety is also managed through structured Food Safety Management Systems, including ISO 22000-certified processes and regular audits. The hotel also maintains Marine Stewardship Council (MSC) and Aquaculture Stewardship Council (ASC) certifications, ensuring responsible seafood sourcing and monitored supply chains. Moreover, monthly microbiological testing of food, beverages, drinking water and ice further ensures the safety of guests' health. Digital monitoring systems track food storage temperatures and inventory conditions to ensure compliance with food safety standards.

Sustainability and health information are also regularly communicated to guests via digital signage and social media, enhancing transparency and trust. Additionally, the hotel offers diverse dietary options, including vegetarian, plant-based, keto and sugar-free selections, reflecting inclusive and accessible services aligned with changing health and lifestyle preferences.

The hotel also collaborates with suppliers that provide biodegradable, recyclable and FSC-certified products and packaging, reinforcing responsible practices that support both environmental and social partnership objectives.

Accessibility considerations are also incorporated into infrastructure design, including accessible toilets and guest rooms for individuals with disabilities. Technological systems support accessible service delivery, contributing to inclusive hospitality practices.

3. Community Engagement and Social Contribution

Beyond internal operations, technology supports the hotel's broader community engagement efforts. The hotel collaborates with local universities and educational institutions, providing internship placements that contribute to workforce development within Hong Kong's hospitality sector.

Moreover, the hotel also partners with NGOs such as Food Angel, preparing meals for underprivileged community members through food redistribution initiatives. Hotel staff also participate in events such as Stride for a Cure, a charity walk supporting cancer research, further reflecting community care and engagement. Although these initiatives are not inherently technological, digital tools are used to facilitate volunteer sign-ups, reporting, scheduling and communication across departments.

Overall, technology within the Social ESG dimension functions less as a visible innovation and more as an organisational backbone. It standardises training, formalises accountability, supports inclusive hiring, safeguards health and safety and strengthens communication between stakeholders. Digital systems allow the hotel to practice ESG in everyday operations, rather than treating them as standalone initiatives.

Technology Adoption in Governance

The governance pillar of ESG refers to corporate oversight structure, ethical leadership, compliance, transparency and accountability (Krantz & Jonker, 2024). Within the governance dimension of ESG, technology is used to measure, verify and institutionalise sustainability efforts. It allows for structured oversight, cross-departmental coordination and transparent reporting of ESG performance.

1. Digital Monitoring and KPI Tracking

The hotel digitally tracks key environmental performance indicators, including energy consumption, water usage, and waste metrics. Systems such as the BMS can generate data on MVAC operations, light loads and cooling demand. While these systems automate data collection, managerial oversight is still needed to interpret trends, identify anomalies, and implement strategic adjustments.

Energy, water, waste and safety indicators are discussed within the hotel's cross-departmental ESG and Green Committee. Technology is used here to facilitate information sharing across departments, allowing performance discussions to be evidence-based and supported by measurable indicators rather than informal reporting.

In addition, digital platforms are used to track completion of mandatory ESG training modules and occupational safety inspections. Weekly safety inspection results are also reported electronically to group-level safety managers to ensure oversight and compliance monitoring. This integration of digital tracking mechanisms strengthens internal accountability across departments.

2. Corporate Reporting and External Accountability

ESG data also plays a critical role in supporting corporate reporting requirements. At the time of this study, the hotel reported sustainability data to its former IHG parent group, as well as SHKP, contributing to group-level sustainability reports, disclosures and performance reviews. Technology allows for the consolidation of environmental and social performance indicators into annual ESG reports submitted to corporate offices. These reports draw upon data generated from BMS monitoring, waste audits and tracking systems, as well as safety compliance documentation.

Furthermore, digital records support certification processes, including food safety management certifications. By maintaining structured documentation and measurable indicators, the hotel strengthens the credibility and verifiability of its ESG claims.

The hotel's ESG performance has also received formal external recognition through multiple industry awards. The hotel achieved the ESG Connect Pioneer Gold (Environmental) Award in Hong Kong, a recognition from the Hong Kong Quality Assurance Agency (HKQAA) for its iFilm initiative, demonstrating measurable environmental impact and innovation in energy efficiency. In addition, the iFilm project further contributed to the hotel becoming the first hotel to win a Hong Kong ESG award in 2024.

The hotel was also recognised under the CLP Smart Energy Award in 2024, receiving a Merit certification for its energy optimisation efforts. These recognitions reflect not only environmental performance improvements but also structured documentation and measurable data verification, both of which rely on technological monitoring systems.

In addition, the hotel's food and beverage initiatives were acknowledged through the Green Excellence Award for its F&B carbon-neutral program. The hotel has also received the Best Environmental Partner Award from GCS Rimes for its adoption of FSC-certified wooden room key cards, demonstrating a positive alignment between decision-making and sustainable sourcing standards.

Collectively, these awards illustrate how technological ESG initiatives, when supported by data and structured reporting systems, translate into external validation and industry benchmarking. These achievements not only improve the hotel's reputation, but also encourage accountability, transparency and continuous improvement within the hotel.

3. Institutionalising ESG Through Digital Coordination

Governance technologies also support the institutionalisation of ESG within organisational structures. The hotel's Green Committee relies on digital communication platforms and shared reporting systems to coordinate sustainability initiatives and monitor progress. Technology allows for structured documentation of meeting outcomes, task assignments and departmental responsibilities. This formalises ESG practices into routine managerial processes.

Overall, within the governance dimensions, technology is used as a tool to transform ESG from aspirational goals into measurable and reportable organisational practices. By integrating digital monitoring systems, reporting mechanisms and cross-departmental oversight, the hotel demonstrates how technological adoption supports transparency, accountability and credibility in ESG implementation.

Challenges and Trade-offs in ESG Technology Adoption

Despite significant progress in ESG-related technological adoption, the hotel still faces several structural, financial and organisational challenges that shape the scope of its ESG transformation. These constraints highlight various trade-offs in the implementation of ESG technologies within the hotel's existing governance and infrastructure.

Technological Limitations and System Fragmentation

While the hotel has implemented targeted optimisation technologies, it currently lacks a more advanced IoT sensor network that would allow more detailed, room-level energy and occupancy tracking. The lack of this IoT system limits the precision of real-time environmental monitoring and predictive optimisation capabilities.

Similarly, ESG monitoring remains partially fragmented across systems. Energy data, food waste metrics, training recordings, reporting documentation, etc., are all stored in separate places rather than within a fully integrated ESG dashboard. This lack of a centralised monitoring system reduces data visibility and may slow down decision-making.

Although the BMS provides real-time operational data, ESG performance still heavily relies on manual data consolidation for reporting. Human oversight is needed to interpret trends, verify and compile data into annual ESG reports. The reliance on human intervention introduces a key trade-off: while technology improves optimisation and data collection, it simultaneously increases the demand for digital literacy and cross-departmental coordination, increasing administrative workload and potential inefficiencies.

Financial Constraints

Budget constraints are a significant limitation in ESG technology expansion. Many advanced sustainability technologies, including IoT systems and integrated dashboards, require large investments. Although partnerships, such as subsidies from CLP, have reduced financial barriers, ESG technology remains very costly.

Hospitality operates within tight profit margins, making long-term sustainability investments subject to cost-benefit assessment. The decision to adopt new ESG technologies must balance environmental ambition with financial cost and return on investment.

Governance Complexity and Stakeholder Alignment

The hotel's dual governance structure also introduces additional complexities. At the time of this case study, the hotel operated under dual governance influence from both IHG and SHKP. These governance systems may operate within different strategic contexts, reporting expectations and operational priorities. Managing two forms of governance can create overlapping reporting requirements with different ESG benchmarks and stakeholder expectations. This becomes even more complex in the present, as the hotel transitions to a new management under the Royal Garden franchise.

Different departments within the hotel may also prioritise cost control, operational efficiency, guest experience or sustainability outcomes differently. Therefore, technological adoption can be considered disruptive, especially when it changes workflows or increases workload. Moreover, varied levels of staff acceptance also highlight the need for clearer communication, training and change management strategies in ESG contexts.

Overall, these challenges demonstrate that ESG technology adoption within hospitality is not purely a technical upgrade, but an organisational transformation. Financial limitations,

fragmented data, governance complexity and limited human capacity all influence the hotel's ESG trajectory. These limitations highlight the practical realities of integrating ESG into an existing hotel environment.

Future Directions

While current ESG technologies have strengthened operational efficiency and reporting capabilities, there is room for future advancements in greater system integration and digitalisation. One key development involves strengthening the BMS using integrated IoT sensors. The addition of room-level occupancy sensors and smart monitoring technologies would allow for more detailed and accurate monitoring of energy and water consumption, allowing for real-time adjustments based on actual usage patterns, rather than predefined schedules.

Enhanced IoT integration would be able to track waste generation, resource flows, and guest behaviour trends better. By consolidating all water, waste and energy metrics into one ESG dashboard or system, the hotel could move from a more fragmented reporting model towards a more integrated sustainability system. This would reduce reliance on manual data consolidation and improve data visibility.

AI technology could also be used to support predictive optimisation analytics, including demand forecasting in food production and energy management. Beyond operational efficiency, AI technologies could also be used to improve guest experiences by enabling personalised sustainability settings. For example, guests could select energy-efficient room modes and track their own resource footprints during their stay. This would extend ESG beyond internal management into the guest interface.

Importantly, these future directions reflect a transition from operational optimisation towards intelligent, integrated ESG governance. By moving towards more real-time data ecosystems and predictive analysis, the hotel would be able to strengthen environmental performance, governance reporting and social reporting standards within the hospitality sector. This transition towards a more connected digital infrastructure would be the next stage in the hotel's ESG journey.

