



## Effectiveness of Sustainable Waste Management: A Case Study of the Housekeeping Department at Four Seasons Resort Bali at Jimbaran Bay

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### ABSTRACT

This study analyzes the effectiveness of waste management in the Housekeeping Department of Four Seasons Resort Bali at Jimbaran Bay using the 5P approach: planning, organizing, implementing, supervising, and transporting. A descriptive qualitative method was employed, with data collected through observation, interviews, and documentation. The findings reveal that during the planning phase, the resort established standard operating procedures (SOPs) for waste sorting and reduction. In the organizing phase, housekeeping staff are assigned specific waste management tasks. Implementation includes sorting waste into four categories: glass, paper, garden, and plastic, and replacing single-use plastic bottles with reusable glass bottles. Supervision is carried out regularly by the Village Chief to ensure adherence to SOPs. The study recommends enhancing employee training and raising environmental awareness to support the Sustainable Development Goals (SDGs) and contribute to environmental conservation.

## INTRODUCTION

Sustainable tourism is a concept that aims to balance economic, social, and environmental aspects, ensuring that tourism activities do not harm ecosystems but rather support environmental conservation (Satrio Wibowo & Arviana Belia, 2023). This approach emphasizes the wise management of natural resources, reduction of greenhouse gas emissions, effective waste management, promotion of social justice, and active participation of local communities in decision-making (Aminah, 2021). Addressing environmental damage is a serious concern in Indonesia, and effective waste management is considered a crucial entry point for achieving sustainable development goals (Eraku et al., 2023)

Waste is generally categorized into organic, inorganic, and hazardous and toxic materials (B3) (Sidik, 2024). Organic waste originates from living organisms, while inorganic waste, such as plastics and metals, is difficult to renew or hazardous and takes a long time to decompose (Kusmana et al., 2024). B3 waste, often containing mercury, includes items like paint cans and detergents, requiring specialized handling due to its harmful nature (Maimunah & Syarifuddin, 2021).

Many hotels in Bali have adopted the "green hotel" concept, integrating sustainable tourism principles into their operations (Putu et al., 2024). Four Seasons Resort Bali at Jimbaran Bay, a five-star hotel established 27 years ago, has implemented a comprehensive waste management system (Sandy, 2019). This resort has also achieved CHSE (Cleanliness, Health, Safety, and Environment Sustainability) certification since 2021, demonstrating its commitment to high standards of cleanliness and safety (Putu et al., 2024).

Despite these efforts, the hospitality sector still faces challenges in effectively implementing the 3R principles (Reduce, Reuse, Recycle) (Prasetyo, 2019). Many hotels struggle with efficient waste segregation, leading to recyclable materials being mixed with organic and other waste, hindering environmentally friendly efforts. Four Seasons Resort Bali at Jimbaran Bay categorizes its waste into glass, paper, garden, and plastic waste, and employs a temporary transit area for initial sorting before further processing or transfer to third parties.

The resort has taken significant steps to reduce single-use plastics by replacing plastic water bottles with reusable glass bottles, sourcing refill water locally to minimize carbon footprint (Eraku et al., 2023). While the resort acknowledges that it is not "one hundred percent environmentally friendly," consistent and dedicated efforts in waste management can significantly reduce environmental burdens. The high volume of waste generated and inconsistencies in waste sorting remain ongoing challenges (Kusmana *et al.*, 2024).

This research focuses on the five key processes of waste management: planning, organizing, implementation, supervision, and transportation, as applied within the Housekeeping Department of Four Seasons Resort Bali at Jimbaran Bay. Given that hotels operate continuously, generating constant waste and by-products, understanding the effectiveness of these processes is crucial.

This study aims to provide new insights to enhance waste management programs and contribute to environmental sustainability (Hanifah, 2018)

Despite the existing efforts and the resort's commitment to sustainability, there is a lack of in-depth studies specifically examining the effectiveness of waste management practices at Four Seasons Resort Bali at Jimbaran Bay. Previous research has highlighted the importance of waste management for sustainable development and the challenges in program implementation, but a detailed analysis of the 5P technique (planning, organizing, implementation, supervision, and transportation) within this specific context is missing. This study seeks to fill this gap by evaluating how these processes contribute to the resort's sustainability goals and identifying areas for improvement in employee training and environmental awareness.

