



Knowledge, Attitude, and Practice toward Solid Waste Management among Coastal Communities in Banate Bay, Iloilo, Philippines

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ABSTRACT

The protection of coastal communities, especially their marine ecosystems, can be attributed to proper solid waste management for public health and livelihoods among residents. The municipal government of the coastal municipalities along Banate Bay has invested to address this situation, particularly through the acquisition of equipment such as garbage compactors and the strengthening of material recovery facilities. Despite this contextualized initiative, knowledge, attitude and practice remain insufficiently considered in terms of studies as to the limits in the implementation of policies. This study assessed the knowledge, attitudes, and practices related to solid waste management among household heads in the coastal barangays of Banate Bay, focusing on the interrelationships of the variables. A researcher-made survey questionnaire was administered to 12,308 household heads selected randomly to ensure equal representation among community members, conducted via face-to-face interviews. Computerized statistics were used to explore relationships among the identified variables. Results revealed strong knowledge of waste types, environmental impacts, composting, and national legislation (RA 9003); however, awareness of local laws and the ability to differentiate recyclable waste led to uneven practices. Respondents' attitudes were generally positive, showing strong support for government efforts, community participation, and policies such as banning single-use plastics, despite mixed views on individual responsibility. Their practices indicated high compliance with waste segregation, proper disposal, hazardous waste management, and composting; on the other hand, waste burning remained a persistent practice. In addition, a strong relationship was found among knowledge, attitude, and practice ($r = 0.922$ to 1.00 , $p < 0.05$), meaning that enhanced knowledge is associated with positive attitudes and better waste management behaviors. The Banate Bay coastal residents showed high environmental awareness and positive waste management practices, supported by government initiatives, community activities, and awareness campaigns. However, gaps in legal awareness and the persistence of malpractices such as burning stress the need for appropriate education, policy implementation, and adequate infrastructure. The strong relationships among knowledge, attitudes, and practices emphasize the importance of content-based educational and behavioral interventions to sustain solid waste management in coastal areas.

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1. Introduction.

Solid waste management (SWM) in coastal communities in Banate Bay is a crucial environmental issue. Improper waste disposal significantly threatens marine ecosystems, public health, and local livelihoods dependent on fisheries and tourism, which are the primary source of living for coastal residents. The four municipalities along Banate Bay, Iloilo, have recently made investments such as the acquisition of a garbage compactor to

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improve their SWM system, indicating strong institutional support for sustainable waste management (Iloilo Provincial Government, 2025). Despite these initiatives, local-level knowledge, attitudes, and practices (KAP) toward SWM remain unexplored, creating limits on the effectiveness of policies and programs.

The Ecological Solid Waste Management Act (RA 9003) mandates local government units to implement comprehensive SWM plans, yet challenges in awareness and participation persist (DENR, 2024). Recent studies emphasize that community engagement and socio-demographic factors significantly influence KAP and, consequently, the success of SWM initiatives (Langit et al., 2024).

In Banate Bay, solid waste management has become one of the pressing and compelling challenges confronting local government units in their focus on environmental protection. The volume of solid waste generated increasingly outstrips the agencies' capacity to mobilize the financial and technical resources essential to manage this concern effectively. In Banate Bay's coastal municipalities, solid waste management is often characterized by inefficient collection methods, limited waste collection systems, and inappropriate waste disposal practices. This concern has significantly affected daily life, making residents uncomfortable, unpleasant, and uneasy both in their homes and when going to markets.

Each municipality has its own material recovery facility, but their capacity is not sufficient, and the requirement for waste materials is lower than the volume of waste generated. Almost all of the waste fails to reach designated transfer points and instead litters the environment. There are also inadequate collection programs for recyclable waste to facilitate recycling at the material recovery facility. Consequently, existing legislation is insufficient to properly enforce the handling, treatment and processing of solid waste.