Overall Outcomes

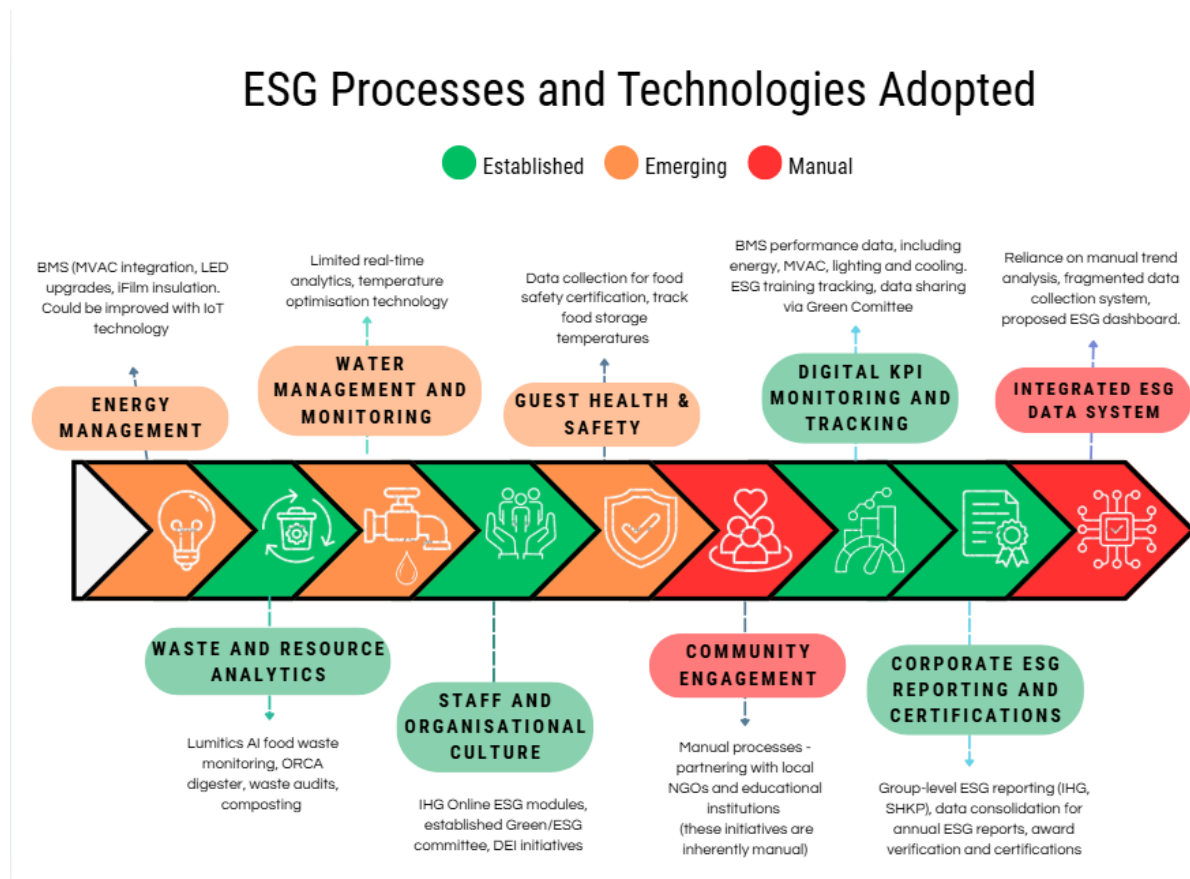
The hotel's ESG technology adoption highlights a transition away from a marketing driven initiative, towards a more structured, measurable and data-driven management system. Technological interventions across environmental, social and governance dimensions have improved operational efficiency, strengthened accountability and improved transparency in reporting. Quantifiable energy savings, waste reductions, formalised training systems and recognised certifications collectively demonstrate that ESG is embedded within the core operational processes of the hotel.

At the same time, the hotel's ESG journey reflects the realities of incremental digital transformation within an existing hospitality infrastructure. The hotel's current ESG

governance operates within a hybrid model that combines monitoring systems with human oversight.

The hotel's alignment of technological innovation with ESG objectives helps position the hotel competitively within an extremely competitive hospitality landscape. Its strategic use of digital tools and technology has allowed the hotel to strengthen its credibility with corporate stakeholders and environmentally conscious guests. Technology in his hotel does not merely function as an operational tool, but rather as a mechanism for long-term resilience.

Figure 1: ESG Processes and Technologies Adopted in the Royal Garden Kowloon East hotel



Conclusion

This case study demonstrates that technological adoption plays a central role in advancing ESG implementation in the Royal Garden Kowloon East hotel. Rather than operating in isolation, digital monitoring tools, optimisation systems, training modules and reporting mechanisms all reshape how ESG is embedded within organisational decision-making and the wider workplace culture. The hotel's experience highlights that ESG digitalisation is an evolving process, with progress occurring incrementally with financial, infrastructural and governance constraints. Overall, the Royal Garden Kowloon East hotel provides a valuable example of how technology is not simply used to support ESG initiatives but is foundational to their credibility and long-term integration in the hospitality industry. As sustainability and ESG expectations continue

to intensify, the use of digital systems will become increasingly important in the measuring, tracking and reporting of ESG data.

References

Back, K.-J. (2024). ESG for the hospitality and tourism research: Essential demanded research area for all. *Tourism Management*, 105, 104954. <https://doi.org/10.1016/j.tourman.2024.104954>

Krantz, T., & Jonker, A. (2024, January 24). *What is environmental, social, and governance (ESG)?* | *ibm*. <https://www.ibm.com/think/topics/environmental-social-and-governance>

Sun, J., & Nasrullah, A. (2024). Green transition in the hospitality industry: The influence of market forces and customer dynamics on sustainable performance in the digital era. *Heliyon*, 10(8), e29563. <https://doi.org/10.1016/j.heliyon.2024.e29563>

Yu, J., Kim, S. (Sam), Chiriko, A. Y., Moon, H. G., Choi, H., & Han, H. (2024). Environmental, social, and governance (Esg) in the hotel industry: A strategy for brand management, brand tribalism, and brand choice. *Journal of Travel & Tourism Marketing*, 41(9), 1226–1243. <https://doi.org/10.1080/10548408.2024.2406346>

智慧款待：九龙东帝苑酒店以技术驱动的 ESG 整合

引言

款待业正日益被公认为全球碳排放和资源消耗的主要来源之一。酒店业的碳排放量约占全球总排放量的 1%，仅在 2021 年就产生了约 3.63 亿吨二氧化碳（HKGCC, 2024）。该行业具有高能源需求、全天候持续运营、密集用水以及产生大量食物垃圾等特点，正面临采用可持续发展战略的巨大压力（Sun & Nasrullah, 2024）。

在香港，公共政策和监管法规的发展进一步强化了融入 ESG（环境、社会和公司治理）的迫切性。2022 年，香港录得 3,350 万吨温室气体排放，并在《香港气候行动蓝图》中承诺在 2035 年前将碳排放量减少 50%（HKGCC, 2024）。各项监管措施，包括垃圾征费计划以及 2024 年实施的管制即弃塑料餐具及产品条例，直接影响了酒店业的运营。这些措施推动了香港各酒店纷纷采用可再生能源系统、滤水技术、厨余回收计划和数字化能源管理系统。

除了合规要求外，宾客也越来越期望企业能展现出环保责任、安全的食品采购以及社区参与（Yu et al., 2024）。此外，千禧世代和 Z 世代的旅客更愿意为具备可持续性的体验支付溢价。因此，在结构化报告体系、认证计划和技术辅助优化工具的支持下，香港的行业领袖已开始将 ESG 嵌入核心业务战略中。香港酒店业协会更于 2021 年推出了 ESG 发展计划，反映出整个行业正迈向可衡量且标准化的 ESG 实践（HKGCC, 2024）。这些标准已将 ESG 确立为成功企业战略的关键组成部分。

款待业中 ESG 的演变与数字技术的进步是同步发展的。随着酒店面临降低环境影响和提高透明度的双重压力，技术已成为落实 ESG 举措的核心。在环境领域，数字系统被用于通过暖通空调（HVAC）控制、LED 自动化、楼宇管理和实时监控平台来优化能源消耗。除了环境表现外，数字工具还通过线上培训平台、数字合规模型以及在招聘流程中落实多元、平等与包容（DEI）倡议的数据驱动型人力资源系统，来支持 ESG 的社会层面。从治理角度来看，数字平台简化了 ESG 报告和关键绩效指标（KPI）的追踪，实现了数据管理的集中化，并提高了不同企业结构之间的透明度（Sun & Nasrullah, 2024）。技术已将款待业的 ESG 实践推向更具可衡量性、数据驱动的绩效管理

九龙东帝苑酒店（The Royal Garden Kowloon East）是一家位于香港将军澳的现代度假风酒店。该酒店自定位为“都市绿洲”，在提供便利交通以连接香港繁华都市的同时，亦坐拥海岸线与山脉景致。酒店拥有 366 间客房和 7 栋私人别墅。其度假村的品牌形象使其有别于传统的市中心商务酒店，提供了一种兼顾休闲与企业款待服务的混合模式（Royal Garden, 2025）。

值得注意的是，在 2025 年底之前，该酒店一直以“香港九龙东皇冠假日酒店”之名在洲际酒店集团（IHG）的全球品牌下运营，同时由香港最大的地产发展商之一新鸿基地产（SHKP）拥有。在洲际酒店集团管理期间，酒店实施了广泛的 ESG 项目，这些项目嵌入在国际可持续发展框架中，并由数字报告平台、结构化培训系统和集团级治理

机制提供支持。这一时期的 ESG 整合受益于全球可持续发展标准、监控基础设施和正式问责体系的接入。

自 2026 年初起，该物业转由帝苑酒店集团（Royal Garden Group）运营，这代表着一次重大的品牌重塑，以及治理结构和运营自主权的重大转变。虽然这一转变在决策上带来了更多独立性，但也对能否继续使用 IHG 的 ESG 系统带来了不确定性。

本案例研究旨在评估该酒店在 IHG 管理下、作为香港九龙东皇冠假日酒店运营期间所实施的 ESG 举措和技术应用。这一时间窗口至关重要，因为它反映了 ESG 整合受制于国际品牌标准、可持续发展报告准则以及嵌入 IHG 网络的数字系统的时期。

