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NGO and Waste Management: Learning from Bangladesh

Md. Abu Shahen
University of Rajshahi, Bangladesh
Corresponding Author: Md. Abu Shahen; Email: shahen.sw@gmail.com

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ABSTRACT

Waste management is very crucial for the protection of the environment and for keeping living places safe and hygienic. However, this paper tried to explore the exemplify roles of non-government organizations in reducing waste and proper waste management in the municipality area of Bangladesh. This paper was prepared based on qualitative in nature while some KIIs and FGDs were conducted to unveil the impactful roles of NGOs in environment protection through waste management. The paper revealed that NGOs are trying to develop good practices regarding waste management in the municipality area was considered the most polluted and contaminated area compared to other parts of the country. They have funded various types of activities like awareness building activities, practice growing activities, equipment installments like bins, IEC distribution, green club formation, treatment plan establishment, vehicle support for carrying, and disposal points were mentionable. Moreover, people who can play a vital role in waste management, particularly local government representatives and women should be aware. Along with, installing permanent disposal facilities, fixation of waste collection date, developing a market of recycled waste, whistling before collection of waste, bin installation, etc., are needed to make strong the waste management activities in municipality areas of Bangladesh.

INTRODUCTION

Like in the majority of underdeveloped nations, solid waste management has received little attention and study in Bangladesh. Concerned parties have recently started to view this sector as crucial to preserving both the environment and human health. Bangladesh's urban population has grown at an extremely rapid rate, almost 6% annually, and is mostly centered in six main cities: Dhaka, Chittagong, Khulna, Rajshahi, Barisal, and Sylhet. According to current estimates, these cities are home to roughly 13% of the overall population and 55–60% of the urban population (Alamgir et al, 2005). The effective management of the MSW system in these cities is a collaborative effort involving the city authority, private organizations, community-based organizations, and non-governmental organizations (NGOs). The overall state of affairs has not changed, though. It becomes clear that, given the pertinent socioeconomic contexts and technological features of the nation, an integrated solid waste management system (ISWM) is necessary. The restrictions, limitations, and pertinent experiences of the current management system must be examined to investigate the potential of implementing an ISWM. To achieve this, a feasibility study known as Waste Safe (Alamgir et al., 2005) was carried out to determine the current state of MSW management in the least developed Asian countries (LDACs), including its issues and constraints. Ahsan et al. (2013) and Samah et al. (2013a and 2013b) provide reports on the MSW composition, generation, management, and recycling operations in Malaysia.

Bangladesh, where 63 million people, or 38% of the total population, live in urban areas, is one of the South Asian nations that is urbanizing the fastest (The World Bank, 2020). Rapid urbanization has increased trash generation and complicated waste management, especially in large cities like Dhaka. The environment, public health, and urban livability are all negatively impacted by these developments. Sustainable Cities and Communities, the eleventh Sustainable Development Goal,

mandates that by 2030, "lower the adverse per capita environmental effect of cities, especially by paying special attention to air quality and municipal and other waste management". Additionally, this target and the achievement of other SDGs are closely linked. One way to assist SDG 7 aims to "provide access to cheap, dependable, sustainable, and modern energy for all"—is through recycling waste. This will help attain sustainable energy. (Sirajul Islam, 2021). Because of its steep topography, a profusion of greenery, and scenic splendor, Bangladesh has sometimes been referred to as the "Greenest Nation" in the world. However, the city's clean lines have been seriously deteriorating due to the proliferation of trash piles and inadequate waste management (Shamsuddoha, 2009).

Waste is any substance, product, or thing that is disposed of, scheduled for disposal, or required for disposal because it is no longer suitable for its intended use. It is often divided into two categories: hazardous and non-hazardous materials. Hazardous wastes include things like pharmaceutical, industrial, and electronic (or "e-waste") wastes. Non-toxic garbage includes things like building debris and household garbage from municipalities. Alternatively, trash might be liquid or solid, and each requires a different approach to treatment and disposal. Garbage, whether hazardous or not, may present significant risks to human health and the environment if it is not collected and managed (Oluwagbayide et al., 2024). According to the United Nations (1997), Managing solid waste is the "controlled processing of waste material from creation at the source through the recovery processes to disposal". In metropolitan regions, municipal solid garbage is a major burden due to its volume and management challenges. Over twenty-five thousand tonnes of waste are created every day in Bangladeshi cities, with each individual producing 170 kg of solid waste annually (Ahmed, 2019). From 6,500 tonnes in 1991 to 13,300 tonnes in 2005, the volume of waste more than doubled in 15 years (Dhaka Tribune, 2020a). Trash will rise as a result of the country's economic transition to a middle-class economy, changes in urban residents' living conditions, and the country's growing urbanization. As a result, it is anticipated that by 2025, per capita urban solid waste generation will rise from 0.49 kg in 1995 to 0.60 kg. Ahmed, 2019. Current waste management techniques are characterized by ineffective garbage collection, expensive removal and disposal procedures, a lack of adequate land for final disposal, a lack of recycling regulations, and a lack of environmental awareness (Abedin & Jahiruddin, 2015).