The widespread dumping of waste in streets, gutters, and other unauthorized locations rather than in appropriate landfills or incinerators is a common problem and difficult to address. Researchers have identified that improper waste disposal in coastal communities results in adverse health effects for coastal residents, specifically the pollution of air, water, and land. It also serves as a breeding ground for infectious diseases such as leptospirosis, foot-and-mouth disease (FMD), cholera, and typhoid fever. The literature also reveals that excessive exposure to hazardous waste materials can lead to respiratory issues, skin infections, and other health problems.

Against this background, the researcher was motivated to assess the knowledge, attitudes, and practices among residents in the coastal communities along Banate Bay. This study aims to explore the relationship between knowledge, attitude, and practice regarding solid waste management among household residents along Banate Bay.

2. Methods.

The study utilized a cross-sectional survey design to assess the KAP of coastal community members regarding SWM.

The main focus of the study was household head residents of the coastal barangays in Banate Bay, Iloilo. This investigation employed simple random sampling to ensure representation across coastal barangays and socio-demographic groups, with a total population of approximately twelve thousand three hundred eight (12,308) respondents. To achieve the purpose of this study, the researcher developed a questionnaire used to assess the knowledge, attitude and practice of solid waste management among household heads in the coastal barangays along Banate Bay. The questionnaire was divided into three (3) sections. Section A consisted of ten (10) items on knowledge of solid waste management (including awareness of RA 9003 and local waste management facilities) among households in the coastal barangays along Banate Bay; Section B consisted of ten (10) items on attitude toward solid waste management (environmental concern, willingness to participate) among households in the coastal barangays along Banate Bay; Section C consisted of ten (10) items on practice of solid waste management (segregation, disposal methods) among households in the coastal barangays along Banate Bay. Hence, a total of thirty (30) items constituted the questionnaire. The questionnaire was pre-tested for validity and reliability in a pilot study with thirty (30) respondents from a nearby coastal community. Face-to-face administration of the researcher-made questionnaire, translated into the local dialect, ensuring informed consent and confidentiality, was conducted by the researcher. Data were coded and analyzed using computerized statistics. Descriptive statistics (means, frequencies, percentages) were used to summarize KAP levels, and correlational statistics were used to examine relationships among knowledge, attitude, and practice, controlling for socio-demographic variables. Prior information was provided to seek consent from the household heads regarding the study's purpose, and confidentiality was assured.

3. Results.

3.1. Level of Knowledge of Coastal Residents on Solid Waste Management.

The investigation primarily assessed the knowledge of approximately twelve thousand three hundred eight (12,308) household heads regarding several aspects of solid waste management. The results showed the community's awareness and understanding of waste types, environmental impacts, local regulations, and proper waste handling practices. The majority of respondents revealed strong awareness of the types of waste commonly generated in their households: 67% (8,205) agreed and 33% (4,103) strongly agreed regarding their awareness of these waste types, showing enhanced knowledge in their respective residences. All respondents (100%, 12,308) strongly agreed on the environmental impacts of improper waste disposal on coastal waters and marine life; this result unanimously highlights a high level of environmental consciousness within the community regarding the significant effects of poor solid waste management. Community awareness of local laws and ordinances related to solid waste management was divided: 33% (4,102) strongly agreed, 33% (4,103) agreed, and 33% (4,103)

