

SUSTAINABLE WASTE MANAGEMENT PRACTICES AT NAIA TERMINAL 1 ENVIRONMENTAL IMPACT AND COMMUNITY LIVELIHOOD DEVELOPMENT IN PARAÑAQUE CITY, PHILIPPINES

Dante B. Peolino Jr.

Independent Researcher,

107 A Luna AFPOVAI 6, Taguig City, Philippines

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Abstract: This study examines sustainable waste management practices at Ninoy Aquino International Airport (NAIA) Terminal 1 and their effects on communities in Parañaque City, Philippines. The research identifies existing waste disposal and segregation systems, assesses contributions to environmental sustainability, and explores how recycling programs may support livelihood opportunities. A mixed-method approach is used, including document review, on-site observation, and survey data from 70 residents. The work focuses on practical implementation and links between airport operations and local development.

Keywords: Airport waste management; Environmental sustainability; Livelihood development; NAIA Terminal 1; Parañaque City; Recycling; Solid waste management; Sustainability.

I. INTRODUCTION

Waste management has become a major environmental concern in urban areas, particularly in transportation facilities such as airports where large volumes of passengers generate different types of waste daily. Ninoy Aquino International Airport (NAIA) Terminal 1 serves both domestic and international travelers and remains one of the busiest airport terminals in the Philippines. The continuous movement of passengers, airport personnel, and commercial activities contributes to the accumulation of solid waste, making effective waste management essential for environmental protection and operational efficiency.

Sustainable waste management refers to proper segregation, collection, recycling, disposal, and monitoring of waste in ways that minimize environmental damage and promote responsible use of resources. In airport settings, these practices are necessary not only to maintain cleanliness and safety but also to reduce pollution and support long-term environmental goals. In the Philippine context, this is mandated by Republic Act No. 9003 (Ecological Solid Waste Management Act of 2000), which requires institutions to adopt waste reduction measures.

In Parañaque City, communities located near airport operations are directly affected by environmental practices within NAIA. Poor waste management may contribute to pollution and health risks, while organized recycling and recovery systems may create opportunities for livelihood and community participation. This relationship highlights the importance of integrating environmental management with local economic development.

The objective of this study is to examine sustainable waste management practices implemented at NAIA Terminal 1, evaluate their environmental impact, and determine how these practices may support livelihood development in nearby communities. The research uses a descriptive qualitative approach supplemented by quantitative survey data, with information gathered through document review, observation of waste handling procedures, and analysis of related environmental policies.

II. BODY OF ARTICLE

This section provides a complete description of the research work, including problem statement, methodology, findings, and discussion of results. All paragraphs are justified and organized in clear sections.

A. STATEMENT OF THE PROBLEM

This study seeks to answer the following questions:

1. What waste management practices are currently implemented at NAIA Terminal 1?
2. How do these practices contribute to environmental sustainability within the airport?
3. What challenges affect the implementation of sustainable waste management?
4. How may these practices contribute to livelihood opportunities in nearby communities of Parañaque City?

B. METHODOLOGY

The study uses a mixed-method design combining descriptive qualitative and supplementary quantitative elements. Qualitative data is gathered through review of available documents (including NAIA reports, government guidelines, and local programs) and on-site observation of waste handling procedures at NAIA Terminal 1. Quantitative data is collected via a survey of 70 residents from nearby communities, with a 4-point scale used to measure perceptions of program impact and demographic information gathered to characterize participants. Data analysis focuses on identifying patterns in practices, challenges, and potential for community development.

C. FINDINGS

TABLE I: FOUR-POINT SCALE FOR PERCEPTION MEASUREMENT
Option Weighted Mean Range Descriptive Rating

4	3.25 – 4.00	Strongly Agree
3	2.50 – 3.24	Agree
2	1.75 – 2.49	Disagree
1	1.00 – 1.74	Strongly Disagree

Note: Scale used to measure respondents’ perceptions of the social and economic impact of NAIA Terminal 1’s waste recycling programs.

TABLE II: FREQUENCY AND PERCENTAGE DISTRIBUTION OF PARTICIPANTS’ DEMOGRAPHIC PROFILE

N = 70

Demographic Factor Frequency Percentage (%)

1.1 AGE		
18–24 years	15	30.00
25–34 years	19	38.00
35–44 years	11	22.00
45–54 years	3	6.00
55 years and above	2	4.00
1.2 SEX		
Male	19	38.00
Female	31	62.00
1.3 EMPLOYMENT STATUS		
Employed full-time	24	48.00
Employed part-time	5	10.00

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Self-employed	5	10.00
Unemployed	15	30.00
Retired	1	2.00
1.4 INCOME		
Below ₱10,000	25	50.00
₱10,000 – ₱19,999	14	28.00
₱20,000 – ₱29,999	7	14.00
₱30,000 – ₱39,999	3	6.00
₱40,000 and above	1	2.00

Note: Demographic data collected from residents of Parañaque City communities near NAIA Terminal 1.

The study finds that NAIA Terminal 1 implements mandatory waste segregation at source, with designated bins for recyclables (paper, plastic, glass), general waste, and hazardous materials. Waste is collected on scheduled routes by licensed service providers, with recyclables sent to partner facilities for processing. These practices contribute positively to environmental sustainability by reducing improper disposal and maintaining sanitation standards required for high-traffic facilities.

Key challenges include high daily waste volumes (average 1.2 metric tons per day), limited public awareness among some passengers about segregation protocols, and gaps in coordination between airport management, local government, and community groups. Survey data shows 80% of respondents are of working age, with 30% unemployed and 50% earning below ₱10,000 monthly—indicating strong potential for livelihood initiatives linked to recycling.

D. DISCUSSION

The findings align with global best practices for airport waste management, where environmental compliance is combined with operational efficiency. NAIA’s systems demonstrate progress in meeting Republic Act No. 9003 requirements, though high waste volumes remain a challenge consistent with trends in other large Philippine transportation hubs. The demographic profile highlights opportunities for community-based recycling programs, which could create income through waste collection, sorting, and repurposing—similar to successful initiatives in other Philippine cities. Gaps in stakeholder coordination suggest the need for formal partnerships to scale these efforts.

III. CONCLUSION

This study concludes that sustainable waste management practices at NAIA Terminal 1 play an important role in environmental sustainability and operational cleanliness. Waste segregation, proper disposal, and recycling contribute to reducing environmental impact and improving airport sanitation.

Strengthened collaboration between airport management, the Local Government of Parañaque City, and surrounding communities may support livelihood development through recycling and environmental programs. Sustainable waste management should be strengthened through continued policy implementation, public awareness campaigns, and community participation. Future initiatives may focus on expanding recycling systems, increasing environmental education, and developing stronger partnerships with local groups to support both environmental protection and sustainable livelihood opportunities.

REFERENCES

- [1] Department of Environment and Natural Resources. Ecological Solid Waste Management Guidelines. Philippines: DENR Environmental Management Bureau, n.d.
- [2] Local Government of Parañaque City. Environmental and Waste Management Programs 2023–2025. Philippines: LGU Parañaque Planning and Development Office, n.d.
- [3] Manila International Airport Authority. Waste Management and Environmental Compliance Annual Report. Philippines: MIAA Corporate Communications Office, 2022.
- [4] Republic of the Philippines. Republic Act No. 9003: Ecological Solid Waste Management Act of 2000. Manila: Congress of the Philippines, 2000.
- [5] World Bank. Solid Waste Management and Sustainable Urban Development. Washington, D.C.: World Bank Urban Development Department, 2018.