## LITERATURE REVIEW

### *Effectiveness*

Any predetermined goal or goal can be achieved, then it is at that point that effectiveness has been realized (Arpandi & Aminah, 2023). Because if the goal or goal has been achieved according to what was previously planned, it is effective, and if the goal is not achieved, it means that the work done is not effective. Effectiveness is used as a benchmark to compare the plans and processes carried out with the results achieved.

### *Waste Management (5P Technique)*

Waste sorting techniques in hotels are one of the important steps in environmentally friendly waste management. In general, there are three types of waste identification, namely organic, inorganic, residue, and B3 (Hazardous and Toxic Materials), to ensure that each type of waste is managed appropriately. This sorting is usually carried out from the beginning by housekeeping employees who have been given an understanding of the importance of sorting waste according to categories. Supervision of this sorting process is usually carried out by the *relevant village chief* at the resort.

In general, waste management consists of several important stages. Waste *minimization* includes three main principles: *Reduce*, *Reuse*, and *Recycle*. Waste reduction can be done by limiting waste generation, reusing materials that can still be used, and recycling unused materials. The 3R (*Reduce*, *Reuse*, *Recycle*) strategy is a very important approach in waste management to reduce negative impacts on the environment. The use of plastic waste in creative products and services is one of the efforts to overcome the problem of plastic waste in Indonesia that can provide economic, social, and environmental benefits (Nurmalasari, 2024). By applying this principle, we not only reduce the amount of waste generated but also reuse existing resources. *Reduce* means reducing waste production by minimizing the use of single-use items and choosing products with minimal packaging (Eraku et al., 2023). *Reuse* is reusing used goods without first doing the process (Maimunah & Syarifuddin, 2021). On the other hand,

recycling processes waste that can be used into usable goods so that it has economic value (Maimunah & Syarifuddin, 2021).

### ***Sustainability***

Sustainability is an increasingly important concept in facing today's environmental, social, and economic challenges. Sustainability consists of three main pillars: environmental, social, and economic (Astuti et al., 2024). The environmental pillar emphasizes the need to maintain the health of the planet by using resources responsibly, reducing waste, and preserving biodiversity. The concept of sustainable tourism is closely co-existing with *the green tourism* program. *Green tourism* is a form of ecotourism development concept used in sustainable tourism practices that ensure the future need for adequate environmental, economic, and socio-cultural resources (Astuti et al., 2024).

### **METHODOLOGY**

This qualitative descriptive study will investigate the effectiveness of sustainable waste management within the Housekeeping Department of Four Seasons Resort Bali at Jimbaran Bay. Data collection will involve direct observation using an observation checklist focused on implementation, supervision, and transportation, in-depth interviews with the Environmental Manager, Executive Housekeeper, Village Chief, and housekeeping staff, and documentation analysis of relevant policies and information. The collected data will be analyzed using the 5P technique (Planning, Organizing, Implementation, Supervision, and Transportation) to evaluate the effectiveness of waste management policies and their contribution to the resort's sustainability goals.

### **RESULTS**

Four Seasons Resort Bali at Jimbaran Bay is a five-star resort that has been operating for over 27 years, demonstrating a long-standing commitment to sustainable waste management. Since 2021, the resort has held CHSE (Cleanliness, Health, Safety, and Environment Sustainability) certification, affirming its high operational standards. Its vision aligns with sustainable tourism, balancing economic, social, and environmental aspects through wise resource management and reduced environmental impact.

The resort actively implements the 3R principles (Reduce, Reuse, Recycle) as part of its "Four Seasons for Good" program, which focuses on environmental and social impact, contributing to the Sustainable Development Goals (SDGs). The Housekeeping Department, led by an Executive Housekeeper and supported by supervisors and staff, is central to managing cleanliness and waste, overseeing the entire process from sorting to transportation. Four Seasons Resort Bali at Jimbaran Bay operates in the accommodation services sector, providing a range of lodging facilities, including 147 villas and 9 residences, alongside other amenities for its guests. Complete details of the room facilities at Four Seasons Resort Bali at Jimbaran Bay can be seen in the following table:

Table 1.