disagreed, implying a need for thorough and contextualized action in the dissemination and education of relevant policies and ordinances. Results revealed an even distribution regarding the ability to distinguish recyclable from non-recyclable waste: 33% (4,102) strongly agreed, 33% (4,103) disagreed, and 33% (4,103) strongly disagreed, implying a notable gap in knowledge of effective recycling practices. Residents showed strong familiarity with waste segregation in their respective households, with 67% (8,205) strongly agreeing and 33% (4,103) agreeing, indicating the success of awareness campaigns or educational efforts promoting segregation. Regarding proper waste disposal methods for hazardous waste such as batteries and chemicals, 33% (4,103) strongly agreed and 67% (8,205) agreed; although positive and suggesting good understanding, comprehensive and contextualized training must be properly implemented among coastal residents. Awareness of existing programs or services for waste collection and recycling revealed: 33% (4,103) strongly agreed, 33% (4,102) agreed, and 33% (4,103) disagreed, indicating that access to knowledge or services pertaining to solid waste management within the community should be regularly implemented and made available to all residents. All respondents (100%, 12,308) agreed that burning or illegally dumping waste could pose health hazards, indicating strong community awareness of the potential dangers of improper solid waste disposal. Regarding knowledge of Republic Act 9003 or other related policies or ordinances, 67% (8,206) strongly agreed and 33% (4,102) agreed, indicating that coastal residents are now aware through information dissemination and education policies and ordinances. Lastly, residents practice and apply knowledge of composting biodegradable waste, with 33% (4,102) strongly agreeing and 67% (8,206) agreeing, indicating positive attitudes towards sustainable waste management practices. Table 1 shows the data.

Table 1: Level of knowledge of coastal residents on solid waste management.

Items	4		3		2		1	
	(SA)		(A)		(DA)		(SDA)	
	f	%	f	%	f	%	f	%
1. The community is aware of the types of waste that are commonly generated in their household (e.g., plastics, organic, metals, glass, hazardous).	4103	33	8205	67	-	-	-	-
2. The community is aware of the environmental impacts of improper waste disposal on coastal waters and marine life.	12308	100	-	-	-	-	-	-
3. The community knows about any local laws or ordinances related to solid waste management in your community.	4102	33	4103	33	4103	33	-	-
4. The community can identify which wastes are recyclable and which are not.	4102	33	-	-	4103	33	4103	33
5. The community is familiar with the concept of waste segregation at the household level.	8205	67	4103	33	-	-	-	-
6. The community knows the proper methods for disposing hazardous waste such as batteries and chemicals.	4103	33	8205	67	-	-	-	-
7. The community is aware of programs or services for waste collection and recycling.	4103	33	4102	33	4103	33	-	-
8. The community understands the health risks associated with burning or dumping waste illegally.	-	-	12308	100	-	-	-	-
9. The community is aware about Republic Act 9003 (Ecological Solid Waste Management Act) or similar policies.	8206	67	4102	33	-	-	-	-
10. The community knows how to compost biodegradable waste.	4102	33	8206	67	-	-	-	-

Source: Author.

3.2. Level of Attitude of Coastal Residents on Solid Waste Management.

This section presents findings on the attitudes of the twelve thousand three hundred eight (12,308) coastal residents regarding solid waste management in their community, showing several views on responsibility, participation, efforts, and concerns. Coastal residents believed that individual actions could help reduce waste pollution: about one-third (33%, 4,130) strongly agreed, another third (33%, 4,102) agreed, while the remaining third (33%, 4,103) disagreed, indicating belief in the power of personal responsibility to affect waste pollution outcomes. Almost all respondents expressed willingness to participate in community-based waste management initiatives, with a 67% (8,205) strongly agreeing and 33% (4,103) agreeing, revealing a high level of community readiness to actively contribute to lowering waste volume. Regarding the role of local government units (LGUs), 33% (4,103) strongly agreed and 67% (8,205) agreed that their respective LGU is working to manage solid waste effectively and efficiently, suggesting community confidence in LGU-related waste management policies. Concern about health risks posed by improper waste disposal was notably high, with 67% (8,205) strongly agreeing and 33% (4,103) agreeing, a positive indicator of strong community awareness and concern for public health issues linked to poor waste management. Regarding personal responsibility for keeping the community clean, results showed 33% (4,130) strongly agreeing, 33% (4,102) agreeing, and 33% (4,103) disagreeing, suggesting that coastal residents are not fully aware of their responsibility and accountability. In terms of support for policies banning single-use plastics, 33% (4,102) strongly agreed and 67% (8,206) agreed, indicating that the community's aim of reducing plastic waste should be accompanied by supportive policies. A positive view of recycling was shown by 67% (8,206) strongly agreeing and 33% (4,102) agreeing, implying that the community and households value this practice as a positive indicator. Confidence and knowledge about proper waste disposal among residents revealed: 33% (4,130) strongly agreed, 33% (4,102) agreed, and 33% (4,103) disagreed, underscoring the importance of information dissemination and appropriate community training to boost confidence and competence. Almost all respondents believe in proper resource management, with 33% (4,103) strongly agreeing and 67% (8,205) agreeing, indicating that the promotion of waste recovery and recycling programs supports a positive outlook among residents. Coastal residents understand the importance of proper waste management in protecting coastal ecosystems, with 67% (8,205) strongly agreeing and 33% (4,103) agreeing, reflecting a high level of consciousness and motivation to safeguard their natural surroundings and a developed sense of ownership. Table 2 reflects the data.