ESG 战略与治理结构

在九龙东帝苑酒店，ESG 不仅仅是一个营销口号，而是嵌入在酒店运营哲学中的长期战略承诺。在酒店中优先考虑 ESG，意味着长期价值和目标不仅与财务和绩效指标挂钩，还与环境责任、社会贡献以及制度诚信紧密相连。酒店将 ESG 视为一项指导决策、风险管理和跨部门协调的根本原则。

其 ESG 愿景围绕五大核心支柱展开：环境、员工、社区、顾客和供应链。环境支柱超越了单纯的合规，强调资源优化、能源效率以及嵌入日常运营的低碳技术。员工支柱侧重于创建一个具支持性且包容的工作场所，提供专业发展路径、公平机会和员工福祉。在社区层面，酒店旨在与本地组织建立长期合作关系，将自己定位为本地社会价值创造的积极贡献者。顾客支柱优先考虑健康与安全、消费者权益保障，以及通过创新和负责任的实践持续提升服务品质。最后，供应链支柱强化了可持续采购的重要性，并致力于发展互利共赢、长期的供应商关系。

ESG 考量已嵌入到酒店更广泛的风险管理和内部系统中，包括决策过程和运营监督。这确保了可持续发展目标能够融入到核心业务职能中。

ESG 举措的治理由一个跨部门的 ESG 委员会支持，成员来自工程、财务、市场营销、人力资源和餐饮部门。这种结构有利于跨业务的协调，并将 ESG 职责落实到酒店的各个环节。这些举措有助于在酒店内部培养 ESG 和可持续发展文化。此外，该酒店的 ESG 模式同时受到 IHG 和新鸿基地产可持续发展框架的影响。这种双重对齐意味着其 ESG 倡议既遵循国际品牌标准，又符合本地公司治理原则。

实施 ESG 技术应用的驱动因素

九龙东帝苑酒店利用技术支持 ESG 举措，是由运营压力、企业问责要求、战略定位以及领导层价值观共同塑造的。技术被引入作为改善酒店日常运营的实用工具。

最直接的驱动因素之一是日益上涨的能源成本。作为一家 24 小时运营的大型酒店，该物业在客房、厨房、照明系统和暖通空调（HVAC）基础设施中消耗大量电力。特别是位于 47 楼的餐厅，极易受到太阳辐射热能的影响，尤其在夏季。因此，该区域制冷需求极高，导致了庞大的能源消耗。技术驱动的干预措施因此被视为应对成本和可持续发展担忧的战略响应。

此外，酒店旨在减少其碳足迹，以配合更广泛的环保承诺。这些减碳目标要求资源消耗实现可衡量的减少，而这在没有技术支持的情况下是无法实现的。数字监控系统和节能设施使酒店能够量化节省、优化资源使用，并以切实的方式展示环境影响。

同时，企业报告和问责义务进一步强化了技术整合的必要性。由于酒店在双重领导结构下运营，它需要向两个企业总部提交能源、水资源和废弃物指标，以维持各自的 ESG 报告框架。因此，技术对于实现精确的数据追踪与监控、简化报告流程以及确保符合两个独立的企业可持续发展标准至关重要。

领导层的价值观和道德考量也影响了 ESG 技术的使用。酒店将 ESG 框定作为一种责任，反映了对本地社区和更大环境的深层承诺。技术被视为将这些价值观转化为可衡量行动的实用工具。

长期运营效率是另一个激励因素。对节能资源和资源优化技术的投资，不仅被视为环境干预措施，也被视为降低成本和确保长期绩效稳定性的战略。最后，参与 ESG 基准评估计划并获得行业认可，也鼓励了对创新数字工具的探索。采用新的环保技术使酒店在竞争激烈的款待业市场中脱颖而出，并展示了其在可持续发展实践中的领导地位。酒店已获得多项奖项和认证，验证了其努力并提升了声誉。

总之，这些驱动因素表明，酒店采用数字技术具有明确的战略动机。这些工具和创新使得环境责任、治理问责和运营效率得以同步发展。

技术在环境 ESG 中的应用

ESG 的环境支柱衡量企业对自然系统的影响，包括能源消耗、碳排放、水资源利用和废弃物管理（Krantz & Jonker, 2024）。在九龙东帝苑酒店，环境可持续性为 ESG 实施中技术发展最成熟的维度。酒店采用了一系列能源、水和废弃物管理技术，旨在高需求的款待业环境中降低碳排放并优化资源利用。

1. 节能技术

酒店实施的最显著的环境创新之一是安装了 *iFilm 隔热膜*。该薄膜安装在顶层 Cielo 餐厅玻璃窗的内侧表面，旨在阻挡紫外线（UV）和红外线（IR）辐射，同时仍允许自然光穿透。*iFilm* 的安装直接解决了 47 楼餐厅面临的高制冷需求——该餐厅因其高度和大型落地窗而承受着巨大的热量增长。通过减少太阳热能的渗透，该薄膜降低了空调负荷。此举每年成功节省约 16,416.72 kWh 的能源，为减少电力消耗和相关碳排放做出了可衡量的贡献。

除了环保效益外，该项目还改善了温度稳定性，提升了宾客的舒适度，并降低了与制冷相关的财务成本。作为一个试点项目，该举措展示了未来在酒店其他区域推广的可扩展性。此外，由于薄膜仅安装在窗户玻璃内侧，项目并未造成重大的施工干扰，这使其成为酒店的实用解决方案。该项目还获得了多项行业认可，巩固了其作为款待业获奖可持续创新项目的地位。

除了 iFilm 之外，酒店还将整个物业的照明升级为 LED 照明。LED 系统消耗的能源显著低于传统照明，且更换频率较低，有助于降低能源和维护成本。

酒店还与中华电力（中电，CLP）合作，升级了其厨房设备。中电为选定的节能电器提供 50% 的补贴，并提供高达 30 万港元的资金支持。这一合作推动了向更环保烹饪系统的转型，同时降低了资本支出，展示了如何通过外部可持续发展资金计划支持技术改进。

此外，酒店升级了其楼宇管理系统（BMS），以精细化调节机械通风及空调系统（MVAC）的能源表现。BMS 整合了照明和制冷操作，实现了更协调和高效的能源使用。数据监控和优化功能允许系统根据需求进行调整，例如在设定的时间间隔后自动关闭空调，以防止不必要的能源消耗。空气调节箱内还安装了变频器，可根据负载需求调节电机速度，进一步为运营节省 10-15% 的能源。酒店在热水温度优化方面也采用了类似的系统。酒店采用日夜运行模式，使冷水/热水系统的能量输出与实时入住率和需求模式相匹配，从而节省用于水加热的能源。

总结来说，这些以能源为中心的技术表明，ESG 环境目标是如何通过针对性的技术优化和落实，嵌入到酒店基础设施和日常运营中的。

2. 水资源管理技术

水资源管理是酒店环境战略的另一个关键方面。客房内滤水系统的实施取代了客房内的一次性塑料瓶装水。这些滤水器使宾客可以直接从水龙头获取安全饮用水，在大幅减少塑料消耗的同时，也降低了生产和废弃物处置成本。

此外，厨房和洗手间均已安装节水龙头，以减少整体用水量。此外，冷却水系统经过优化，可根据一天中的时间调节温度输出，确保在低入住率期间不浪费能源。

酒店还推出了床单重复使用计划，鼓励宾客选择不更换每日毛巾和床单，以减少水和清洁剂的使用以及电力消耗。虽然该计划在本质上属于行为引导，但需要运营系统的支持，利用技术来协调房务日程并监控顾客的使用模式。

3. 废弃物管理技术

垃圾减量技术进一步强化了酒店的环境 ESG 形象。酒店实施了废弃物分类系统，以促进整个物业的回收利用，同时将有机废弃物运往场外进行堆肥和沼气处理。

酒店还尝试利用 Lumitics 系统进行 AI 驱动的厨余监控。该技术利用图像识别分析厨余盘中的剩余食物，并识别过度生产的模式。这有助于更好的菜单规划和需求预测，从而使厨余减少了 46%。此外，这些数字工具也为关闭传统上会产生大量厨余的自助餐/平价餐厅模式的决策提供了依据。这些变化反映了技术驱动运营转向更具可持续性的食品管理。

此外，酒店引进了 ORCA 厨余分解器，将固体厨余转化为液体，从而使约 30 吨垃圾免于进入堆填区。在香港已经极度紧张的垃圾处理现状下，这为减少堆填区压力做出了贡献。酒店还减少了即弃塑料餐具的使用，并将塑料房卡更换为木质房卡，进一步减少了酒店营运中的塑料垃圾。

总体而言，该酒店的环境 ESG 方法以针对性的技术解决方案、系统优化和资源效率干预为特征。酒店并未完全依赖大规模的结构重建，而是展示了渐进且具战略性的技术采用如何产生可衡量的环境影响。

技术在社会 ESG 中的应用

ESG 的社会维度是指组织对人、文化和社区的影响，包括劳工实践、员工福祉、社区参与和人权（Krantz & Jonker, 2024）。在九龙东帝苑酒店，社会 ESG 通过数字系统得以具体落实，这些系统使培训标准化、减少偏见、加强安全监控并促进利益相关者之间的沟通。在这里，技术被用作将 ESG 原则融入酒店文化、宾客和员工福祉以及社区参与的工具。

1. 员工与组织文化

技术在将 ESG 价值观嵌入酒店内部文化中发挥着关键作用。强制性 ESG 培训是通过其前母公司 IHG 开发的线上学习平台进行的。这些数字模组确保了跨部门标准化的 ESG 教育，无论员工的职责或资历如何，都能提供一致且可衡量的学习成果。在本案例研究期间，这些培训系统已完全融入员工入职和专业发展流程中。然而，在酒店新的管理结构下，未来是否能继续使用这些培训资源尚不确定。尽管如此，这些数字学习平台确保了 ESG 知识的持续传授和定期更新，减少了对非正式口耳相传的依赖。它们也有助于将 ESG 原则融入到入职流程、每日例会和部门会议中。