Hotel Villas Facilities Four Seasons Resort Bali at Jimbaran Bay

<b>Villa Categories</b>	<b>Units</b>	<b>Facilities</b>
Imperial Villa	1	2 King bed & 2 single beds, one bedroom for butler,
Royal Villa	2	1 King bed & 2 single beds,.
Two Bedroom Villa	4	1 King bed & 2 single beds.
Ocean Front One Bedroom Villa	25	1 King bed /2 single beds.
Deluxe Ocean View One Bedroom Villa	27	1 King bed/2 single beds.
Ocean View One Bedroom Villa	39	1 King bed/2 single beds.
One Bedroom Villa Garden View	49	1 King bed/2 single beds.
Four Bedroom Residence Villa	2	Luxury & modern design architecture, 3 King beds & 2 single beds.
Three Bedroom Residence Villa	4	Luxury & modern design architecture, 2 King beds & 2 single beds.
Three Bedroom Garden Residence Villa	1	Luxury & modern design architecture, 2 King beds & 2 single beds, private butler.
Two Bedroom Garden Residence Villa	2	Luxury & modern design architecture, 1 King bed & 2 single beds, private butler.
Total Villas	147 Villas and 9 Residences	

Source : ( Room Division, 2025)

Table 1 provides a comprehensive breakdown of the diverse room accommodations offered at Four Seasons Resort Bali at Jimbaran Bay, which collectively include 147 villas and 9 residences. The resort features a variety of villa types, ranging from the expansive Imperial and Royal Villas to numerous One-Bedroom Villas with different views (Ocean Front, Deluxe Ocean View, Ocean View, and Garden View), catering to a wide array of guest preferences. Additionally, the table highlights the exclusive Residence Villas, available in Four-Bedroom, Three-Bedroom, and Two-Bedroom configurations, some of which include private butler services, underscoring the resort's commitment to luxurious and personalized guest experiences.. Four Seasons Resort Bali at Jimbaran Bay provides various choices of service, designed food, and drinks to pamper the taste of guests from various backgrounds. The following are the food and beverage service facilities available at the resort as follows:

Table 2.  
Food and Beverage Service Facilities

Restaurant	Description
Taman Wantilan	Offers a variety of breakfast menus such as Indonesian breakfast, Japanese breakfast, Korean breakfast, European country breakfast, egg specials, and vegetarian options. Features an open kitchen with chefs specializing in Asian and Western cuisine.
Sundara	A beachfront restaurant serving lunch and dinner with traditional Jimbaran grilled seafood, rich in flavor, perfect for enjoying the sunset view.
Alu	A casual poolside restaurant offering an à la carte menu with a variety of healthy and delicious options such as Buddha bowls, poke, and street food.
Coconut Grove	Located directly facing Jimbaran Beach, complete with a sunbathing area.
In Villa Dining	24-hour in-villa dining service with direct delivery from the resort's restaurants.
Telu	A bar serving local Balinese beverages such as arak, offering a unique experience with arak stored underground.
Jala Cooking Class	A venue for cooking and dining experiences in a traditional Balinese setting, featuring chefs who prepare fresh seafood dishes like pepes, seafood salad, and grilled prawns with Balinese spices.

Source: Room Division, 2025

Table 2 above provides an overview of the diverse dining options available at Four Seasons Resort Bali at Jimbaran Bay. Each restaurant offers a unique culinary experience, ranging from international breakfasts at Taman Wantilan and beachfront seafood dining at Sundara, to healthy casual meals at Alu and traditional Balinese cooking at Jala Cooking Class. Guests can also enjoy exclusive 24-hour in-villa dining, unwind with local beverages at Telu bar, or relax by the beach at Coconut Grove. These varied offerings reflect the resort's commitment to providing exceptional gastronomy while highlighting local culture and international flavors.

## DISCUSSION

Based on the interview results using the 5P Technique indicators about waste management housekeeping departments' operation with the Environmental Manager, Executive Housekeeper, Village Chief, and housekeeping department staff of Four Seasons Resort Bali at Jimbaran Bay, the data exposition is as follows:

***Environmental Manager Interview (Focus: Planning)***

Four Seasons Resort Bali at Jimbaran Bay has specific programs for managing each type of waste. Organic waste is processed into compost and animal feed with Jimbaran Lestari, while inorganic waste (paper, plastic, glass) is recycled with partners like Sangkara, Bali Bersih Recycle, and Eco Bali. Excess plastic waste is converted into solar fuel using a pyrolysis machine, and used soap bars are reprocessed by Bali Wise into new soaps for orphanages. The resort holds CHSE certification and is pursuing Greenkey certification, driven by high waste volumes, corporate sustainability goals, and ESG commitments.

