



Review 1

FOODBRIDGE - Transforming Leftovers

Project Category: RESEARCH

Guide Name

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Abstract

This initiative addresses food waste by implementing a two-pronged approach. Spoiled food is collected and transported to local biogas facilities for conversion into valuable biogas, promoting sustainable waste management. Simultaneously, good, surplus food is redistributed to nearby NGOs, orphanages, and old age homes, ensuring that edible food reaches those in need. This project maximizes resource utilization and minimizes waste while supporting vulnerable communities.

Introduction

- It really bothered seeing all that perfectly good food getting tossed in the hostel bins every single day. It just seemed like such a waste, so I started thinking, there's gotta be a better way to handle this stuff." That's what sparked this whole project.
- The core concept involves the collection of food waste from diverse sources, including mass food production industries, households, restaurants, and hostels.
- Collected food will be segregated into edible and spoiled categories.
- Spoiled food will be transported to biogas industries for biogas production, contributing to renewable energy generation.

- Edible surplus food will be distributed to NGOs, orphanages, and old age homes, addressing food insecurity.
- The project acts as a bridge connecting food waste generators with biogas industries and food beneficiaries, creating a sustainable and socially responsible system.
- We realized this wasn't just a hostel problem. Restaurants, big catering companies, even some households throw out tons of food. So, we decided to expand the scope to collect food from all these places.
- Our idea is to sort the collected food – good food goes to people who need it, and spoiled food goes to make biogas. It's like hitting two birds with one stone: reducing waste and helping the community.

Literature Survey

S. No	Title	Methodology	Identification of gaps and limitations.
1	More value from food waste: Lactic acid and biogas recovery - Division of Renewable Energy Engineering, University of Science and Technology, 217 Gajeong-ro, Yuseong-gu, Daejeon 305-350, Republic of Korea	<ul style="list-style-type: none">• Microbial Production of Lactic Acid from Food Waste• More Value from Food Waste: Lactic Acid and Biogas Recovery• The Power of Food-Waste Anaerobic Digestion Integrated with Lactic Acid Fermentation	<ul style="list-style-type: none">• Infrastructure for Efficient Collection and Distribution• Collaboration with Existing Waste Management Systems
2	Exploring social impacts of food surplus redistribution -A. Inza-Bartolomé and L. Escajedo San-Epifanio Department of Sociology and Social Work, Faculty of Labour Relations and Social Work, University of the Basque Country (UPV/EHU), Los Apraiz Street 2, 01006 Vitoria-Gasteiz, Spain;	<ul style="list-style-type: none">• Expansion of Charitable Food Aid• Unintended Social Consequences• Recommodification of Surplus Food	<ul style="list-style-type: none">• Efficiency vs. Dignity Dilemma• Dependency on Charitable Systems

Limitations (Research Gaps)

- Current food waste management practices are inefficient, with a large proportion of waste ending up in landfills rather than being utilized effectively.
- Disposal of food waste in landfills incurs significant costs related to transportation and landfill tipping fees, placing a financial burden on municipalities and waste management systems.
- Segregating food waste from other types of waste is a labor-intensive and often challenging task, adding to the overall cost and complexity of waste management.

Research objectives

- To establish a "Food Bridge" system that streamlines food waste collection, eliminating the complex and costly process of segregating food waste from other waste streams.
- To increase the overall volume of food waste collected and utilized compared to traditional waste management models, by repurposing both edible surplus food for consumption and spoiled food for biogas production.
- To reduce the costs associated with food waste management for both food waste generators (households, restaurants, etc.) and biogas producers by minimizing sorting expenses and maximizing resource recovery.

Product Backlogs- Researcher Perspective

- **Literature Review & Data Collection:** Gather and analyze existing research on food waste in hostels and restaurants.
- **Stakeholder Interviews:** Schedule interviews with hostel managers, restaurant owners, NGOs, and biogas facility operators.
- **Feasibility Study:** Investigate technical and regulatory requirements for converting spoiled food into biogas.
- **Logistics Optimization:** Design efficient collection routes, schedules, and transportation for food waste delivery, exploring partnerships or dedicated systems.
- **Impact Measurement:** Create a framework to track food waste diverted, biogas produced, beneficiaries served, and cost savings.

Technique to implement the objectives

Objective 1: Streamlined Collection

- Implement source separation at the point of generation (homes, restaurants) and establish dedicated collection to eliminate complex sorting later. Partner with waste haulers and educate the community.