在运营层面，ESG 相关职责被分配到各个部门，管理人员通过数字报告系统和持续的跨部门沟通，监控可持续发展任务和合规情况。这个跨部门的“绿色委员会”实现了对可持续发展举措的协调和部门贡献的追踪。该模式确保了 ESG 的实施不会被孤立在一团队中，而是融合到所有组织职能中。

技术还用于支持公平就业实践。酒店将多元、平等与包容（DEI）原则融入招聘流程，使用标准化评估标准的数字平台。这些系统有助于减少主观偏见，促进更公平地获得就业机会。

在健康和​​安全方面，每周的安全结果都会数字化地汇报给集团安全经理，以便进行监督和问责。酒店频繁开展职业风险评估，并举办了由物理治疗师指导的慢性疼痛缓解工作坊等员工福祉倡议，这反映了对员工健康的广泛承诺。虽然这些举措不纯粹是技术性的，但它们受到数字追踪和沟通系统的支持，以协调人员参与和活动的执行。

2. 宾客健康、安全与包容性

技术也支撑着酒店对宾客福祉的承诺。客房内的滤水系统在产生环保效益的同时，也保障了宾客的健康，确保他们无需依赖瓶装水即可获得安全的饮用水。

食品安全亦通过结构化的食品安全管理系统进行管理，包括通过 ISO 22000 认证的流程和定期审核。酒店还持有**海洋管理委员会（MSC）和水产养殖管理委员会（ASC）**认证，确保负责任的海鲜采购和受监控的供应链。此外，每月对食品、饮料、饮用水和冰块进行的微生物检测，进一步保障了宾客的健康安全。数字监控系统追踪食品储存温度和库存状况，以确保符合食品安全标准。

可持续发展和健康资讯会定期通过数字指示牌和社交媒体传递给宾客，从而提升透明度和信任度。此外，酒店提供多样化的膳食选择，包括素食、纯素食、生酮及无糖选择，反映出其与时俱进、符合健康和生活方式偏好的包容性和无障碍服务。

酒店还与提供可生物降解、可回收以及经 FSC（森林管理委员会）认证的产品和包装的供应商合作，强化了支持环境和社会伙伴关系目标的负责任实践。

无障碍考量也被融入到基础设施设计中，包括为残疾人士提供无障碍洗手间和客房。技术系统支持无障碍服务的提供，促进了包容性款待服务的实践。

3. Community 参与和社会贡献

除了内部运营，技术还支持酒店更广阔的社区参与工作。酒店与本地大学和教育机构合作，提供实习机会，为香港款待业的人才培育做出贡献。

此外，酒店还与**惜食堂（Food Angel）**等非政府组织（NGO）合作，通过食物再分配计划为弱势社区成员准备膳食。酒店员工还参与了支持癌症研究的“步步驰骋”（Stride for a Cure）慈善步行活动，进一步体现了社区关爱与参与。虽然这些举措本身不具有科技属性，但数字工具被用来推动志愿者报名、汇报、排班以及跨部门沟通。

总体而言，在社会 ESG 维度中，技术角色较少体现为显眼的创新，而更多是作为组织的骨干。它规范了培训、使问责制度化、支持包容性招聘、保障健康与安全，并加强了利益相关者之间的沟通。数字系统使酒店能够在日常运营中实践 ESG，而不是将其视为孤立的项目。

技术在公司治理中的应用

ESG 的治理支柱是指公司监督结构、道德领导力、合规性、透明度和问责制（Krantz & Jonker, 2024）。在公司治理维度中，技术被用于衡量、验证和制度化可持续发展工作。它实现了结构化监督、跨部门协调和 ESG 绩效的透明汇报。

1. 数字监控与 KPI 追踪

酒店数字化地追踪关键环境绩效指标，包括能源消耗、用水量和垃圾指标。诸如 BMS 之类的系统可以生成关于 MVAC 运行、照明负荷和制冷需求的数据。虽然这些系统实现了数据收集的自动化，但仍需要管理层的监督来解读趋势、识别异常并进行战略调整。

能源、水、废弃物和安全指标会在酒店的跨部门 ESG 与绿色委员会会议中进行讨论。在这里，技术被用于促进部门间的信息共享，使绩效讨论能够基于事实并由可衡量的指标支持，而非非正式的口头汇报。

此外，数字平台还被用于追踪强制性 ESG 培训模组的完成情况以及职业安全检查。每周的安全检查结果也会以电子方式提交给集团级安全经理，以确保监督和合规监控。这种数字追踪机制的整合加强了跨部门的内部问责。

2. 企业报告与外部问责

ESG 数据在支持企业报告要求方面也发挥着关键作用。在本研究期间，酒店向其前母公司 IHG 以及新鸿基地产（SHKP）提交可持续发展数据，为集团层面的可持续发展报告、披露和绩效审查做出贡献。技术使得环境和社会绩效指标能够整合到提交给企业总部的年度 ESG 报告中。这些报告利用了由 BMS 监控、废弃物审计和追踪系统以及安全合规文件产生的数据。

此外，数字记录支持了各项认证流程，包括食品安全管理认证。通过维护结构化文件和可衡量指标，酒店增强了其 ESG 声明的信誉和可验证性。

该酒店的 ESG 绩效也获得了多项行业奖项的正式外部认可。该酒店凭借 iFilm 项目荣获了香港品质保证局（HKQAA）颁发的 ESG 联接先锋金奖（环境），展示了在提高能源效率方面可衡量的环境影响和创新。此外，iFilm 项目进一步助力该酒店成为 2024 年首家荣获香港 ESG 奖项的酒店。

该酒店还在 2024 年获得中电创新节能大奖的“优秀奖”，以表彰其在能源优化方面的努力。这些认可不仅反映了环境绩效的改善，也体现了结构化文件和可衡量数据验证的价值，而这两者均依赖于技术监控系统。

此外，酒店的餐饮业倡议因其餐饮碳中和计划而获得了绿色卓越奖。酒店还因采用经 FSC 认证的木质房卡而获得 GCS Rimes 颁发的最佳环境合作伙伴奖，展示了决策与可持续采购标准之间的良好对齐。

总结来说，这些奖项说明了技术化 ESG 项目在数据和结构化报告系统的支持下，如何转化为外部验证和行业基准。这些成就不仅提升了酒店的声誉，也促进了酒店内部的问责制、透明度和持续改进。

3. 通过数字协调将 ESG 制度化

治理技术还支持将 ESG 制度化融入组织结构。酒店的绿色委员会依赖数字通信平台和共享报告系统来协调可持续发展举措并监控进展。技术实现了对会议成果、任务分配和部门职责的结构化记录。这将 ESG 实践正式融入到日常的管理流程中。

总体而言，在公司治理维度中，技术被用作将 ESG 从理想化目标转化为可衡量、可汇报的组织实践的工具。通过整合数字监控系统、报告机制和跨部门监督，酒店展示了技术采用如何支持 ESG 实施中的透明度、问责制和信誉。

采用 ESG 技术面临的挑战与权衡

尽管在 ESG 相关技术采用方面取得了重大进展，酒店仍面临若干结构性、财务和组织挑战，这些挑战影响了其 ESG 转型的范围。这些局限性突显了在酒店现有治理和基础设施中实施 ESG 技术时的各种权衡。

技术局限性与系统碎片化

尽管酒店实施了针对性的优化技术，但目前仍缺乏更先进的物联网（IoT）传感器网络，无法进行更精细、客房级别的能源和入住追踪。物联网系统的缺失限制了实时环境监控和预测性优化能力的精准度。

同样，ESG 监控在系统之间仍存在部分碎片化。能源数据、厨余指标、培训记录、报告文件等都存储在不同的地方，而不是整合在一个单一的 ESG 仪表板中。这种缺乏集中式监控系统的状况降低了数据的可视性，并可能减缓决策过程。

虽然 BMS 提供了实时运营数据，但 ESG 绩效报告在很大程度上仍依赖于手动数据整合。解读趋势、验证并将数据汇编到年度 ESG 报告中仍需要人工监督。对人工干预的依赖引入了一个关键权衡：虽然技术改善了优化和数据收集，但同时也增加了对数字素养和跨部门协调的要求，增加了行政工作量并可能带来潜在的低效。

财务约束

预算限制是 ESG 技术推广的一大重要障碍。许多先进的可持续发展技术（包括物联网系统和整合式仪表板）需要大笔资金投入。尽管与中电补贴等合作减轻了财务障碍，但采用 ESG 技术的成本依然高昂。

酒店业的利润空间相对狭窄，这使得长期可持续发展投资必须经过严格的成本效益评估。采用新 ESG 技术的决策必须在环保雄心与财务成本及投资回报率之间取得平衡。

治理复杂性与利益相关者对齐

酒店的双重治理结构也引入了额外的复杂性。在本案例研究期间，酒店在 IHG 和新鸿基地产（SHKP）的双重治理影响下运营。这两个治理系统可能在不同的战略背景、报告期望和运营优先事项下运营。管理两种形式的治理可能会产生重叠的报告要求，并伴随不同的 ESG 基准和利益相关者期望。在当前酒店转向帝苑酒店特许经营的新管理架构下，这一点变得更为复杂。

酒店内的不同部门也可能对成本控制、运营效率、宾客体验或可持续发展成果有着不同的优先排序。因此，技术的采用有时会被视为一种干扰，特别是当它改变了工作流程或增加了工作量时。此外，员工接受程度参差不齐，也凸显了在 ESG 背景下采取更清晰的沟通、培训和变革管理策略的必要性。

总体而言，这些挑战表明，在款待业中采用 ESG 技术不仅仅是一次技术升级，更是一次组织转型。财务限制、碎片化数据、复杂的治理结构和有限的人力资源都影响着酒店的 ESG 发展轨迹。这些局限性揭示了将 ESG 整合到现有酒店环境中的现实挑战。

