

IMPLEMENTATION OF GREEN HOTEL IN SUPPORTING SUSTAINABLE TOURISM AT THE 101 BOGOR SURYAKANCANA HOTEL

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Abstract

The growth of the accommodation industry is expected to maximize the benefits achieved through more environmentally responsible accommodation. Waste and emissions generated in the surrounding environment can lead to global warming. This research aims to examine the implementation of green hotels in supporting sustainable tourism at THE 101 Bogor Suryakancana Hotel with reference to the ASEAN Green Hotel Standard (2018). The type of research is a combination method with sequential exploratory mixed methods, combining qualitative and quantitative to review and analyze data with observation, interviews, documentation and questionnaire distribution to 20 respondents. The sampling technique in this study used purposive sampling technique, namely head of department and supervisor. The results showed that THE 101 Bogor Suryakancana Hotel has implemented green hotels in supporting sustainable development goals, especially SDG 6, SDG 7, SDG 12, and SDG 13. The implementation of green hotels at THE 101 Bogor Suryakancana Hotel is based on the ASEAN Green Hotel Standard (2018) with 11 variables. The percentage value of the questionnaire results shows a value range of 61%-80% with the criteria for the level of suitability of implementation accordingly and a value of 81%-100% with the criteria for the level of suitability of implementation very suitable. With the results of the research analysis, THE 101 Bogor Suryakancana Hotel can improve the implementation of wastewater management aspects for operational purposes, strengthening policies and more structured energy efficiency, and increasing education for staff and guests regarding the importance of sustainability in the hospitality industry.

Keywords: *Implementation, Green Hotels, Sustainable Tourism.*

INTRODUCTION

The tourism sector is one of the largest sectors in the world because it has an impact on people's income and employment (Dewi et al., 2024). Therefore, many countries are interested in making this sector a part of their development (DN Dewi et al., 2024). In addition, tourism can have negative impacts caused by the development of tourism, especially mass tourism. As a result, many parties need to take action and pay attention to the government and the environment (NPIPS Dewi et al., 2023).

Table 1 Emissions and Waste in Hotel Operations

| INPUT | OUTPUT |
|--|---|
| Energy: Electricity, Fuel | Emission: HCs, CO ₂ |
| Coolant: AC, Freezer, Refrigerator, Mini Bar | Emission: CFCs, HCs |
| Water: Drinks, Cleaning, Living Room, Laundry, Pool, Spa | Impact: Waste from bathrooms and kitchens, water that contaminates materials, cleaning detergent "chlorine" from pool cleaner residue. |
| Tools and Equipment: Electrical Equipment, Furniture | Emissions and Waste: Plastic, wood, metal, glass, glue, paint, toxic and hazardous waste and their packaging. |
| Consumables: Detergents and Cleaning Materials, Toilet Paper, Fertilizers and Pesticides, Office Supplies, Food & Beverages, Organic Waste, | Emissions and Waste: Packaging waste such as paper, glass bottles, plastic bottles, paint, fertilizer waste, pesticides, batteries, light bulbs. |

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| INPUT | OUTPUT |
|--|--------|
| Waste Wrappers, Aluminum Bottles, Trash Bins, Glass Bottles. | |

Source: Ministry of Tourism of the Republic of Indonesia (2016)

Currently, accommodations are trying to implement more environmentally friendly hotels, which reduce the use of energy, water, and materials while still providing good quality of service (Jaklin & Sari, 2023). Green tourism is part of sustainable tourism, which means travel that aims to realize sustainability through the preservation of natural, cultural, and economic resources. One part of green tourism is the concept of a green hotel, which shows concern for the environment and the progress of sustainable tourism (Wibisana et al., 2022). Green hotels show concern for the environment and sustainable tourism development (Wibisana et al., 2022). Green hotels include environmental planning and management, environmentally friendly products, and human resources (ASEAN Tourism Standards, 2018). Green buildings are buildings that are designed efficiently and environmentally friendly and take into account the environmental impact as minimally as possible, from the beginning to the end of their operation and maintenance.