3.3. Level of Practice of Coastal Residents on Solid Waste Management.

As reflected in Table 3, findings on the practices and perceptions of the twelve thousand three hundred eight (12,308) residents regarding household waste management and community waste services are presented. The majority of community

Table 2: Level of attitude of coastal residents on solid waste management.

Items	4 (SA)		3 (A)		2 (DA)		1 (SDA)	
	f	%	f	%	f	%	f	%
1. Do you agree that in your barangay that your actions lessen waste pollution.	4103	33	4102	33	4103	33	-	-
2. Do you agree that in your barangay where community-based waste management initiatives are conducted and participated.	8205	67	4103	33	-	-	-	-
3. Do you agree that the solid waste management in your community are managed and facilitated by your respective LGUs.	4103	33	8205	67	-	-	-	-
4. Do you agree and aware of the health impacts of improper waste management?	8205	67	4103	33	-	-	-	-
5. Do you agree that the community cleanliness and avoidance of waste pollution is your responsibility?	4103	33	4102	33	4103	33	-	-
6. Do you support of the banning and regulation of single-used plastics?	4102	33	8206	67	-	-	-	-
7. Do you agree that recycling should be practiced by community and household?	8206	67	4102	33	-	-	-	-
8. Do you agree that one must be confident and knowledgeable about proper waste disposal especially coastal residents.	4103	33	4102	33	4103	33	-	-
9. Do you agree, waste is a resource if managed properly.	4103	33	8205	67	-	-	-	-
10. Do you agree protecting coastal ecosystem and marine life is through importance of proper waste management.	8205	67	4103	33	-	-	-	-

Source: Author.

residents showed full compliance with segregating household waste into biodegradable, recyclable, and non-recyclable categories, with 67% (8,205) strongly agreeing and 33% (4,103) agreeing, implying strong community commitment to proper waste separation at source. Sixty-seven percent (67%, 8,205) strongly agreed and 33% (4,103) agreed that residents follow approved methods of household waste disposal, indicating the proper adoption of recommended waste disposal practices. Regarding participation in community clean-up drives and waste management programs, results were 67% (8,205) strongly agree and 33% (4,103) agree, showing active community engagement in collective environmental efforts. Thirty-three percent (33%, 4,103) strongly agreed and 67% (8,205) agreed regarding the reuse or recycling of materials such as plastic containers, glass bottles, or paper, a strong manifestation of support for sustainable waste reduction through material recovery. Sixty-seven percent (67%, 8,205) strongly agreed and 33% (4,103) agreed regarding burning waste in their respective homes, evidence that burning remains a practice in communities where residents may not be fully aware of the associated environmental and health risks. The presence of a material recovery facility (MRF) as a collection point is highly visible in the community, with 33% (4,103) strongly agreeing and 67% (8,205) agreeing, indicating LGU support for waste disposal and management infrastructure. Regarding the disposal of hazardous wastes such as batteries, paint, or expired medicines, 100% (12,308) strongly agreed that they dispose of these properly, reflecting excellent awareness and responsible behavior that lessens health risks. All respondents (100%, 12,308) agreed that composting of organic kitchen or garden waste is highly practiced, reflecting awareness of LGU support for environmentally friendly waste treatment methods. All respondents (100%, 12,308) agreed that training and information dissemination on solid waste manage-

ment should be conducted regularly in their respective communities. Results revealed that 33% (4,103) strongly agree and 67% (8,205) agree that they are satisfied with the waste collection services of their respective LGUs, suggesting that LGU efforts on waste collection must continue to be conducted effectively and efficiently, with continued investment in infrastructure for solid waste management.