未来方向

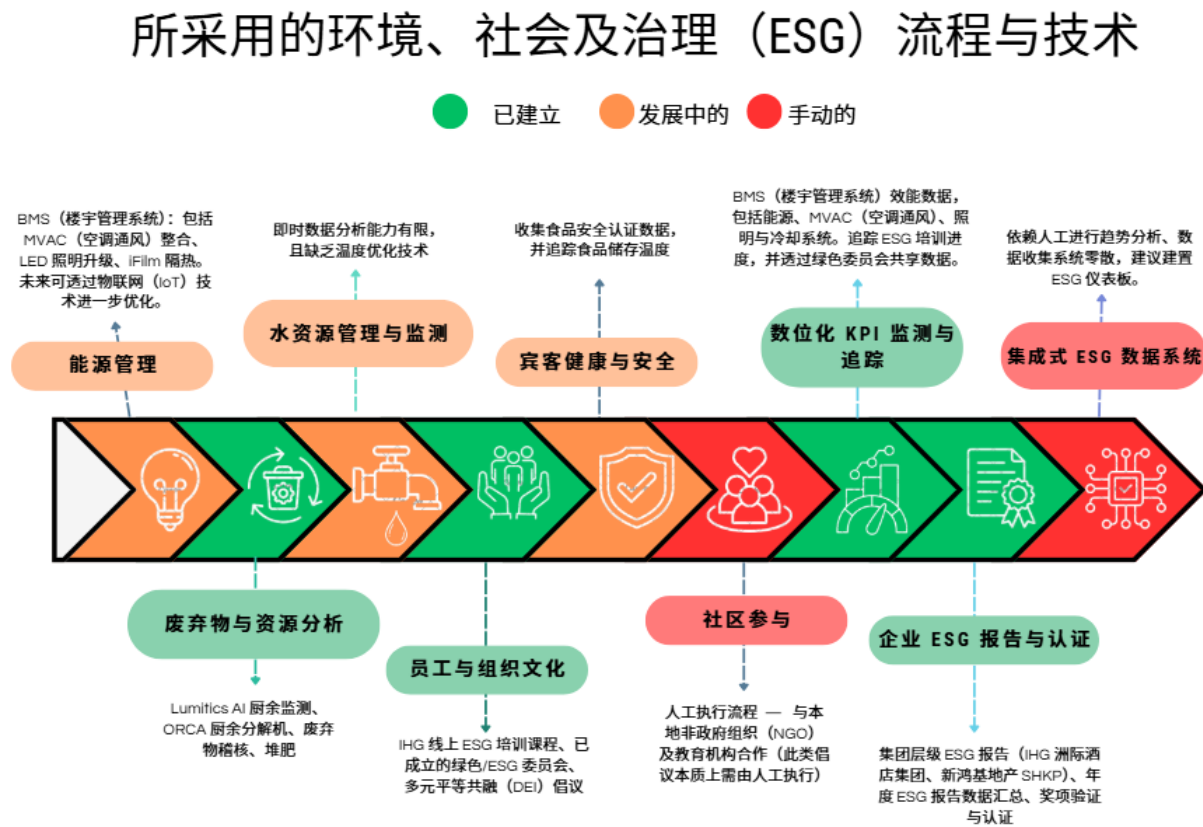
虽然现有的 ESG 技术加强了运营效率和报告能力，但在系统整合与数字化方面仍有未来提升的空间。一个关键的发展方向是利用整合的物联网（IoT）传感器来强化楼宇管理系统（BMS）。引入客房级别的入住传感器和智能监控技术，将实现对水电消耗更精细、更准确的监控，从而能够根据实际使用模式进行实时调整，而非依赖预设的时间表。

加强物联网整合将能够更好地追踪废弃物的产生、资源流向以及宾客的行为趋势。通过将所有水、废弃物和能源指标整合到一个 ESG 仪表板或系统中，酒店可以从碎片化的报告模式转向一体化的可持续发展系统。这将减少对手动数据整合的依赖，并提高数据的可视性。

人工智能（AI）技术也可用于支持预测性优化分析，包括食品生产的需求预测和能源管理。除了运营效率外，AI 技术还可用于提升宾客体验，例如启用个性化的可持续设置（例如，宾客可以在入住期间选择节能房型模式，并追踪自己的资源消耗足迹）。这将把 ESG 从内部管理延伸到宾客互动界面。

重要的是，这些未来方向反映了从“运营优化”向“智能、整合的 ESG 治理”的转变。通过迈向更具实时性的数据生态系统和预测性分析，该酒店将能够提升其在款待业中的环境表现、治理报告和社会报告标准。向更具互联性的数字基础设施过渡，将是该酒店 ESG 旅程的下一阶段。

图 1：九龙东帝苑酒店采用的 ESG 流程与技术



总体成果

该酒店对 ESG 技术的采用，凸显了其从“营销驱动的举措”向“更具结构化、可衡量和数据驱动的管理系统”的转变。在环境、社会 and 治理维度上的技术干预，提高了运营效率，加强了问责制，并提升了报告的透明度。可量化的能源节省、废弃物减少、标准化的培训系统和公认的行业认证，共同证明了 ESG 已嵌入到酒店的核心运营流程中。

与此同时，酒店的 ESG 历程也反映了在现有款待业基础设施中进行渐进式数字转型的现实。酒店目前的 ESG 治理在结合了监控系统与人工监督的混合模式下运行。

酒店将技术创新与 ESG 目标相结合，有助于其在竞争极其激烈的款待业格局中占据有利的竞争地位。对数字工具和技术的战略性应用，使酒店能够加强其在企业利益相关者和具环保意识的宾客中的信誉。在这家酒店中，技术不仅发挥着运营工具的作用，更是作为实现长期韧性的机制。

结论

本案例研究表明，技术采用在推动九龙东帝苑酒店实施 ESG 方面发挥着核心作用。数字监控工具、优化系统、培训模组和报告机制并非孤立运作，而是重新塑造了 ESG 如何融入组织决策和更广泛的工作场所文化。该酒店的经验表明，ESG 数字化是一个不断演进的过程，其进展是在财务、基础设施和治理约束下渐进取得的。总体而言，九龙东帝苑酒店提供了一个宝贵的范例，展示了技术不仅是用于支持 ESG 项目，更是其在款待业中建立信誉和实现长期整合的基石。随着大众对可持续发展和 ESG 的期望持续增强，数字系统在衡量、追踪和汇报 ESG 数据方面的作用将变得愈发重要。

参考文献

Back, K.-J. (2024). ESG for the hospitality and tourism research: Essential demanded research area for all. *Tourism Management*, 105, 104954. <https://doi.org/10.1016/j.tourman.2024.104954>

Krantz, T., & Jonker, A. (2024, January 24). *What is environmental, social, and governance (ESG)?* | *ibm*. <https://www.ibm.com/think/topics/environmental-social-and-governance>

Sun, J., & Nasrullah, A. (2024). Green transition in the hospitality industry: The influence of market forces and customer dynamics on sustainable performance in the digital era. *Heliyon*, 10(8), e29563. <https://doi.org/10.1016/j.heliyon.2024.e29563>

Yu, J., Kim, S. (Sam), Chiriko, A. Y., Moon, H. G., Choi, H., & Han, H. (2024). Environmental, social, and governance (Esg) in the hotel industry: A strategy for brand management, brand tribalism, and brand choice. *Journal of Travel & Tourism Marketing*, 41(9), 1226–1243. <https://doi.org/10.1080/10548408.2024.2406346>

智慧款待：九龍東帝苑酒店以技術驅動的 ESG 整合

引言

款待業正日益被公認為全球碳排放和資源消耗的主要來源之一。酒店業的碳排放量約佔全球總排放量的 1%，僅在 2021 年就產生了約 3.63 億噸二氧化碳（HKGCC, 2024）。該行業具有高能源需求、全天候持續運營、密集用水以及產生大量食物垃圾等特點，正面臨採用可持續發展戰略的巨大壓力（Sun & Nasrullah, 2024）。

在香港，公共政策和監管法規的發展進一步強化了融入 ESG（環境、社會和公司治理）的迫切性。2022 年，香港錄得 3,350 萬噸溫室氣體排放，並在《香港氣候行動藍圖》中承諾在 2035 年前將碳排放量減少 50%（HKGCC, 2024）。各項監管措施，包括垃圾徵費計劃以及 2024 年實施的管制即棄塑膠餐具及產品條例，直接影響了酒店業的運營。這些措施推動了香港各酒店紛紛採用可再生能源系統、濾水技術、廚餘回收計劃和數位化能源管理系統。

除了合規要求外，賓客也越來越期望企業能展現出環保責任、安全的食品採購以及社區參與（Yu et al., 2024）。此外，千禧世代和 Z 世代的旅客更願意為具備可持續性的體驗支付溢價。因此，在結構化報告體系、認證計劃和技術輔助優化工具的支持下，香港的行業領袖已開始將 ESG 嵌入核心業務戰略中。香港酒店業協會更於 2021 年推出了 ESG 發展計劃，反映出整個行業正邁向可衡量且標準化的 ESG 實踐（HKGCC, 2024）。這些標準已將 ESG 確立為成功企業戰略的關鍵組成部分。

款待業中 ESG 的演變與數位技術的進步是同步發展的。隨著酒店面臨降低環境影響和提高透明度的雙重壓力，技術已成為落實 ESG 舉措的核心。在環境領域，數位系統被用於通過暖通空調（HVAC）控制、LED 自動化、樓宇管理和實時監控平台來優化能源消耗。除了環境表現外，數位工具還通過線上培訓平台、數位合規模型以及在招聘流程中落實多元、平等與包容（DEI）倡議的數據驅動型人力資源系統，來支持 ESG 的社會層面。從治理角度來看，數位平台簡化了 ESG 報告和關鍵績效指標（KPI）的追蹤，實現了數據管理的集中化，並提高了不同企業結構之間的透明度（Sun & Nasrullah, 2024）。技術已將款待業的 ESG 實踐推向更具可衡量性、數據驅動的績效管理系統。