***Executive Housekeeper Interview (Focus: Planning)***

Waste management planning in the Housekeeping Department is systematic, covering organization, implementation, supervision, and transportation according to SOPs. The main goal is for all employees to understand and be aware of the importance of waste sorting by type. Key Performance Indicators (KPIs) focus on accurate waste segregation to prevent mixing, with any non-compliance reported by third parties indicating ineffective management. This systematic sorting and collaboration with the Environmental department and third parties integrate waste management with the hotel's overall sustainability program.

***Village Chief Interview (Focus: Organization and Supervision)***

The housekeeping team is organized into two shifts (morning and afternoon) for each pantry area, with supervisors providing training and demonstrations on waste sorting using HCCP (Hazard Analysis Critical Control Point) Checklists after every shift. Supervisors ensure the availability of sorting tools for room attendants, especially to address challenges with wet waste like food scraps. Supervision involves checking HCCP Checklists and sorting areas, with mixed waste leading to departmental notifications and warnings during briefings.

***Housekeeping Staff Interview (Focus: Implementation and Transportation)***

Housekeeping staff ensure waste is sorted meticulously, item by item, at the end of each shift, following guidelines and waste types. Used soap bars are separated, and after sorting, pantries are cleaned and checklists are completed for accountability. The main challenges are wet waste (food scraps, bathtub flowers), which often mixes and is difficult to sort, requiring staff to use hand gloves for safety and hygiene. Transportation issues arise from waiting for sorting to finish, sometimes causing overtime for village support, particularly when moving heavy glass waste to the buggy car. Observation Checklist (Implementation, Supervision, Transportation) Observations on May 20-21, 2025

Table 3.  
Observation Checklist (Implementation, Supervision, Transportation)

No	Activity	Yes	No	Remarks
1	Waste has been sorted according to the waste categories at Four Seasons Resort Bali at Jimbaran Bay	✓		Waste has been sorted accordingly, although some food waste was still found sticking to plastic.
2	Waste is sorted by the room attendant at the end of each shift	✓		Room attendants sort waste at the end of each shift using hand gloves.
3	Trash is tied and tidied after the bin is full	✓		Full trash bins are collected and replaced with new garbage bags.
4	Supervisors inspect the waste sorting process for reporting purposes	✓		Supervisors monitor sorting activities using the HCCP checklist based on actual conditions.
5	Supervisors remind room attendants to use protective equipment during waste sorting	✓		Supervisors ensure the availability of hand gloves as protective tools during the sorting process.
6	Supervision results are communicated to room attendants to ensure sorting aligns with standard procedures	✓		Supervisors emphasize in briefings the importance of proper waste sorting according to SOPs to achieve the hotel's vision and mission.
7	Waste is transported regularly according to schedule		X	Waste is not transported on a regular schedule due to workload differences between room attendant teams.
8	Vehicles are available for waste transportation	✓		Buggy cars are available and used by Village Support for waste collection at the end of each shift.
9	Waste is disposed of in the temporary storage area according to waste categories at the resort	✓		Waste has been disposed of in the resort's temporary storage area according to the specific categories assigned at the TPS (Temporary Storage Site).

Source: Interview Results, 2025.

This research utilized observations and in-depth interviews with key personnel at Four Seasons Resort Bali at Jimbaran Bay to evaluate the effectiveness of waste management practices. Data collection focused on indicators such as implementation, supervision, and transportation, providing a

comprehensive view of the processes involved. The analysis employed the 5P Technique (planning, organizing, implementation, supervision, and transportation) to assess the execution of waste management policies within the resort's operations.

#### 1. planning

Planning is essential for achieving organizational goals through strategic development and structured work plans. At Four Seasons, the Environmental Manager oversees the overall waste management planning, while the Executive Housekeeper ensures that housekeeping programs are aligned with these strategies. This coordinated effort between departments is vital for effective waste management and supports the resort's broader sustainability initiatives.