Tourists are satisfied and give positive comments to THE 101 Bogor Suryakancana Hotel. Some tourists also convey reviews related to the experience they got while staying at THE 101 Bogor Suryakancana Hotel. "With the implementation of this green hotel, it certainly has a positive impact on the environment, supporters also to the surrounding residents with the economic side for them" (Ahmad Gunawan-Chief Engineering, February 6, 2025). In addition to the management and impact of the implementation of the green hotel, it was also emphasized by the hotel, that "We also provide appeals and counseling regarding green hotel practices and sustainability such as during the General Staff Meeting (GSM) activities such as "Current World Conditions Appearance" so as to increase employee awareness, signs in the hotel and we utilize technology to reduce energy use efficiently "(Ardian Pratama-Human Capital Manager, February 6, 2025).

Ricardianto et al., (2022) conducted research on the concept of green hotels in India, finding that hotel managers have responded to the desires of customers or hotel guests to relax, exercise and stay in a hotel environment with a green atmosphere. According to Ricardianto et al., (2022) green architecture is a new concept where building and environmental planning. This has mainly emerged since the 1987 Brundtland Commission on Sustainable Development was proposed by the United Nations (UN). In addition, according to Ricardianto et al., (2022), the view of public awareness and access to construction financing, political will, the size of the construction industry to the source of materials for green buildings may not be sustainable in developing countries (least developed countries). Therefore, in promoting sustainable tourism in the future and raising awareness of the benefits of green buildings, the main concepts involved in such development must be discussed (Ricardianto et al., 2022). THE 101 Bogor Suryakancana Hotel is committed to sustainable tourism by implementing the green hotel concept in its operations and obtaining the Green Building Excellence in Design for Greater Efficiencies (EDGE) Certificate initiated by the International Finance Corporation (IFC), part of the World Bank Group.

"We received green certification in 2017, precisely on August 14, 2017, with the category of implementing or saving energy, saving water and using environmentally friendly materials." (Ahmad Gunawan-Chief Engineering, February 6, 2025)



Figure 1.1 Green Hotel Certification
Source: @the101bogorsk (2025)

From the data, THE 101 Bogor Suryakancana Hotel has achieved 46% energy savings, 25% water savings, 41% material less embodied energy with activities that have been carried out by THE 101 Bogor Suryakancana Hotel management, namely reducing the window to wall ratio, external shading devices, low e-coated glass, variable refrigerant volume cooling system, heat pump for hot water, energy-efficient lighting for internal and external spaces, low-flow faucets in the kitchen and bathroom, dual-flush water closets, water-efficient urinals, dishwashers, aerators and auto shut-off faucets in the bathroom and autoclaved aerated concrete blocks and UPVC window frames.

LITERATURE REVIEW

Environmental policies and actions for hotel operations (X1) with indicators 1. Environmental activities carried out by staff, 2. Environmental awareness, 3. Environmental management plan for hotel operations, 4. Program measurement. Use of environmentally friendly products (X2) with indicators 1. Criteria for purchasing local products and promotions, 2. Criteria for using environmentally friendly products (green procurement). Collaboration with local communities and organizations (X3) with indicators 1. Improving the quality of life of the community, 2. Environmental awareness programs or activities carried out in the community by hotel staff or hotels. Human resource development (X4) with indicator 1. Environmental management training programs or activities by hotels for staff in the last few years (1-2 years) Solid Waste Management (X5) with indicators 1. Waste handling and management training programs or activities implemented in the last few years for staff, 2. Programs or activities that encourage hotel staff involvement in waste handling and management, 3. Programs or activities that encourage guest involvement in handling, managing, and minimizing waste.