九龍東帝苑酒店（The Royal Garden Kowloon East）是一家位於香港將軍澳的現代度假風酒店。該酒店自定位為「都市綠洲」，在提供便利交通以連接香港繁華都市的同時，亦坐擁海岸線與山脈景致。酒店擁有 366 間客房和 7 棟私人別墅。其度假村的品牌形象使其有別於傳統的市中心商務酒店，提供了一種兼顧休閒與企業款待服務的混合模式（Royal Garden, 2025）。

值得注意的是，在 2025 年底之前，該酒店一直以「香港九龍東皇冠假日酒店」之名在洲際酒店集團（IHG）的全球品牌下運營，同時由香港最大的地產發展商之一新鴻基地產（SHKP）擁有。在洲際酒店集團管理期間，酒店實施了廣泛的 ESG 項目，這些項目嵌入在國際可持續發展框架中，並由數位報告平台、結構化培訓系統和集團級

治理機制提供支持。這一時期的 ESG 整合受益於全球可持續發展標準、監控基礎設施和正式問責體系的接入。

自 2026 年初起，該物業轉由帝苑酒店集團（Royal Garden Group）運營，這代表著一次重大的品牌重塑，以及治理結構和運營自主權的重大轉變。雖然這一轉變在決策上帶來了更多獨立性，但也對能否繼續使用 IHG 的 ESG 系統帶來了不確定性。

本案例研究旨在評估該酒店在 IHG 管理下、作為香港九龍東皇冠假日酒店運營期間所實施的 ESG 舉措和技術應用。這一時間窗口至關重要，因為它反映了 ESG 整合受制於國際品牌標準、可持續發展報告準則以及嵌入 IHG 網路的數位系統的時期。

ESG 戰略與治理結構

在九龍東帝苑酒店，ESG 不僅僅是一個營銷口號，而是嵌入在酒店運營哲學中的長期戰略承諾。在酒店中優先考慮 ESG，意味著長期價值和目標不僅與財務和績效指標掛鉤，還與環境責任、社會貢獻以及制度誠信緊密相連。酒店將 ESG 視為一項指導決策、風險管理和跨部門協調的根本原則。

其 ESG 願景圍繞五大核心支柱展開：環境、員工、社區、顧客和供應鏈。環境支柱超越了單純的合規，強調資源優化、能源效率以及嵌入日常運營的低碳技術。員工支柱側重於創造一個具支持性且包容的工作場所，提供專業發展路徑、公平機會和員工福祉。在社區層面，酒店旨在與本地組織建立長期合作關係，將自己定位為本地社會價值創造的積極貢獻者。顧客支柱優先考慮健康與安全、消費者權益保障，以及通過創新和負責任的實踐持續提升服務品質。最後，供應鏈支柱強化了可持續採購的重要性，並致力於發展互利共贏、長期的供應商關係。

ESG 考量已嵌入到酒店更廣泛的風險管理和內部系統中，包括決策過程和運營監督。這確保了可持續發展目標能夠融入到核心業務職能中。

ESG 舉措的治理由一個跨部門的 ESG 委員會支持，成員來自工程、財務、市場營銷、人力資源和餐飲部門。這種結構有利於跨業務的協調，並將 ESG 職責落實到酒店的各個環節。這些舉措有助於在酒店內部培養 ESG 和可持續發展文化。此外，該酒店的 ESG 模式同時受到 IHG 和新鴻基地產可持續發展框架的影響。這種雙重對齊意味著其 ESG 倡議既遵循國際品牌標準，又符合本地公司治理原則。

實施 ESG 技術應用的驅動因素

九龍東帝苑酒店利用技術支持 ESG 舉措，是由運營壓力、企業問責要求、戰略定位以及領導層價值觀共同塑造的。技術被引入作為改善酒店日常運營的實用工具。

最直接的驅動因素之一是日益上漲的能源成本。作為一家 24 小時運營的大型酒店，該物業在客房、廚房、照明系統和暖通空調（HVAC）基礎設施中消耗大量電力。特

別是位於 47 樓的餐廳，極易受到太陽輻射熱能的影響，尤其在夏季。因此，該區域製冷需求極高，導致了龐大的能源消耗。技術驅動的干預措施因此被視為應對成本和可持續發展擔憂的戰略響應。

此外，酒店旨在減少其碳足跡，以配合更廣泛的環保承諾。這些減碳目標要求資源消耗實現可衡量的減少，而這在沒有技術支持的情況下是無法實現的。數位監控系統和節能設施使酒店能夠量化節省、優化資源使用，並以切實的方式展示環境影響。

同時，企業報告和問責義務進一步強化了技術整合的必要性。由於酒店在雙重領導結構下運營，它需要向兩個企業總部提交能源、水資源和廢棄物指標，以維持各自的 ESG 報告框架。因此，技術對於實現精確的數據追蹤與監控、簡化報告流程以及確保符合兩個獨立的企業可持續發展標準至關重要。

領導層的價值觀和道德考量也影響了 ESG 技術的使用。酒店將 ESG 框定為一種責任，反映了對本地社區和更大環境的深層承諾。技術被視為將這些價值觀轉化為可衡量行動的實用工具。

長期運營效率是另一個激勵因素。對節能資源和資源優化技術的投資，不僅被視為環境干預措施，也被視為降低成本和確保長期績效穩定性的戰略。最後，參與 ESG 基準評估計劃並獲得行業認可，也鼓勵了對創新數位工具的探索。採用新的環保技術使酒店在競爭激烈的款待業市場中脫穎而出，並展示了其在可持續發展實踐中的領導地位。酒店已獲得多項獎項和認證，驗證了其努力並提升了聲譽。

總之，這些驅動因素表明，酒店採用數位技術具有明確的戰略動機。這些工具和創新使得環境責任、治理問責和運營效率得以同步發展。

技術在環境 ESG 中的應用

ESG 的環境支柱衡量企業對自然系統的影響，包括能源消耗、碳排放、水資源利用和廢棄物管理（Krantz & Jonker, 2024）。在九龍東帝苑酒店，環境可持續性是 ESG 實施中技術發展最成熟的維度。酒店採用了一系列能源、水和廢棄物管理技術，旨在高需求的款待業環境中降低碳排放並優化資源利用。

1. 節能技術

酒店實施的最顯著的環境創新之一是安裝了 **iFilm 隔熱膜**。該薄膜安裝在頂層 Cielo 餐廳玻璃窗的內側表面，旨在阻擋紫外線（UV）和紅外線（IR）輻射，同時仍允許自然光穿透。iFilm 的安裝直接解決了 47 樓餐廳面臨的高製冷需求——該餐廳因其高度和大型落地窗而承受著巨大的熱量增長。通過減少太陽熱能的滲透，該薄膜降低了空調負荷。此舉每年成功節省約 16,416.72 kWh 的能源，為減少電力消耗和相關碳排放做出了可衡量的貢獻。

除了環保效益外，該項目還改善了溫度穩定性，提升了賓客的舒適度，並降低了與製冷相關的財務成本。作為一個試點項目，該舉措展示了未來在酒店其他區域推廣的可擴展性。此外，由於薄膜僅安裝在窗戶玻璃內側，項目並未造成重大的施工干擾，這使其成為酒店的實用解決方案。該項目還獲得了多項行業認可，鞏固了其作為款待業獲獎可持續創新項目的地位。

除了 iFilm 之外，酒店還將整個物業的照明升級為 **LED 照明**。LED 系統消耗的能源顯著低於傳統照明，且更換頻率較低，有助於降低能源和維護成本。

酒店還與**中華電力（中電，CLP）**合作，升級了其廚房設備。中電為選定的節能電器提供 50% 的補貼，並提供高達 30 萬港元的資金支持。這一合作推動了向更環保烹飪系統的轉型，同時降低了資本支出，展示了如何通過外部可持續發展資金計劃支持技術改進。

此外，酒店升級了其**樓宇管理系統（BMS）**，以精細化調節機械通風及空調系統（MVAC）的能源表現。BMS 整合了照明和製冷操作，實現了更協調和高效的能源使用。數據監控和優化功能允許系統根據需求進行調整，例如在設定的時間間隔後自動關閉空調，以防止不必要的能源消耗。空氣調節箱內還安裝了變頻器，可根據負載需求調節電機速度，進一步為運營節省 10-15% 的能源。酒店在熱水溫度優化方面也採用了類似的系統。酒店採用日夜運行模式，使冷水/熱水系統的能量輸出與實時入住率和需求模式相匹配，從而節省用於水加熱的能源。

總結來說，這些以能源為中心的技術表明，環境 ESG 目標是如何通過針對性的技術優化和落實，嵌入到酒店基礎設施和日常運營中的。

2. 水資源管理技術

水資源管理是酒店環境戰略的另一個關鍵方面。**客房內濾水系統**的實施取代了客房內的一次性塑膠瓶裝水。這些濾水器使賓客可以直接從水頭獲取安全飲用水，在大幅減少塑料消耗的同時，也降低了生產和廢棄物處置成本。

此外，廚房和洗手間均已安裝**節水龍頭**，以減少整體用水量。此外，冷卻水系統經過優化，可根據一天中的時間調節溫度輸出，確保在低入住率期間不浪費能源。

酒店還推出了**床單重複使用計劃**，鼓勵賓客選擇不更換每日毛巾和床單，以減少水和清潔劑的使用以及電力消耗。雖然該計劃在本質上屬於行為引導，但需要運營系統的支持，利用技術來協調房務日程並監控顧客的使用模式。

3. 廢棄物管理技術

垃圾減量技術進一步強化了酒店的環境 ESG 形象。酒店實施了**廢棄物分類系統**，以促進整個物業的回收利用，同時將有機廢棄物運往場外進行堆肥和沼氣處理。

酒店還嘗試利用 **Lumitics 系統** 進行 **AI 驅動的廚餘監控**。該技術利用圖像識別分析廚餘盤中的剩餘食物，並識別過度生產的模式。這有助於更好的菜單規劃和需求預測，從而使廚餘減少了 46%。此外，這些數位工具也為關閉傳統上會產生大量廚餘的自助餐/平價餐廳模式的決策提供了依據。這些變化反映了技術驅動的運營轉向更具可持續性的食品管理。

