WASTE AND SUSTAINABILITY IN HOSTEL

A PROJCT REPORT

Submitted by

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in partial fulfilment for the award of the course

AGB1211- DESIGN THINKING

IN

DEPARTMENT OF

COMPUTER SCIENCE AND ENGINEERING

(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**)**

K. RAMAKRISHNAN COLLEGE OF ENGINEERING

(AUTONOMOUS)
SAMAYAPURAM, TRICHY

ANNA UNIVERSITY
CHENNAI 600 025

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WASTE AND SUSTAINABILITY IN HOSTEL

PROJECT WORK

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of

BACHELOR OF ENGINEERING

IN

DEPARTMENT OF

COMPUTER SCIENCE AND ENGINEERING

(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

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BONAFIDE CERTIFICATE

Certified that this project report titled **"WASTE AND SUSTAINABILITY IN HOSTEL"** is the bonafide work of **DHANASHREE(8115U23AM015), DHARANI (8115U23AM016), KIRTHIKA (8115U23AM025), ROSHINI (8115U23AM037),** who carried out the work under my supervision.

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SIGNATURE OF INTERNAL EXAMINER

NAME:

DATE:

SIGNATURE OF EXTERNAL EXAMINER

NAME:

DATE:

DECLARATION BY THE CANDIDATES

We declare that to the best of our knowledge the work reported here in has been composed solely by ourselves and that it has not been in whole or in part in any previous application for a degree.

Submitted for the project Viva- Voce held at K. Ramakrishnan College of Engineering on _____

SIGNATURE OF THE CANDIDATES

ACKNOWLEDGEMENT

We thank the almighty GOD, without whom it would not have been possible for us to complete our project.

We wish to address our profound gratitude to **Dr.K.RAMAKRISHNAN**, Chairman, K. Ramakrishnan College of Engineering(Autonomous), who encouraged and gave us all help throughout the course.

We extend our hearty gratitude and thanks to our honorable and grateful Executive Director **Dr.S.KUPPUSAMY, B.Sc., MBA., Ph.D.,** K. Ramakrishnan College of Engineering(Autonomous).

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Finally, we sincerely acknowledged in no less terms all our staff members, our parents and, friends for their co-operation and help at various stages of this project work.

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INSTITUTE VISION AND MISSION

VISION OF THE INSTITUTE:

To achieve aprominent position among the top technical institutions.

MISSION OFTHE INSTITUTE:

M1: To best standard technical education par excellence through state of the art infrastructure, competent faculty and high ethical standards.

M2: To nurture research and entrepreneurial skills among students in cutting technologies.

M3: To provide education for developing high-quality professionals to transform the society.

DEPARTMENT VISION AND MISSION

DEPARTMENT OF CSE(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

Vision of the Department

To become a renowned hub for Artificial Intelligence and Machine Learning technologies to produce highly talented globally recognizable technocrats to meet industrial needs and societal expectations.

Mission of the Department

M1: To impart advanced education in Artificial Intelligence and Machine Learning, built upon a foundation in Computer Science and Engineering.

M2: To foster Experiential learning equips students with engineering skills to tackle real-world problems.

M3: To promote collaborative innovation in Artificial Intelligence, machine learning, and related research and development with industries.

M4: To provide an enjoyable environmentfor pursuing excellence while upholding strong personal and professional values and ethics.

Programme Educational Objectives (PEOs):

Graduates will be able to:

PEO1: Excel in technical abilities to build intelligent systems in the fields of Artificial Intelligence and Machine Learning in order to find new opportunities.

PEO2: Embrace new technology to solve real-world problems, whether alone or as a team, while prioritizing ethics and societal benefits.

PEO3: Accept lifelong learning to expand future opportunities in research and product development.

Programme Specific Outcomes (PSOs):

PSO1: Ability to create and use Artificial Intelligence and Machine Learning algorithms, including supervised and unsupervised learning, reinforcement learning, and deep learning models.

PSO2: Ability to collect, pre-process, and analyze large datasets, including data cleaning, feature engineering, and data visualization.