Energy efficiency (X6) with indicators 1. Installation and use of energy-saving technology in hotels, 2. Installation of power and energy consumption measurement technology, 3. Energy efficiency programs or encouragement to hotel guests. Water efficiency and water quality (X7) with indicators 1. Installation and use of water efficiency technology practices in hotels, 2. Engineering team maintenance reports on water-saving technology, 3. Media or promotional practices to guests, 4. Water quality testing. Air quality management (indoor and outdoor) (X8) with indicators 1. Photos of smoking and non-smoking areas in the hotel, 2. Reports on maintenance of air conditioning technology or good air ventilation in the hotel. Noise pollution control (X9) with indicator 1. Planning activities to ensure noise control in hotels Wastewater control and management (water quality) (X10) with indicators 1. Implementation of water contamination minimization and pollution prevention programs in hotels, 2. Evidence of hotel promotion of water reuse and use of treated water in hotels, 3. Implementation of wastewater treatment in hotels.

Management of the disposal of toxic materials and chemical substances (X11) with indicators 1. Clear and easy-to-understand indications for the storage and use of chemicals in hotels, 2. Appropriate practices for handling and disposing of B3 waste in hotels. Implementation of ASEAN Green Hotel Standard (Y) with Criteria indicators above 50%

METHOD

The type of research is a combination method or mix method used in this study with the basis of the philosophy of pragmatism, namely a combination of interpretivism and positivism. In this study, the use of qualitative and quantitative data is combined sequentially to provide a more comprehensive understanding of the problems studied. The first stage carried out was a qualitative approach, researchers analyzed and collected data on the implementation of green hotels carried out at THE 101 Bogor Suryakancana Hotel through direct observation, interviews with hotel management, and data documentation to strengthen the research results. After that, the researcher collected and analyzed quantitative data from the calculation and tabulation of questionnaires related to the implementation of green hotels in supporting sustainable tourism at THE 101 Bogor Suryakancana Hotel.

The population in this study was the management involved in the implementation of green hotels at THE 101 Bogor Suryakancana Hotel. Therefore, the selection of questionnaire samples in this study was the head of department (HOD) and supervisor because it was to understand the implementation of green hotels from a managerial perspective. The limitation of the questionnaire can increase the reliability of the research data because the head of department (HOD) and supervisor are considered key informants regarding relevant and in-depth information regarding management operations and policies (Mudassir et al., 2023).

RESULTS AND DISCUSSION

Environmental Policy and Action for Hotel Operations

From the Implementation of Environmental Policy and Action for Hotel Operations carried out, THE 101 Bogor Suryakancana Hotel also supervises or monitors environmental management, namely by cleaning the Sewage Treatment Plant (STP) and drainage using aerobic bacteria, namely good bacteria that decompose wastewater bacteria in public areas and rooms. Therefore, the waste from THE 101 Bogor Suryakancana Hotel has been filtered and does not pollute the environment based on environmental policies.

Use of Green Products

THE 101 Bogor Suryakancana Hotel carries out sustainable initiatives in furniture, grease, chemicals and pesticides, air conditioning, and local products. In addition, improvements are still needed such as reducing plastic in several categories of amenities.

Collaboration with Local Communities and Organizations

THE 101 Bogor Suryakancana Hotel collaborates with the MSME community, organizations and local communities in stunting programs, community empowerment-based greening, organic solid waste management, and providing souvenirs to foreign guests staying at the hotel in the form of local products such as mini dolls, batik scarves and batik bags.

Human Resource Development

THE 101 Bogor Suryakancana Hotel implements with general appeals and counseling to its employees with GSM activities, as well as direct operational training in three departments in waste management, water efficiency, and energy efficiency. However, in the consistency of implementation, continuous training is needed in each department to increase commitment, adaptation to regulatory changes, and operational effectiveness in each hotel department.

Solid Waste Management

THE 101 Bogor Suryakancana Hotel has implemented waste sorting based on its type and collaborated with related partners for solid waste processing. However, it is necessary to provide separate waste bins (organic and inorganic) in the room area, corridors and hallways, accompanied by clear guidelines on the type of waste and how to properly dispose of it to encourage guest participation in the waste management program.