#### 2. organizing

Organizing involves identifying, grouping, and structuring work relationships to achieve specific objectives effectively. The Village Chief plays a crucial role in organizing the housekeeping teams responsible for waste sorting, ensuring that each shift is equipped with the necessary personnel to manage waste efficiently. This clear organizational structure not only maximizes effectiveness but also ensures consistency in waste sorting practices across the resort, reinforcing the commitment to sustainability.

#### 3. Implementation

Implementation refers to the execution of the meticulously prepared waste management plan, which is critical for achieving desired outcomes. Housekeeping staff perform waste sorting at the end of each shift, facing challenges such as the mixing of wet waste, which complicates the separation process. To address these challenges, strict safety protocols, including the use of gloves and masks, are mandated to ensure that waste is handled properly and that staff safety is prioritized.

#### 4. supervision

Supervision is crucial for monitoring compliance with waste sorting procedures and ensuring that objectives are met. The Village Chief effectively oversees the waste sorting processes, providing guidance and corrections as needed to maintain adherence to Standard Operating Procedures (SOPs). Regular briefings and reminders during team meetings reinforce the importance of proper waste management practices and ensure that the staff is equipped with the necessary personal protective equipment.

ensure that the staff is equipped with the necessary personal protective equipment.

#### 5. transportation

Transportation involves the systematic collection and management of waste generated by hotel activities to maintain cleanliness and regulatory compliance. At the resort, waste is transported using a buggy car at the end of the night shift, with sorted waste collected from pantries and taken to a temporary disposal site for further processing. Despite facing challenges with the heavy load of glass waste and the timing of sorting completion, daily transportation ensures that

waste is managed effectively and contributes to the resort's environmental sustainability goals.

The waste management practices in the housekeeping department at Four Seasons Resort Bali at Jimbaran Bay have proven effective through a 5P analysis, characterized by thorough planning, a clear organizational structure, and routine supervision. These practices, which include sorting waste into categories such as glass, paper, garden, and plastic, align with the resort's "Four Seasons for Good" program, reinforcing its commitment to sustainability and the United Nations' Sustainable Development Goals (SDGs).

Despite these successes, challenges remain, particularly in the transportation of waste, especially regarding the volume and weight of glass. Addressing these issues will require innovative solutions, such as optimizing transportation schedules and utilizing assistive tools, to enhance efficiency and consistency. By tackling these challenges, Four Seasons can continue to serve as a model for sustainable waste management in the hospitality industry and further contribute to achieving environmental goals.

## **CONCLUSION AND RECOMMENDATIONS**

Based on the research results, data analysis using the 5P technique indicators indicates that waste management in the housekeeping department of Four Seasons Resort Bali at Jimbaran Bay is effectively implemented. This effectiveness aligns with the theory that an activity is considered effective when it adheres to the planning established by the Executive Housekeeper and Environmental Manager. Despite some operational challenges, the overall commitment to effectiveness remains strong, ensuring that sustainability targets are successfully realized.

To further enhance the effectiveness of sustainable waste management within the housekeeping department at Four Seasons Resort Bali at Jimbaran Bay, several improvements are recommended. Firstly, planning for waste transportation should be improved by evaluating and revising schedules and routes, taking into account varying workloads and the specific types of waste, such as heavier glass. Secondly, staff understanding of sustainability programs and the use of safety tools for waste sorting needs to be enhanced through regular "ice breaking" sessions to ensure comprehension of proper methods. Thirdly, the Village Chief should maintain strict supervision over staff waste sorting, actively coordinating and finding solutions for any challenges encountered during end-of-shift sorting. Lastly, specialized training should be provided to Village Support staff on efficient waste transportation techniques to prevent cross-contamination and maximize recycling processes.

## **FURTHER STUDY**

Future research is recommended to expand the scope of analysis beyond the Housekeeping Department at Four Seasons Resort Bali at Jimbaran Bay by involving other departments or hospitality establishments to allow comparative evaluation of sustainable waste management practices. In addition, future

studies may adopt quantitative or mixed-method approaches to measure the effectiveness of waste management programs in terms of cost efficiency, environmental impact reduction, and employee awareness. The inclusion of external factors such as government regulations, guest participation, and technological innovation in waste management is also suggested.

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