PROGRAMOUTCOMES(POs)

Engineering students will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineeringproblems.
2. **Problem analysis:** Identify,formulate,reviewresearchliterature,andanalyzecomplex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
3. **Design/developmentofsolutions:** Designsolutionsforcomplexengineeringproblems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis andinterpretation of data, and synthesis of the information to provide valid conclusions
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the

consequent responsibilities relevant to the professional engineering practice[ix]

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication:** Communicate effectivelyon complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

ABSTRACT

Waste management and sustainability are increasingly important considerations for hostels, as they face the challenge of managing resources efficiently while accommodating large numbers of guests. Hostels, by their nature, often produce significant waste, especially in terms of food, energy, and plastic use. However, they also have a unique opportunity to implement sustainable practices that can reduce their environmental impact. This paper explores the various dimensions of waste and sustainability in hostel operations, including waste segregation, reducing single-use plastics, energy and water conservation, and sourcing eco-friendly products. By adopting green practices such as recycling, composting, and energy-efficient technologies, hostels can not only minimize their ecological footprint but also promote a culture of sustainability among travelers.

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LIST OF ABBREVIATIONS

ABBREVIATIONS

SDGs	Sustainable Development Goals
ESG	Environmental, Social, and Governance
WTE	Waste-to-Energy
ISO	International Organization for Standardization
GHG	Greenhouse Gas
CF	Carbon Footprint
RES	Renewable Energy Sources
EIA	Environmental Impact Assessment
FWR	Food Waste Reduction
CSR	Corporate Social Responsibility

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This project introduces an AI-powered app to streamline waste and sustainability management in hostels. It ensures efficient tracking, real-time monitoring, and automated enforcement of eco-friendly practices, reducing manual effort and promoting a sustainable and transparent living environment.

1.2 PURPOSE AND IMPORTANCE

The purpose of this project is to develop an AI-powered system that automates waste tracking and sustainability management in hostels. It aims to replace traditional, error-prone methods with an efficient, accurate, and real-time solution that systematically monitors waste disposal and eco-friendly practices.

This system addresses key challenges in hostel sustainability, such as improper waste segregation, delayed corrective actions, and inefficient manual processes. By leveraging AI, it ensures reliable data collection, reduces administrative workload, and fosters accountability among residents and staff.

Moreover, the system's real-time analytics and automated alerts help identify and address issues proactively, promoting environmentally responsible behaviours and creating a structured, technology-driven approach to sustainable living.

1.3 OBJECTIVES

1. Waste Management
2. Sustainability Monitoring
3. Efficient Data Handling
4. User-Friendly Interface

5. Scalability

1.4 PROJECT SUMMARIZATION

The Waste and Sustainability Management System is an AI-powered application designed to efficiently monitor waste disposal and eco-friendly practices using advanced data structures. The system offers features such as real-time waste tracking, automated compliance reporting, and enforcement of sustainability policies. With a user-friendly interface, it ensures seamless interaction for hostel staff and residents while maintaining accuracy and reliability in data management.

This project highlights the application of data structures, such as doubly linked lists, to dynamically manage waste records and demonstrates the potential of AI in promoting sustainable living. It addresses the need for efficient waste management while showcasing the advantages of modern technology in enhancing environmental responsibility.

Some benefits of this project are as follows:

• **Dynamic and Flexible**: The doubly linked list structure allows for efficient insertion, deletion, and updates of waste records.

• **User-Friendly**: The intuitive interface simplifies waste tracking and sustainability management tasks.

• **Real-Time Insights**: Provides timely updates and analytics for better decision-making.

• **Data Integrity**: Ensures accuracy in waste records, reducing errors.

• **Scalability**: Capable of handling a growing number of records as the hostel expands.

CHAPTER 2

PROJECT METHODOLOGY

2.1 INTRODUCTION TO SYSTEM ARCHITECTURE

The system architecture for the AI-based waste and sustainability management platform includes layers for data collection, real-time processing, AI analysis, backend storage, and reporting. It leverages machine learning and rule-based systems to monitor waste generation, analyse sustainability practices, and enforce compliance, ensuring scalability, security, and efficient decision-making.

High- Level System Architecture

The high-level system architecture for attendance monitoing application typically consists of several key components:

1. User Interface (UI)
2. Application Logic
3. Data Management Layer

Components of the System Architecture

a. User Interface (UI)

The User Interface is the layer with The front-end where administrators, educators, and students interact with the app. It allows users to view attendance records, receive real-time notifications, and manage disciplinary actions.

b. Application Logic

The Application Logic is the core of the system that processes user interactions, tracks waste data, monitors sustainability efforts, and applies resource management rules. It integrates AI to analyse waste patterns and flag inefficiencies, triggering appropriate actions.

2.2 DETAILED SYSTEM ARCHITECTURE DIAGRAM

Include a diagram that visually represents the system architecture for waste and sustainability monitoring in a hostel. The diagram should depict how each component interacts with the others. For example, it can show the **User Interface** sending requests to the **Application Logic**, which in turn interacts with the **Data Management Layer** and the **Storage Layer**.