此外，酒店引進了 **ORCA 廚餘分解器**，將固體廚餘轉化為液體，從而使約 30 噸垃圾免於進入堆填區。在香港已經極度緊張的垃圾處理現狀下，這為減少堆填區壓力做出了貢獻。酒店還減少了即棄塑膠餐具的使用，並將塑膠房卡更換為木質房卡，進一步減少了酒店營運中的塑膠垃圾。

總體而言，該酒店的環境 ESG 方法以針對性的技術解決方案、系統優化和資源效率干預為特徵。酒店並未完全依賴大規模的結構性重建，而是展示了漸進且具戰略性的技術採用如何產生可衡量的環境影響。

技術在社會 ESG 中的應用

ESG 的社會維度是指組織對人、文化和社區的影響，包括勞工實踐、員工福祉、社區參與和人權（Krantz & Jonker, 2024）。在九龍東帝苑酒店，社會 ESG 通過數位系統得以具體落實，這些系統使培訓標準化、減少偏見、加強安全監控並促進利益相關者之間的溝通。在這裡，技術被用作將 ESG 原則融入酒店文化、賓客和員工福祉以及社區參與的工具。

1. 員工與組織文化

技術在將 ESG 價值觀嵌入酒店內部文化中發揮著關鍵作用。**強制性 ESG 培訓**是通過其前母公司 IHG 開發的線上學習平台進行的。這些數位模組確保了跨部門標準化的 ESG 教育，無論員工的職責或資歷如何，都能提供一致且可衡量的學習成果。在本案例研究期間，這些培訓系統已完全融入員工入職和專業發展流程中。然而，在酒店新的管理結構下，未來是否能繼續使用這些培訓資源尚不確定。儘管如此，這些數位學習平台確保了 ESG 知識的持續傳授和定期更新，減少了對非正式口耳相傳的依賴。它們也有助於將 ESG 原則融入到入職流程、每日例會和部門會議中。

在運營層面，ESG 相關職責被分配到各個部門，管理人員通過數位報告系統和持續的跨部門溝通，監控可持續發展任務和合規情況。這個跨部門的「綠色委員會」實現了對可持續發展舉措的協調和部門貢獻的追蹤。該模式確保了 ESG 的實施不會被孤立於單一團隊中，而是融合到所有組織職能中。

技術還用於支持公平就業實踐。酒店將多元、平等與包容（DEI）原則融入招聘流程，使用標準化評估標準的數位平台。這些系統有助於減少主觀偏見，促進更公平地獲得就業機會。

在健康和安全方面，每週的安全結果都會數位化地匯報給集團安全經理，以便進行監督和問責。酒店頻繁開展職業風險評估，並舉辦了由物理治療師指導的慢性疼痛緩解工作坊等員工福祉倡議，這反映了對員工健康的廣泛承諾。雖然這些舉措不純粹是技術性的，但它們受到數位追蹤和溝通系統的支持，以協調人員參與和活動的執行。

2. 賓客健康、安全與包容性

技術也支撐著酒店對賓客福祉的承諾。客房內的濾水系統在產生環保效益的同時，也保障了賓客的健康，確保他們無需依賴瓶裝水即可獲得安全的飲用水。

食品安全亦通過結構化的食品安全管理系統進行管理，包括通過 ISO 22000 認證的流程和定期審核。酒店還持有**海洋管理委員會（MSC）和水產養殖管理委員會（ASC）**認證，確保負責任的海鮮採購和受監控的供應鏈。此外，每月對食品、飲料、飲用水和冰塊進行的微生物檢測，進一步保障了賓客的健康安全。數位監控系統追蹤食品儲存溫度和庫存狀況，以確保符合食品安全標準。

可持續發展和健康資訊會定期通過數位指示牌和社交媒體傳遞給賓客，從而提升透明度和信任度。此外，酒店提供多樣化的膳食選擇，包括素食、純素食、生酮及無糖選擇，反映出其與時俱進、符合健康和生活方式偏好的包容性和無障礙服務。

酒店還與提供可生物降解、可回收以及經 FSC（森林管理委員會）認證的產品和包裝的供應商合作，強化了支持環境和社會夥伴關係目標的負責任實踐。

無障礙考量也被融入到基礎設施設計中，包括為殘疾人士提供無障礙洗手間和客房。技術系統支持無障礙服務的提供，促進了包容性款待服務的實踐。

3. 社區參與和社會貢獻

除了內部運營，技術還支持酒店更廣闊的社區參與工作。酒店與本地大學和教育機構合作，提供實習機會，為香港款待業的人才培育做出貢獻。

此外，酒店還與**惜食堂（Food Angel）**等非政府組織（NGO）合作，通過食物再分配計劃為弱勢社區成員準備膳食。酒店員工還參與了支持癌症研究的「步步馳騁」（Stride for a Cure）慈善步行活動，進一步體現了社區關愛與參與。雖然這些舉措本身不具有科技屬性，但數位工具被用來推動志願者報名、匯報、排班以及跨部門溝通。

總體而言，在社會 ESG 維度中，技術角色較少體現為顯眼的創新，而更多是作為組織的骨幹。它規範了培訓、使問責制度化、支持包容性招聘、保障健康與安全，並加強了利益相關者之間的溝通。數位系統使酒店能夠在日常運營中實踐 ESG，而不是將其視為孤立專案。

技術在公司治理中的應用

ESG 的治理支柱是指公司監督結構、道德領導力、合規性、透明度和問責制（Krantz & Jonker, 2024）。在公司治理維度中，技術被用於衡量、驗證和制度化可持續發展工作。它實現了結構化監督、跨部門協調和 ESG 績效的透明匯報。

1. 數位監控與 KPI 追蹤

酒店數位化地追蹤關鍵環境績效指標，包括能源消耗、用水量和垃圾指標。諸如 BMS 之類的系統可以生成關於 MVAC 運行、照明負荷和製冷需求的數據。雖然這些系統實現了數據收集的自動化，但仍需要管理層的監督來解讀趨勢、識別異常並進行戰略調整。

能源、水、廢棄物和安全指標會在酒店的跨部門 ESG 與綠色委員會會議中進行討論。在這裡，技術被用於促進部門間的信息共享，使績效討論能夠基於事實並由可衡量的指標支持，而非非正式的口頭匯報。

此外，數位平台還被用於追蹤強制性 ESG 培訓模組的完成情況以及職業安全檢查。每週的安全檢查結果也會以電子方式提交給集團級安全經理，以確保監督和合規監控。這種數位追蹤機制的整合加強了跨部門的內部問責。

2. 企業報告與外部問責

ESG 數據在支持企業報告要求方面也發揮著關鍵作用。在本研究期間，酒店向其前母公司 IHG 以及新鴻基地產（SHKP）提交可持續發展數據，為集團層面的可持續發展報告、披露和績效審查做出貢獻。技術使得環境和社會績效指標能夠整合到提交給企業總部的年度 ESG 報告中。這些報告利用了由 BMS 監控、廢棄物審計和追蹤系統以及安全合規文件產生數據。

此外，數位記錄支持了各項認證流程，包括食品安全管理認證。通過維護結構化文件和可衡量指標，酒店增強了其 ESG 聲明的信譽和可驗證性。

該酒店的 ESG 績效也獲得了多項行業獎項的正式外部認可。該酒店憑藉 iFilm 項目榮獲了香港品質保證局（HKQAA）頒發的 **ESG 聯接先鋒金獎（環境）**，展示了在提高能源效率方面可衡量的環境影響和創新。此外，iFilm 項目進一步助力該酒店成為 2024 年首家榮獲香港 ESG 獎項的酒店。

該酒店還在 2024 年獲得中電創新節能大獎的「優秀獎」，以表彰其在能源優化方面的努力。這些認可不僅反映了環境績效的改善，也體現了結構化文件和可衡量數據驗證的價值，而這兩者均依賴於技術監控系統。

此外，酒店的餐飲業倡議因其餐飲碳中和計劃而獲得了**綠色卓越獎**。酒店還因採用經 FSC 認證的木質房卡而獲得 GCS Rimes 頒發的**最佳環境合作夥伴獎**，展示了決策與可持續採購標準之間的良好對齊。

總結來說，這些獎項說明了技術化 ESG 項目在數據和結構化報告系統的支持下，如何轉化為外部驗證和行業基準。這些成就不僅提升了酒店的聲譽，也促進了酒店內部的問責制、透明度和持續改進。

3. 通過數位協調將 ESG 制度化

治理技術還支持將 ESG 制度化融入組織結構。酒店的綠色委員會依賴數位通信平台和共享報告系統來協調可持續發展舉措並監控進展。技術實現了對會議成果、任務分配和部門職責的結構化記錄。這將 ESG 實踐正式融入到日常的管理流程中。

總體而言，在公司治理維度中，技術被用作將 ESG 從理想化目標轉化為可衡量、可匯報的組織實踐的工具。通過整合數位監控系統、報告機制和跨部門監督，酒店展示了技術採用如何支持 ESG 實施中的透明度、問責制和信譽。

採用 ESG 技術面臨的挑戰與權衡

儘管在 ESG 相關技術採用方面取得了重大進展，酒店仍面臨若干結構性、財務和組織挑戰，這些挑戰影響了其 ESG 轉型的範圍。這些局限性突顯了在酒店現有治理和基礎設施中實施 ESG 技術時的各種權衡。

技術局限性與系統碎片化

儘管酒店實施了針對性的優化技術，但目前仍缺乏更先進的物聯網（IoT）感測器網絡，無法進行更精細、客房級別的能源和入住追蹤。物聯網系統的缺失限制了實時環境監控和預測性優化能力的精準度。