Table 3: Level of practices of coastal residents on solid waste management.

Items	4 (SA)		3 (A)		2 (DA)		1 (SDA)	
	f	%	f	%	f	%	f	%
1. Do you agree that segregation your household waste must be categorized into biodegradable, recyclable, and non-recyclable.	8205	67	4103	33	-	-	-	-
2. Do you agree that disposing household waste follow a certain methodology.	8205	67	4103	33	-	-	-	-
3. Do you agree that a policy should be enacted to require participation in community clean-up drives or waste management programs.	8205	67	4103	33	-	-	-	-
4. Do you agree that plastic containers, glass bottles, or paper must be reused or recycled.	4103	33	8205	67	-	-	-	-
5. Do agree that community residents should refrain from burning waste at home.	8205	67	4103	33	-	-	-	-
6. Do you the barangay should strengthen material recovery facility and be placed in a designated area.	4103	33	8205	67	-	-	-	-
7. Do you agree that hazardous wastes like batteries, paint, or expired medicines should be dispose properly.	12308	100	-	-	-	-	-	-
8. Do you agree that each household should have compost pit in their backyard.	-	-	12308	100	-	-	-	-
9. Do you agree that a training and the like must be conducted regularly in your barangay.	12308	100	-	-	-	-	-	-
10. Do you agree that waste collection services in your community must be implement regularly.	4103	33	8205	67	-	-	-	-

Source: Author.

3.4. Extent of Relationship of Knowledge, Attitude, and Practice on Solid Waste Management as Perceived by Coastal Residents.

Computerized statistics revealed a strong correlation among the variables of knowledge, attitude, and practice regarding solid waste management (SWM) as perceived by household heads in the coastal barangays along Banate Bay. The computed correlation coefficients were 0.933, 0.922, and 1.00, all significant at the 0.05 level (Table 4).

Therefore, the null hypothesis is rejected, meaning that knowledge, attitude, and practice regarding SWM within the study population clearly influence one another. Thus, the variables identified at higher levels must be given due consideration, as they interrelate with one another. This implies that LGUs should underscore the importance of integrated educational and behavioral interventions to promote and implement effective waste management in coastal communities, whereby residents are fully aware and informed.

4. Discussion.

Based on the results obtained from the 12,308 coastal residents residing along the coastal barangays of Banate Bay, strong knowledge, positive attitudes, and good practices regarding solid waste management (SWM) were found among household heads. As community residents believed that improper waste disposal,

Table 4: Relationship of knowledge, attitude, and practice on solid waste management.

Variables	N	Mean	SD	r-value	sig
Knowledge	12308	3.26	0.26	0.933*	.000
Attitude		3.13	0.38	0.922*	.000
Practice		3.53	0.16	1.00*	.000

*Correlation is significant at the 0.05 level.

Source: Author.

especially in coastal waters, may threaten marine life, environmental consciousness should be practiced by coastal residents through various information and education campaigns so that they realize their dependence on marine resources for their livelihoods. The solid awareness of household waste types and composting indicates effective education efforts among residents. Because of the strong policies and ordinances in the barangay that shape residents' ability to segregate recyclable and non-recyclable waste, regular training and information campaigns must be conducted to address the remaining gaps.

Regarding the attitudes of coastal residents, they were not entirely consistent in terms of individual influence, but holistically they supported community participation, LGUs, and policies/ordinances such as banning single-use plastics, aligning with global environmental priorities. The high participation rates in clean-up drives and positive views on recycling and waste as a resource reflect the readiness of people in coastal barangays for sustainable practices. However, despite these strengths, the widespread practice of burning waste poses high health and environmental risks, requiring immediate intervention and alternative waste management solutions.