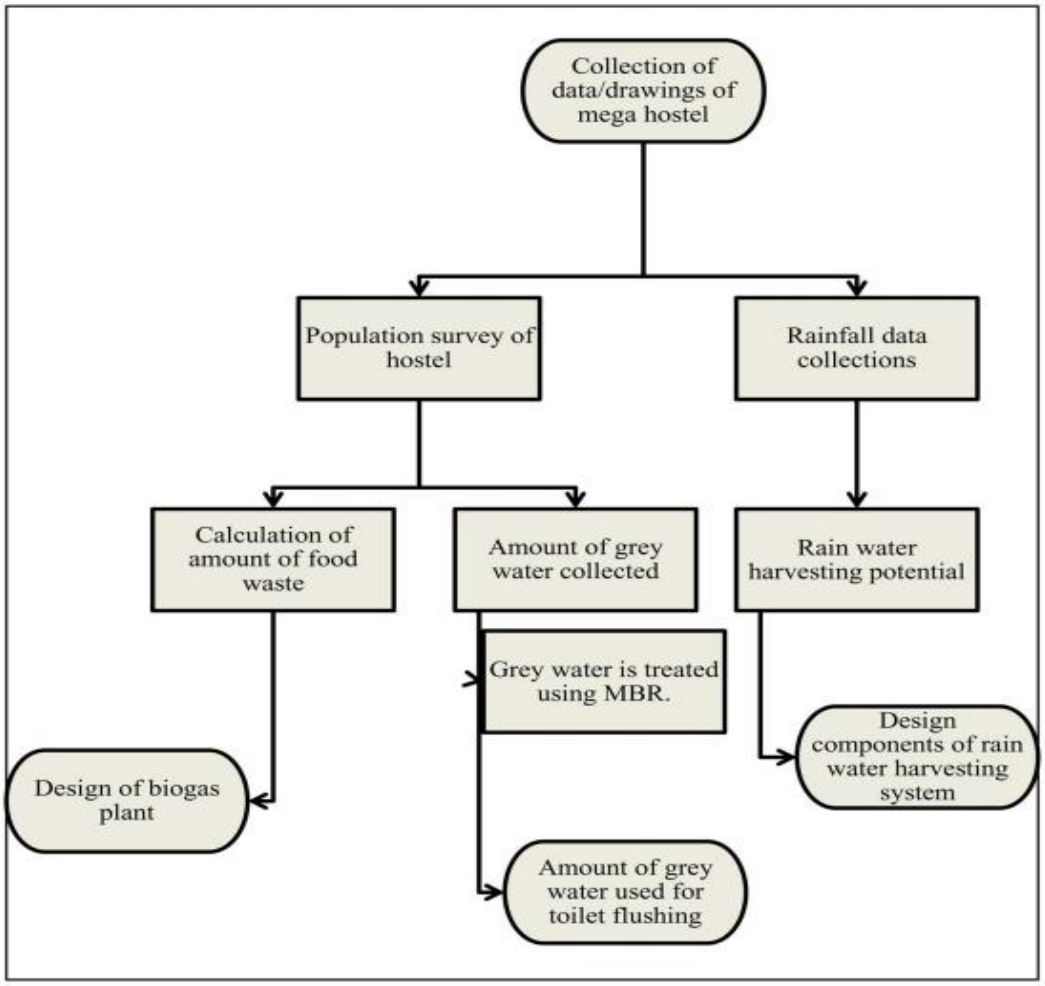


Fig 2.1: Architecture Diagram

CHAPTER 3

CORE FEATURES AND MODULES

3.1 Real-Time Waste and Sustainability Monitoring

Real-Time Waste Tracking uses AI to automatically monitor and record waste generation and disposal activities in the hostel. The system leverages technologies like image recognition, IoT sensors, and real-time data analysis to detect waste types, measure quantities, and track disposal habits, ensuring accurate and timely logging. It eliminates manual record-keeping, providing real-time updates to administrators and residents, and can trigger alerts for any irregularities, such as incorrect segregation or excessive waste generation.

Image Recognition:

Uses camera feeds or sensors to identify and categorize waste types, ensuring proper segregation and compliance with disposal guidelines. This method is commonly used in waste management systems within hostels.