Energy Efficiency

THE 101 Bogor Suryakancana Hotel uses an environmentally friendly AC system, conversion to LED lights, HVAC inverter technology, automatic energy control system, monitoring and maintenance, and a campaign in implementing energy efficiency.

Water Efficiency and Water Quality

THE 101 Bogor Suryakancana Hotel in the implementation of water efficiency and water quality, namely utilizing water efficiency technology, filtration and sterilization technology, running campaigns and monitoring water energy in the hotel. According to (Fakhriyah et al., 2021) in their research, smart water management is an effective management of water resources due to the use of technology such as sensors and IoT (internet of things) devices to maintain water quality and quantity automatically and in real time.

Air Quality Management (Indoor and Outdoor)

THE 101 Bogor Suryakancana Hotel implements the separation of smoking and non-smoking areas, planting trees, and conducting periodic air quality testing with air pollutant parameters SO₂, NO₂, H₂S, NH₃, CO, TSP.

1. SO₂ (Sulfur Dioxide) is a toxic gas produced from the combustion of fossil sulfur fuels such as diesel-fueled power plants (generators), kitchen areas that use LPG with sulfur content and oil-fueled water heaters.
2. NO₂ (Nitrogen Dioxide) is a reactive gas from high temperature combustion such as visitor vehicle engines or goods delivery in parking areas, and kitchen exhaust.
3. H₂S (Hydrogen Sulfide) is a gas from the decomposition of organic materials originating from wastewater drainage (septic tanks and grease traps).

4. NH₃ (Ammonia) is a basic gas from biological processes or chemical cleaners such as rotting food waste.
5. CO (Carbon Monoxide) is an odorless gas from imperfect combustion such as electric generators, and hotels with basement parking without exhaust fans.
6. TSP (Total Suspended Particulate) are solid or liquid particles that float in the air such as construction dust or building renovations, cigarette smoke in smoking areas, cooking activities (deep frying).

Noise Pollution Control

THE 101 Bogor Suryakancana Hotel shows that the average noise level on floors 1 to 7 is 43 dB, while the 8th floor has a noise level of 42 dB. The hotel implements several measures such as installing soundproof walls and routine decibel measurements as part of the evaluation and improvement of operational effectiveness to minimize noise pollution.

Wastewater Control and Management

THE 101 Bogor Suryakancana Hotel in the implementation of wastewater control and management carries out wastewater treatment with an aerobic system, namely STP based on aerobic bacteria to decompose waste, routine maintenance of STP for efficiency and compliance, and the stage of wastewater recycling process with rainwater filtration for watering plants. With integrated wastewater management will improve the hotel's sustainability performance.

Management of Toxic and Chemical Substance Disposal

THE 101 Bogor Suryakancana Hotel implements structured B3 waste management by providing dropbox facilities, information signs, working with certified parties in transporters and management as well as audits from the Environmental Service to ensure the hotel complies with environmental regulations and carries out safe waste storage procedures.

Impact of Green Hotel Implementation

Table 2 Percentage of Green Hotel Implementation at THE 101 Bogor Suryakancana Hotel

| No. | Variables | Score | Presentation | Level of Compliance |
|-----|-----------|-------|--------------|---------------------|
| 1 | X1 | 80 | 100% | Very Suitable |
| 2 | X2 | 36 | 90% | Very Suitable |
| 3 | X3 | 38 | 95% | Very Suitable |
| 4 | X4 | 16 | 80% | In accordance |
| 5 | X5 | 58 | 97% | Very Suitable |
| 6 | X6 | 60 | 100% | Very Suitable |
| 7 | X7 | 72 | 90% | Very Suitable |
| 8 | X8 | 40 | 100% | Very Suitable |
| 9 | X9 | 20 | 100% | Very Suitable |
| 10 | X10 | 47 | 78% | In accordance |
| 11 | X11 | 40 | 100% | Very Suitable |