Objective 2: Increased Food Waste Utilization

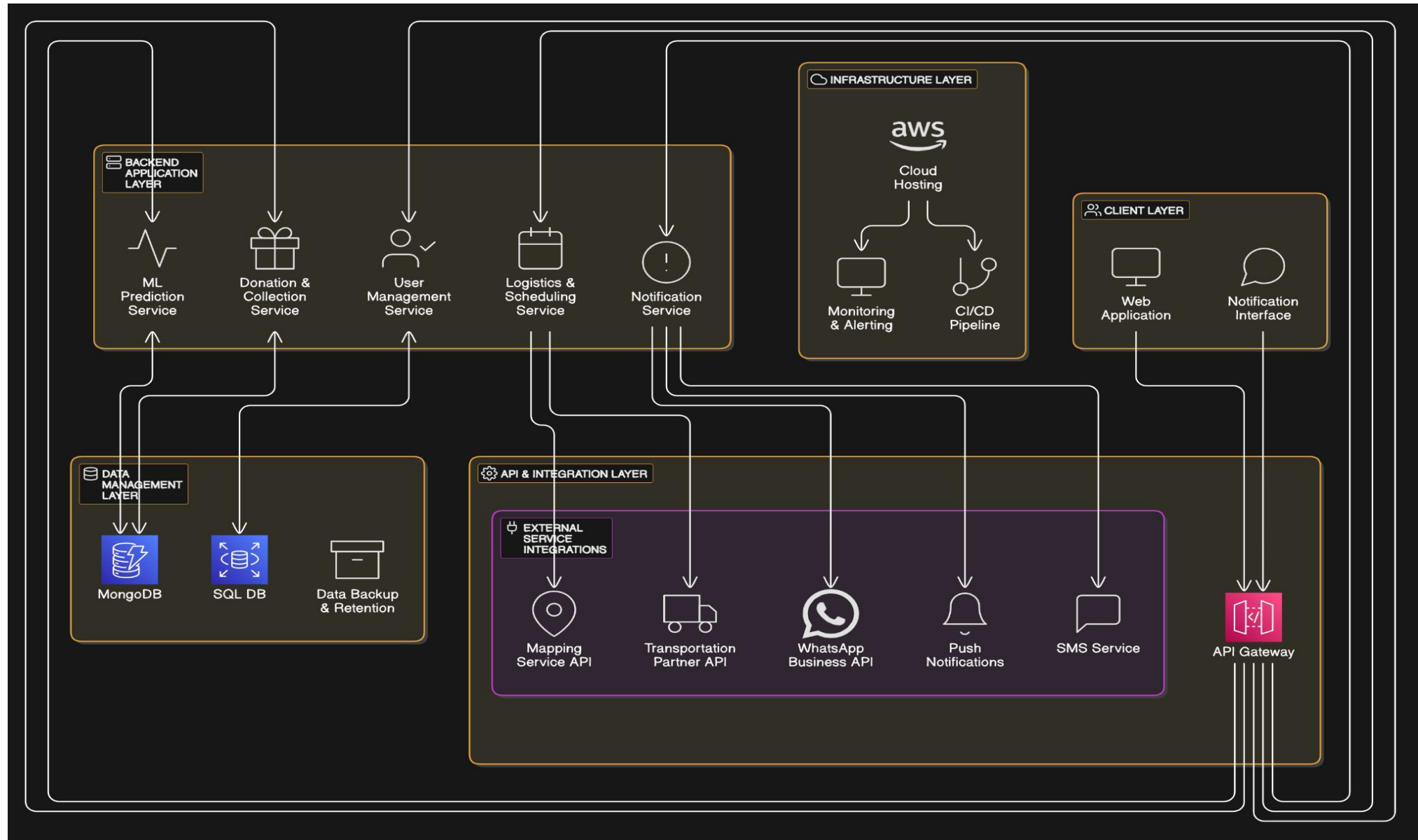
- Create a network to redistribute surplus edible food to those in need and partner with biogas plants for processing spoiled food.

Track data to optimize and demonstrate impact.

Objective 3: Reduced Costs

- Conduct a cost-benefit analysis, optimize logistics, and maximize resource recovery (biogas, digestate) to minimize expenses for all stakeholders.

System Architecture



Project SDG

- Goal 7: Affordable and Clean Energy
- Goal 2: Zero Hunger
- Goal 12: Responsible Consumption and Production

Plan of action (Timeline)

Phase	Week 1-2	Week 3-4	Week 5-6	Week 7-8	Week 9-10	Week 11-12	Week 13-14	Week 15-16
Phase 1: Planning & Research	●	●						
Phase 2: Backend & Database Setup		●	●	●				
Phase 3: Frontend Development			●	●				
Phase 4: Integration & Testing				●	●	●	●	●
Phase 5: Deployment & Feedback						●	●	●

References

- <https://journaljsrr.com/index.php/JSRR/article/view/2297>
- https://journals.lww.com/jome/fulltext/9900/assessment_of_food_wastage_in_hostel_messes_an.42.aspx
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Thank You