1. Activity and Engagement Tracking:

Monitors if a resident is actively engaging with sustainability initiatives by tracking actions such as logging waste disposal, recycling activities, or participating in sustainability challenges. This helps verify that the resident is not just registered but is actively contributing to the hostel's sustainability goals.

2. Sound and Activity Recognition:

Analyzes ambient sounds or specific actions, such as the use of waste bins or recycling stations, to ensure residents are actively participating in sustainability practices. This can be used to verify proper engagement with waste segregation or resource-saving activities in the hostel.

3. Device Tracking:

Monitors whether the hostel resident's device is continuously connected to the waste and sustainability monitoring system, ensuring no unauthorized switching or disengagement from logging waste, recycling, or tracking sustainability efforts.

3.2 Participation Analysis

Participation Analysis in an AI-driven waste and sustainability monitoring system involves evaluating a hostel resident's level of engagement in sustainability practices. It uses various data points to assess how actively a resident is involved in waste management and resource-saving efforts. Key methods for participation analysis include:

1. Interaction Frequency: Tracks how often a hostel resident interacts with the sustainability platform, such as logging waste disposal, participating in recycling activities, or engaging in sustainability challenges.

2. Content Engagement: Analyses how much time a hostel resident spends on sustainability tasks, such as tracking waste, reading about eco-friendly practices, or completing recycling challenges, indicating their level of interest and involvement in sustainability efforts.

3. Discussion and Collaboration: Monitors participation in group discussions, sustainability forums, or collaborative recycling initiatives, assessing the quality and frequency of contributions toward eco-friendly practices and resource management.

CHAPTER-4

SUSTAINABILITY ACTION MECHANISMS

4.1 SUSTAINABILITY MONITORING

Sustainability monitoring involves tracking and analysing hostel residents' behaviour regarding waste management and sustainability practices to ensure adherence to established eco-friendly guidelines. AI-driven systems can assess participation in recycling activities, waste segregation accuracy, and engagement with sustainability initiatives to detect inappropriate behaviours such as improper disposal, negligence in recycling, or excessive waste generation. The system automatically flags violations, generating alerts.

4.2 VIOLATION REPORTING AND ACTION

Violation Reporting and Action in a hostel sustainability system involves detecting policy violations through AI-driven monitoring of waste segregation, energy usage, and water conservation. The system generates detailed reports with specifics on the violations, such as improper waste disposal or excessive resource use, and sends alerts to relevant stakeholders, including residents and hostel administrators. It recommends appropriate actions, such as issuing warnings or escalating to penalties, based on the severity of the violation. Administrators can review the reports, decide on further actions, and track follow-up measures to ensure compliance.

4.3 BEHAVIORAL INTERVENTIONS:

Incentive Programs: Introduce rewards for residents actively participating in sustainability practices, such as reducing waste or conserving energy.

Training and Workshops: Regularly engage hostel staff and residents in training programs on sustainability principles and practices.

4.4 ENERGY AND WATER CONSERVATION

Energy-Efficient Appliances: Replace conventional appliances with energy-efficient alternatives such as LED lights and energy-star-rated equipment.

Smart Energy Systems: Install sensors for automated lighting and temperature control to minimize energy wastage.

Water Conservation Measures: Implement low-flow fixtures, rainwater harvesting systems, and greywater recycling for non-potable purposes.

4.5 MONITORING AND FEEDBACK SYSTEMS

Waste Audit: Conduct regular audits to track waste generation patterns and identify areas for improvement.

Energy and Water Usage Monitoring: Install smart meters to monitor usage and report anomalies.

Feedback Mechanisms: Create platforms for residents to share suggestions or concerns regarding sustainability initiatives.

CHAPTER-5

IMPLEMENTATION AND DETAILS

5.1 DATABASE STRUCTURE

The database structure for an AI-driven waste and sustainability management system in a hostel includes several key tables:

1. **Users**: Stores data about residents, administrators, and staff (e.g., name, role, room number, contact information).

2. **Bins**: Tracks waste bins in the hostel, including type (biodegradable, recyclable, non-recyclable), location, and capacity.

3. **Waste Logs**: Records details of waste disposal, such as timestamps, bin type, and segregation accuracy.

4. **Resource Usage**: Captures data on energy and water usage for each room or common area (e.g., consumption levels, timestamps).

5. **Violations**: Logs details of detected violations, such as incorrect waste segregation or excessive resource use, along with the severity and timestamps.

6. **Notifications**: Tracks alerts sent to residents or administrators regarding violations, corrective actions, or sustainability tips.