As the results revealed a commendable degree of universal compliance in waste segregation, proper disposal, hazardous waste management, and composting, this must be supported by infrastructure, and LGUs should invest in their waste collection services. LGUs should provide strong support through capacity-building initiatives such as information dissemination and barangay training to sustain and enhance SWM outcomes among coastal communities. In summary, sustaining the motivation among coastal residents to protect coastal ecosystems and public health represents the major challenge to be addressed through educational, policy, and service interventions.

In terms of relationships, a strong relationship among knowledge, attitude, and practice (KAP) on solid waste management (SWM) was found among household heads in the coastal barangays along Banate Bay, based on r-values of 0.933, 0.922, and 1.00 ($p < 0.05$). Therefore, the null hypothesis is rejected: higher knowledge levels are associated with more positive attitudes and improved waste management practices. Within the KAP framework, knowledge influences behavior and shapes attitudes. Finally, as LGUs implement behavioral and educational interventions, these are believed to enhance residents' SWM practices in coastal communities, supporting contextualized studies that integrate the role of community education in environmental management.

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References.

- Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. W.H. Freeman.
- Barr, S. (2007). Factors influencing environmental attitudes and behaviors: A UK case study of household waste management. *Environment and Behavior*, 39(4), 435–473.
- Cinner, J.E., et al. (2012). Vulnerability of coastal communities to key impacts of climate change on coral reef fisheries. *Global Environmental Change*, 22(1), 12–20.
- DENR (2020). *Ecological Solid Waste Management Act (Republic Act 9003) Implementation Report*. Department of Environment and Natural Resources, Philippines.
- Department of Environment and Natural Resources (DENR). (2024). *Intensified Environmental Protection: Solid Waste Management*.
- Ellen MacArthur Foundation. (2013). *Towards the Circular Economy: Economic and Business Rationale for an Accelerated Transition*.
- EPA (2021). *Composting at Home*. U.S. Environmental Protection Agency.
- Gupta, S., et al. (2019). Community awareness and compliance with environmental laws: A case study. *Environmental Policy and Governance*, 29(4), 234–245.
- Hoornweg, D., & Bhada-Tata, P. (2012). *What a Waste: A Global Review of Solid Waste Management*. World Bank.
- Iloilo Provincial Government. (2024, October 29). *Banate Gets Garbage Compactor from Capitol*.
- Iloilo Provincial Government. (2025). *Solid Waste Management Initiatives in Banate and Iloilo*.
- Jambeck, J.R., et al. (2015). Plastic waste inputs from land into the ocean. *Science*, 347(6223), 768–771.
- Kaza, S., et al. (2018). *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*. World Bank.
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239–260.
- Langit, E.R.A., Parungao, C.A.S., Gregorio, E.T.A., et al. (2024). Feasibility study of an integrated waste management technology system for a circular economy in the Philippines. *Journal of Human Ecology and Sustainability*, 2(3), 3.
- Launiala, A. (2009). How much can a KAP survey tell us? A review of KAP surveys and their relevance to malaria control.
- Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.

Sharp, V., et al. (2010). Public participation in marine conservation: The role of community-based initiatives. *Marine Policy*, 34(5), 1004–1013.

Tchobanoglous, G., Theisen, H., & Vigil, S. (2014). *Integrated Solid Waste Management: Engineering Principles and Management Issues*. McGraw-Hill.

Tyler, T.R. (2006). Psychological perspectives on legitimacy and legitimation. *Annual Review of Psychology*, 57, 375–400.

UNEP. (2018). *Global Waste Management Outlook*. United Nations Environment Programme.

UNEP (2021). *Marine Pollution and Coastal Communities*. United Nations Environment Programme.

WHO (2018). *Health-Care Waste*. World Health Organization.

World Bank (2018). *Solid Waste Management in Coastal Areas*. World Bank Group.