Source: Data processed by researchers (2025)

Based on research data on the implementation of green hotels in supporting sustainable tourism at THE 101 Bogor Suryakancana Hotel, most of the indicators in the ASEAN Green Hotel Standard (AGHS) 2018 have been implemented very well. This is based on the achievement in the implementation of a percentage of 100% in the variables of environmental policies and hotel operational actions, energy efficiency, air quality management (indoor and outdoor), noise pollution control, and management of toxic and chemical substance disposal. Meanwhile, the implementation of the variables of the use of green products (90%), collaboration with local communities (95%), human resource development (80%), solid waste management (97%), water efficiency and water quality (90%), and wastewater management (78%) shows a strong commitment to sustainability although

there is still room for improvement, especially in the aspect of wastewater management. The impact of the implementation of this green hotel is not only seen in resource efficiency, but also in the economic aspect. In 2024, the hotel recorded annual electricity consumption of 1,567,423 kWh with stable fluctuations, and water use of 33,550 m³. Eco-friendly technologies such as LED lights, energy-efficient cooling systems, dual flush toilets, aerators, auto shut-off faucets, and water recycling systems play an important role in maintaining this efficiency. The hotel's solid waste management has referred to the principles of reduce, reuse, and recycle (3R). THE 101 Bogor Suryakancana Hotel in 2024 managed to achieve a profit of 1% above the target set, showing that the implementation of the sustainable green hotel concept can provide added value financially.

CONCLUSION

Based on this study, it can be concluded that the implementation of green hotels directly supports the Sustainable Development Goals (SDGs), especially SDG 6, SDG 7, SDG 12, and SDG 13 related to sanitation, clean energy, responsible consumption and production, and climate, where Bogor City, precisely at THE 101 Bogor Suryakancana Hotel, is one of the potential hotels with a strategic location that can optimize energy and environmental policies. However, there are still several aspects that need to be improved, such as optimizing wastewater management for operational purposes, strengthening more structured energy efficiency policies, and increasing education for staff and guests regarding the importance of sustainability in the hospitality industry.

This study uses the Sequential Exploratory Mixed Methods research method that combines qualitative and quantitative analysis, utilizing observation, interviews, questionnaires, and documentation as data collection techniques. Quantitative data were collected by distributing questionnaires to 20 respondents with a purposive sampling type distributed via Google Form. Then the data was processed and analyzed using the Miles and Huberman data analysis model which includes data collection, data reduction, data display, and conclusion: drawing, verifying and descriptive statistical analysis with percentage calculations with 5 criteria

the level of suitability of the questionnaire results. From the results of this research analysis, it answers the existing problem formulation, namely:

1. Implementation of green hotels that have been applied in supporting sustainable tourism at THE 101 Bogor Suryakancana Hotel.
THE 101 Bogor Suryakancana Hotel has implemented the green hotel concept comprehensively in accordance with the ASEAN Green Hotel Standard (AGHS) 2018 indicators. The percentage of implementation shows that in its implementation it is above 50% which is at the appropriate and very appropriate level. This implementation is in line with the definition of sustainable tourism according to UNWTO (2005). However, there are several aspects that still need to be improved such as strengthening energy efficiency policies, wastewater management for operational purposes, and education for hotel staff and guests regarding the importance of sustainability in the hospitality industry.
2. The savings provided by implementing a green hotel can support sustainable tourism at THE 101 Bogor Suryakancana Hotel.
The use of energy and water-saving technologies such as LED lights, automatic sensors, dual flush toilets, aerators, air conditioning with environmentally friendly freon, and inverter technology in HVAC stabilizes resource consumption throughout 2024. Total annual electricity consumption of 1,567,423 kWh and water of 33,550 m³ shows consistent efficiency. This efficiency directly contributes to the achievement of hotel profits of 1% above the target budget profit.

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