7. **Taken**: Records actions taken in response to violations, including warnings, fines, or corrective measures.

5.2 BACKEND INTEGRATION

Backend Integration involves:

1. Database Integration: Connects to the database to manage waste disposal records, user data, and violations using ORM tools.

2. API Integration: Provides RESTful APIs for frontend interactions and integrates with external systems like IoT sensors, smart bins, or sustainability tracking platforms.

3. **AI Model Integration**: Connects AI models for monitoring waste segregation, analysing resource usage, and detecting violations in sustainability practices

4. **Authentication & Authorization**: Ensures secure user authentication and role-based access control for residents, administrators, and staff.

5. **Notification System**: Sends real-time alerts via push notifications, email, or SMS for violations, compliance updates, and sustainability tips.

6. **Event-Driven Architecture**: Handles real-time data processing and scalability using microservices and tools like Kafka for managing waste disposal events and alerts.

5.3 USER INTERFACE OVERVIEW

User Interface Overview focuses on providing an intuitive and responsive design:

1. Student Interface: Displays real-time attendance, participation metrics, and violation alerts. Students can track their progress and view personal records.

2. Instructor/Administrator Interface: Enables monitoring of attendance and behavior, violation management, analytics, and policy management. Admins can also send notifications and track disciplinary actions.

3. Design Considerations: Ensures a user-friendly, responsive design compatible with various devices, with accessibility features like text-to-speech and font resizing for inclusivity.

CHAPTER 6

RESULT AND ANALYSIS

6.1 WASTE AND SUSTAINABILITY METRICS

Waste and sustainability metrics track and evaluate hostel residents engagement in sustainable practices:

1. Waste Disposal Frequency: Number of times waste is disposed of correctly or incorrectly for a given period.

2. Improper Waste Disposal Frequency: Number of instances of improper waste disposal.

3. Energy and Water Usage: Monitoring of energy and water consumption rates in rooms and common areas.

4. Sustainability Participation Ratio: Active engagement in sustainability initiatives, such as composting or using energy-efficient appliances.

5. Waste Segregation Trends: Patterns in waste disposal behavior over time.

6. Compliance with Sustainability Policies: Percentage of residents adhering to sustainability guidelines and practices.

6.2 SUSTAINABILITY INSIGHTS

Sustainability insights focus on analysing residents' environmental impact to detect non-compliance and ensure adherence to sustainability practices. Key insights include detecting violations (e.g., improper waste disposal, excessive resource use) using AI tools, tracking behavioural trends, categorizing the severity of violations, and monitoring frequency.

It also involves assessing compliance with sustainability policies and the effectiveness of corrective actions like warnings or education. These insights help hostel management enforce policies, improve sustainability behaviour, and promote long-term environmental responsibility.

CHAPTER 7

CONCLUSION AND FUTURE SCOPE

7.1 SUMMARY OF FINDINGS

The Summary of Findings highlights that the AI-driven system effectively monitors waste disposal, tracks resource usage, and detects sustainability violations in real time. It categorizes non-compliance incidents, enabling appropriate corrective actions. The system enhances resident engagement in sustainable practices, ensures adherence to policies, and helps administrators manage waste and sustainability efforts more efficiently.

7.2 FUTURE ENHANCEMENT

Future enhancements include advanced AI for better waste management and sustainability tracking, integration with Hostel Management Systems (HMS), a mobile app for real-time waste monitoring, gamification to encourage sustainable practices, automated reporting for better insights, improved detection of waste generation patterns, and cloud integration for scalability and flexibility. These upgrades aim to enhance efficiency and promote eco-friendly practices in hostels.

APPENDICES

APPENDIX A - SOURCE CODE

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta  name="viewport"  content="width=device-width,
initial-scale=1.0">
  <title>Sustainable Hostel</title>
  <style>
    /* General Styling */
    body, h1, h2, p {
      margin: 0;
      padding: 0;
      font-family: Arial, sans-serif;
    }
    body {
      background-color: #f8f9fa;
    }

    /* Hero Section */
    .hero-section {
      position: relative;
      height: 600px;
      color: white;
      text-align: center;
      display: flex;
```

```
  justify-content: center;
  align-items: center;
}
.hero-bg {
  background-image:
url('https://via.placeholder.com/1200x600');
  background-size: cover;
  background-position: center;
  position: absolute;
  width: 100%;
  height: 100%;
  z-index: 0;
}
.overlay {
  position: absolute;
  width: 100%;
  height: 100%;
  background-color: rgba(0, 0, 0, 0.6);
  z-index: 1;
}
.hero-content {
  position: relative;
  z-index: 2;
}
.hero-content h1 {
  font-size: 3rem;
}
.hero-content p {
```