同樣，ESG 監控在系統之間仍存在部分碎片化。能源數據、廚餘指標、培訓記錄、報告文件等都存儲在不同的地方，而不是整合在一個單一的 ESG 儀表板中。這種缺乏集中式監控系統的狀況降低了數據的可視性，並可能減緩決策過程。

雖然 BMS 提供了實時運營數據，但 ESG 績效報告在很大程度上仍依賴於手動數據整合。解讀趨勢、驗證並將數據彙編到年度 ESG 報告中仍需要人工監督。對人工干預的依賴引入了一個關鍵權衡：雖然技術改善了優化和數據收集，但同時也增加了對數位素養和跨部門協調的要求，增加了行政工作量並可能帶來潛在的低效。

財務約束

預算限制是 ESG 技術推廣的一大重要障礙。許多先進的可持續發展技術（包括物聯網系統和整合式儀表板）需要大筆資金投入。儘管與中電補貼等合作減輕了財務障礙，但採用 ESG 技術的成本依然高昂。

酒店業的利潤空間相對狹窄，這使得長期可持續發展投資必須經過嚴格的成本效益評估。採用新 ESG 技術的決策必須在環保雄心與財務成本及投資回報率之間取得平衡。

治理複雜性與利益相關者對齊

酒店的雙重治理結構也引入了額外的複雜性。在本案例研究期間，酒店在 IHG 和新鴻基地產（SHKP）的雙重治理影響下運營。這兩個治理系統可能在不同的戰略背景、報告期望和運營優先事項下運營。管理兩種形式的治理可能會產生重疊的報告要求，並伴隨不同的 ESG 基準和利益相關者期望。在當前酒店轉向帝苑酒店特許經營的新管理架構下，這一點變得更為複雜。

酒店內的不同部門也可能對成本控制、運營效率、賓客體驗或可持續發展成果有着不同的優先排序。因此，技術的採用有時會被視為一種干擾，特別是當它改變了工作流程或增加了工作量時。此外，員工接受程度參差不齊，也凸顯了在 ESG 背景下採取更清晰的溝通、培訓和變革管理策略的必要性。

總體而言，這些挑戰表明，在款待業中採用 ESG 技術不僅僅是一次技術升級，更是一次組織轉型。財務限制、碎片化數據、複雜的治理結構和有限的人力資源都影響著酒店的 ESG 發展軌跡。這些局限性揭示了將 ESG 整合到現有酒店環境中的現實挑戰。

未來方向

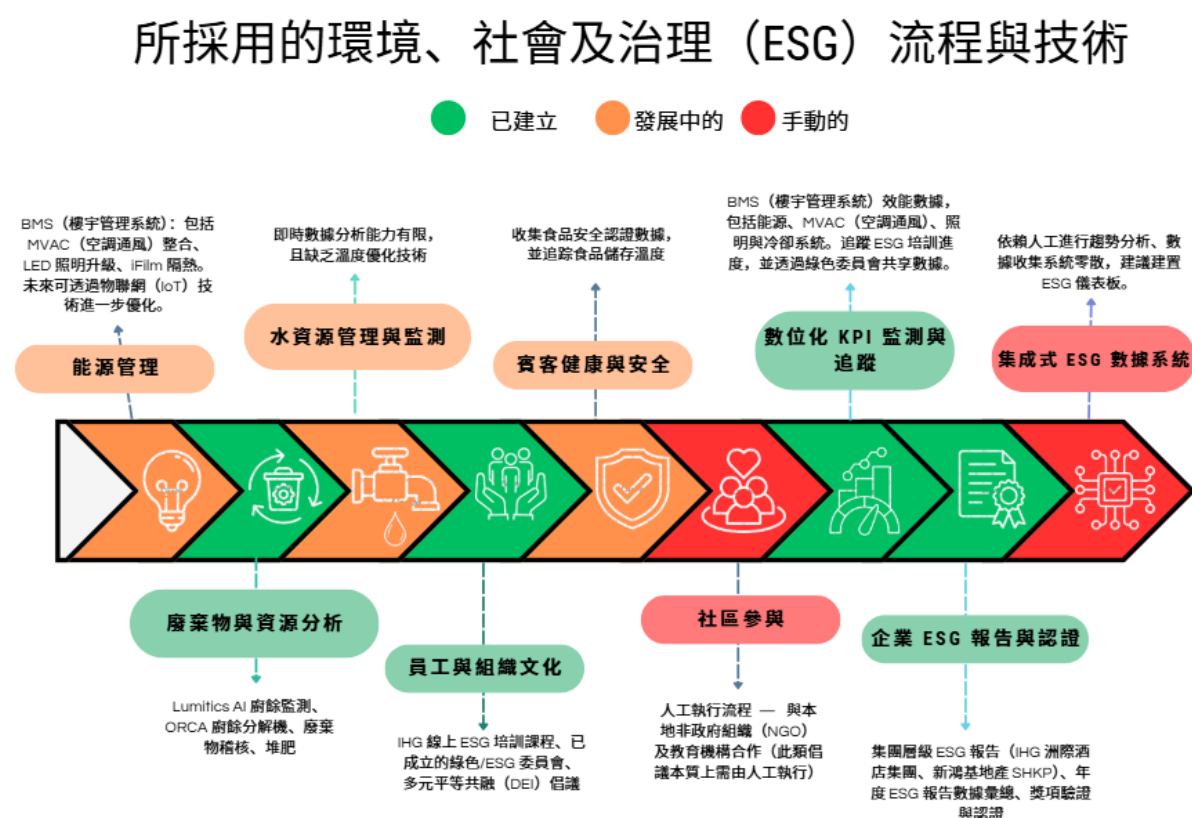
雖然現有的 ESG 技術加強了運營效率和報告能力，但在系統整合與數位化方面仍有未來提升的空間。一個關鍵的發展方向是利用整合的物聯網（IoT）感測器來強化樓宇管理系統（BMS）。引入客房級別的入住感測器和智能監控技術，將實現對水電消耗更精細、更準確的監控，從而能夠根據實際使用模式進行實時調整，而非依賴預設的時間表。

加強物聯網整合將能夠更好地追蹤廢棄物的產生、資源流向以及賓客的行為趨勢。通過將所有水、廢棄物和能源指標整合到一個 ESG 儀表板或系統中，酒店可以從碎片化的報告模式轉向一體化的可持續發展系統。這將減少對手動數據整合的依賴，並提高數據的可視性。

人工智能（AI）技術也可用於支持預測性優化分析，包括食品生產的需求預測和能源管理。除了運營效率外，AI 技術還可用於提升賓客體驗，例如啟用個性化的可持續設置（例如，賓客可以在入住期間選擇節能房型模式，並追蹤自己的資源消耗足跡）。這將把 ESG 從內部管理延伸到賓客互動界面。

重要的是，這些未來方向反映了從「運營優化」向「智能、整合的 ESG 治理」的轉變。通過邁向更具實時性的數據生態系統和預測性分析，該酒店將能夠提升其在款待業中的環境表現、治理報告和社會報告標準。向更具互聯性的數位基礎設施過渡，將是該酒店 ESG 旅程的下一階段。

圖 1：九龍東帝苑酒店採用的 ESG 流程與技術



總體成果

該酒店對 ESG 技術的採用，凸顯了其從「營銷驅動的舉措」向「更具結構化、可衡量和數據驅動的管理系統」的轉變。在環境、社會和治理維度上的技術干預，提高了運營效率，加強了問責制，並提升了報告的透明度。可量化的能源節省、廢棄物減少、標準化的培訓系統和公認的行業認證，共同證明了 ESG 已嵌入到酒店的核心運營流程中。

與此同時，酒店的 ESG 歷程也反映了在現有款待業基礎設施中進行漸進式數位轉型的現實。酒店目前的 ESG 治理在結合了監控系統與人工監督的混合模式下運行。

酒店將技術創新與 ESG 目標相結合，有助於其在競爭極其激烈的款待業格局中佔據有利的競爭地位。對數位工具和技術的戰略性應用，使酒店能夠加強其在企業利益相關者和具環保意識的賓客中的信譽。在這家酒店中，技術不僅僅發揮著運營工具的作用，更是作為實現長期韌性的機制。

結論

本案例研究表明，技術採用在推動九龍東帝苑酒店實施 ESG 方面發揮著核心作用。數位監控工具、優化系統、培訓模組和報告機制並非孤立運作，而是重新塑造了 ESG 如何融入組織決策和更廣泛的工作場所文化。該酒店的經驗表明，ESG 數位化是一個不斷演進的過程，其進展是在財務、基礎設施和治理約束下漸進取得的。總體而言，九龍東帝苑酒店提供了一個寶貴的範例，展示了技術不僅僅是用於支持 ESG 項目，更是其在款待業中建立信譽和實現長期整合的基石。隨著大眾對可持續發展和 ESG 的期望持續增強，數位系統在衡量、追蹤和匯報 ESG 數據方面的作用將變得愈發重要。

Back, K.-J. (2024). ESG for the hospitality and tourism research: Essential demanded research area for all. *Tourism Management*, 105, 104954. <https://doi.org/10.1016/j.tourman.2024.104954>

Krantz, T., & Jonker, A. (2024, January 24). *What is environmental, social, and governance (ESG)?* | *ibm*. <https://www.ibm.com/think/topics/environmental-social-and-governance>

Sun, J., & Nasrullah, A. (2024). Green transition in the hospitality industry: The influence of market forces and customer dynamics on sustainable performance in the digital era. *Heliyon*, 10(8), e29563. <https://doi.org/10.1016/j.heliyon.2024.e29563>

Yu, J., Kim, S. (Sam), Chiriko, A. Y., Moon, H. G., Choi, H., & Han, H. (2024). Environmental, social, and governance (Esg) in the hotel industry: A strategy for brand management, brand tribalism, and brand choice. *Journal of Travel & Tourism Marketing*, 41(9), 1226–1243. <https://doi.org/10.1080/10548408.2024.2406346>