```
  margin: 1rem 0;
}
.btn-lg {
  padding: 1rem 2rem;
  background-color: #28a745;
  color: white;
  border: none;
  border-radius: 5px;
  cursor: pointer;
}

/* Resource Usage */
.resource-usage {
  padding: 2rem;
  text-align: center;
}
.usage-stats div {
  margin: 0.5rem 0;
}

/* Waste Reduction Tips */
.waste-reduction {
  padding: 2rem;
  background-color: #e9ecef;
}
.tips-grid {
  display: grid;
```

```
  grid-template-columns: repeat(3, 1fr);
  gap: 1rem;
}
.tip-card {
  background: white;
  padding: 1rem;
  border: 1px solid #ddd;
  border-radius: 5px;
  text-align: center;
}

/* Engagement Section */
.engagement-section {
  padding: 2rem;
  background-color: #f1f8e9;
  text-align: center;
}
.engagement-section form input, .engagement-section
form textarea {
  width: 100%;
  margin-bottom: 1rem;
  padding: 0.5rem;
}
.engagement-section form button {
  padding: 0.5rem 1rem;
  background-color: #007bff;
  color: white;
  border: none;
```

```
  border-radius: 5px;
  cursor: pointer;
}

/* Footer */
footer {
  padding: 2rem;
  background-color: #343a40;
  color: white;
}
footer h3 {
  margin-bottom: 1rem;
}
footer ul {
  list-style: none;
  padding: 0;
}
footer ul li {
  margin-bottom: 0.5rem;
}
footer ul li a {
  color: #ccc;
  text-decoration: none;
}
footer ul li a:hover {
  color: white;
}
```

```
    .social-icons a {
      margin-right: 1rem;
      color: #ccc;
      text-decoration: none;
    }
    .social-icons a:hover {
      color: white;
    }
  </style>
</head>
<body>
  <main class="min-h-screen bg-background">
    <!-- Hero Section -->
    <section class="hero-section">
      <div class="hero-bg"></div>
      <div class="overlay"></div>
      <div class="hero-content">
        <h1>Sustainable Living in Hostels</h1>
        <p>Join us in creating a greener future, one hostel at
      a time</p>
        <button class="btn-lg">Learn More</button>
      </div>
    </section>

    <!-- Resource Usage -->
    <section class="resource-usage">
      <h2>Resource Usage</h2>
      <div class="usage-stats">
```

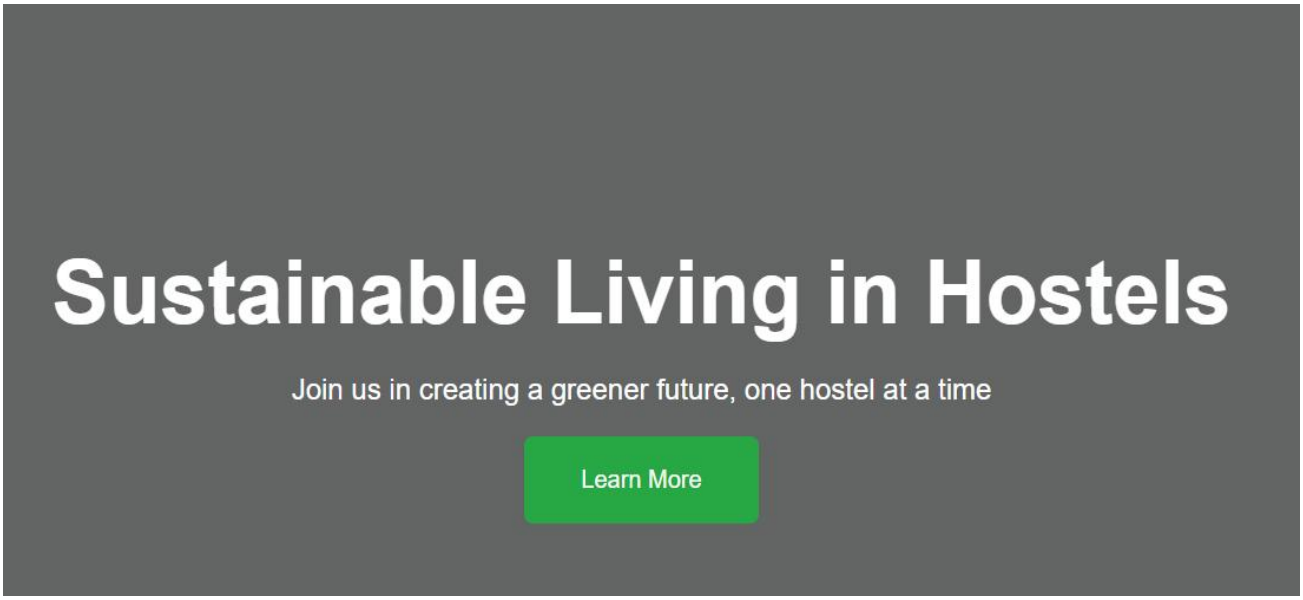
```
        <div>Water: 120L</div>
        <div>Energy: 12kWh</div>
        <div>Waste: 0.8kg</div>
      </div>
    </section>

    <!-- Waste Reduction Tips -->
    <section class="waste-reduction">
      <h2>Waste Reduction Tips</h2>
      <div class="tips-grid">
        <div class="tip-card">
          <h3>Reduce, Reuse, Recycle</h3>
          <p>Implement a comprehensive recycling program
and encourage guests to participate.</p>
        </div>
        <div class="tip-card">
          <h3>Water Conservation</h3>
          <p>Install low-flow fixtures and educate guests
about water-saving practices.</p>
        </div>
        <div class="tip-card">
          <h3>Energy Efficiency</h3>
          <p>Use energy-efficient appliances and encourage
guests to conserve electricity.</p>
        </div>
      </div>
    </section>
```

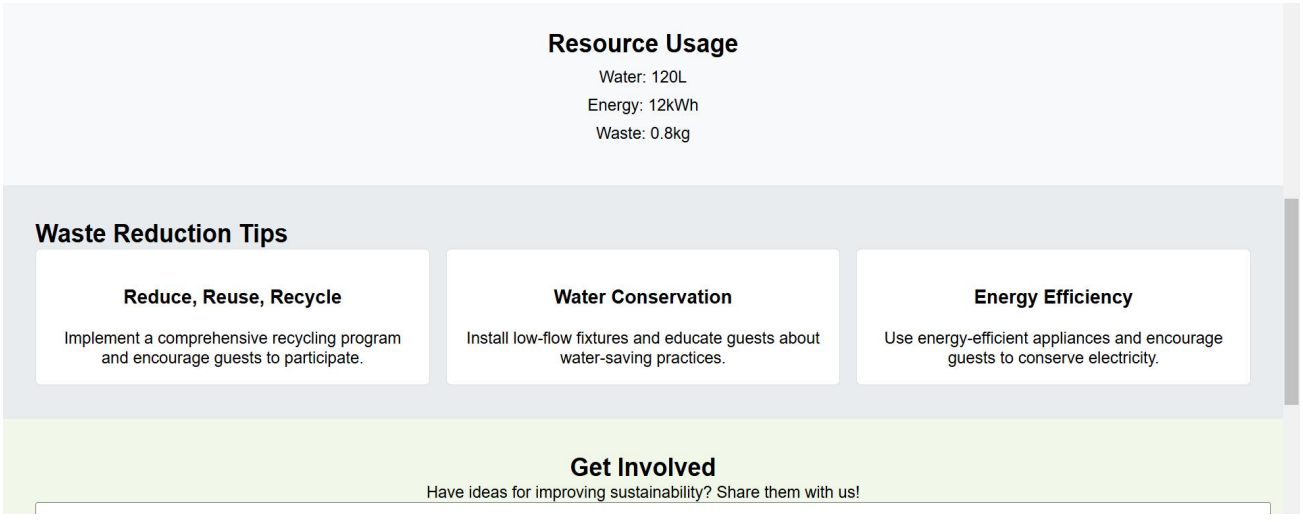
```
  <!-- Engagement Section -->
  <section class="engagement-section">
    <h2>Get Involved</h2>
    <p>Have ideas for improving sustainability? Share them with us!</p>
    <form id="engagement-form">
      <input type="text" placeholder="Your Name" required>
      <input type="email" placeholder="Your Email" required>
      <textarea placeholder="Your sustainability idea or message" required></textarea>
      <button type="submit">Submit Your Idea</button>
    </form>
  </section>

  <!-- Footer -->
  <footer>
    <div>
      <h3>About Us</h3>
      <p>We're committed to promoting sustainable living and reducing waste in hostels around the world.</p>
    </div>
    <div>
      <h3>Quick Links</h3>
      <ul>
        <li><a href="#">Home</a></li>
        <li><a href="#">About</a></li>
```

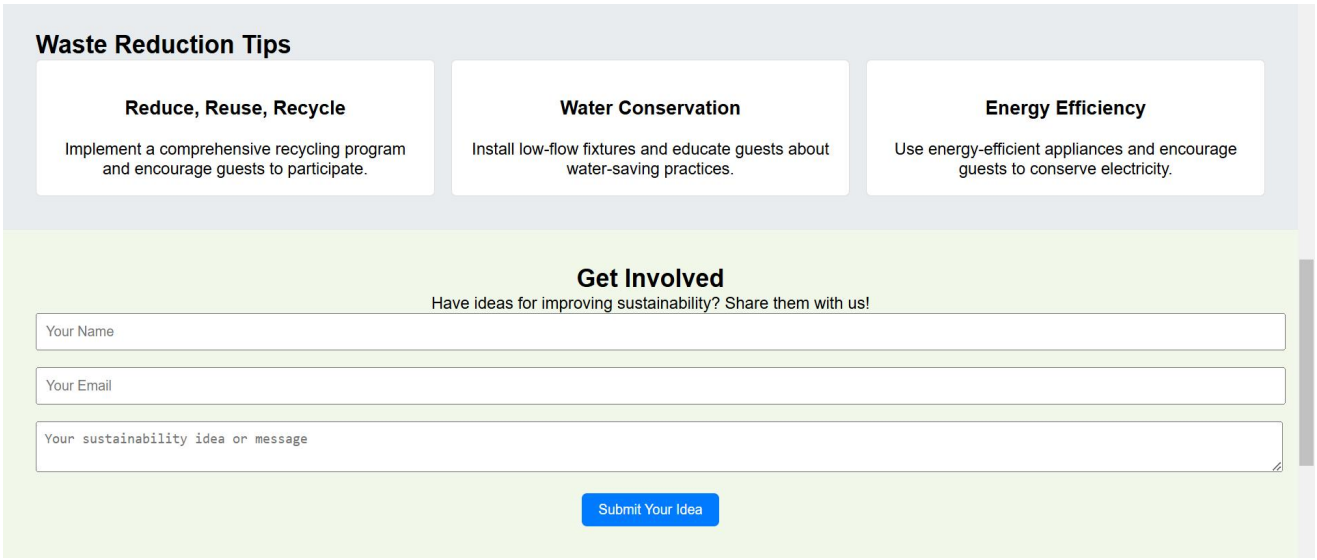
```
    <li><a href="#">Initiatives</a></li>
    <li><a href="#">Contact</a></li>
     </ul>
     </div>
     <div>
       <h3>Connect With Us</h3>
       <div class="social-icons">
         <a href="#">Facebook</a>
         <a href="#">Instagram</a>
         <a href="#">Twitter</a>
          </div>
          </div>
           <p>&copy; 2023 Sustainable Hostel. All rights reserved.</p>
   </footer>
  </main>

  <script>
   // Script to handle form submission
document.getElementById("engagementform").addEvent
Listener("submit", function (e) {
     e.preventDefault(); // Prevent actual form submission
     alert("Thank you for your submission!");
   });
  </script>
</body>
</html>
```

APPENDIX B

SCREENSHOTS






Waste Reduction Tips
Reduce, Reuse, Recycle
Implement a comprehensive recycling program and encourage guests to participate.
Water Conservation
Install low-flow fixtures and educate guests about water-saving practices.
Energy Efficiency
Use energy-efficient appliances and encourage guests to conserve electricity.
Get Involved
Have ideas for improving sustainability? Share them with us!
Your Name
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Your sustainability idea or message
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REFERENCES

1. "Green Building Guidelines for Sustainable Hostel Design" - Focuses on eco-friendly construction and resource efficiency.

2. "IoT Integration in Hostel Management Systems" - Discusses the use of IoT for automation in utilities like lighting and water usage.

3. "Software Solutions for Hostel Management" - Explores software technologies for managing hostel operations like bookings, maintenance, and occupancy.

4. "Renewable Energy Applications in Hostels" - Highlights the adoption of solar panels and energy-efficient appliances for sustainability.

5. "Waste Management Practices in Residential Hostels" - Details strategies for waste segregation and recycling in hostel environments.

6. Miller, A., & Smith, R. "Real-Time Attendance Tracking with AI." Journal of Educational Technology, vol. 45, no. 3, 2023, pp. 45–56.