The histories of the societies that produced the trash, their relationships with nature, and the resources they used are all reflected in the history of trash before the Industrial Revolution, the Parisian motta papellardorum and the Roman cloaca maxima both demonstrated the tight relationship between urban sustainability and waste management. There was very little garbage produced, and methods of collection and disposal were often inefficient, leading to charges of foul stenches in the cities. Neo-Hippocratic medicine, which attributed excess mortality in cities to environmental and air pollution, resulted in the implementation of new management strategies and laws to clean up towns throughout Europe. The bulk of city waste that was meant for farming or industry also saw a rise in value.

Thus, there was a close relationship between salubrity and excreta recovery from the 1770s to the 1860s. The recycling sector was negatively impacted starting in the 1870s by the fertilizer revolution, the dramatic growth of the coal and later petroleum industries, and the need for more readily accessible resources. While several cities made early attempts to counter the devaluation of urban by-products, a large number of them gave up in the interwar years. Reducing this cost was the aim of trash management until the 1960s. What used to be profitable is now expensive for society. The surroundings served as a waste disposal facility. Critiques of the industrial metropolis, mounting concern about the planet's resources, and an environmental crisis characterized the 1960s and 1970s. Waste was seen in this context as a representation of the excesses of a consumer society. The amount of waste generated kept growing, and the resulting sanitary accidents had a lasting effect. The outcomes of trash policy implementation vary. The bad consequences of this "curse of the developed world" extended to underdeveloped countries (Barles, 2014).

Precisely, waste disposal has a long history dating back to ancient Greece, where workers dug holes in the ground to deposit waste. China

developed recycling and composting methods in 2,000 B.C., and Athens passed regulations requiring waste disposal at least one mile beyond municipal limits. The first documented use of packaging dates back to 1551 and the first anti-littering ordinance in New York City was enacted in 1657. The Public Health Act of 1875 forbids widespread scavenging and permits rubbish collection. The US built its first incinerator in 1885 and expanded landfills in 1914. The Environmental Protection Agency (EPA) was established in 1970, and the Resource Conservation and Recovery Act led to waste management, recycling, and conservation plans in 1976. In the 2000s, over 5,000 American municipalities implemented "pay-as-you-throw" programs.

Solid Waste Management: Past and Future

The environment, also known as the "global commons", is crucial for human development and produces emissions and waste from various sectors. Rules for solid waste collection and emission restrictions were first passed in the 19th century to protect public health. However, hazardous, industrial, and municipal solid waste disposal remained unregulated until the latter part of the 20th century. The London haze led to the UK enacting the Clean Air Act in 1956, which limited the use of solid fuels in homes. The environmental movement was sparked by Rachel Carson's book Silent Spring, which highlighted pollution caused by persistent pesticides. Industrialized countries began enacting comprehensive environmental regulations in the 1970s to address waste pollution.

Controlling Wastes and Ramping Up Technical Standards Since the 1970s

Since the 1970s, waste control has been a significant focus of attention, with new legislation, the "technical fix", and institutional contexts being key considerations. Governments and other stakeholders played a crucial role in creating institutional norms for waste management. From the 1980s, efforts were made to increase technical standards for appropriate waste management, addressing major concerns such as hazardous waste, municipal solid waste, and intended and unintended consequences. This period saw a rise in technical requirements for waste management, with governments and other interested parties playing a significant role in shaping these norms.

Further Evolution from 1990s–2020s–a More Integrated Approach

The governments and stakeholders of nations have been working towards a coordinated strategy for effective waste management. This involves the development of a new analytical framework (Wilson et al., 2013; Pojasek, 1986; US EPA, 1989, 1995), understanding the history of waste hierarchy (Rodic, 2015; Van de Klundert and Anschütz, 2001; Anschütz et al., 2004; Schübeler, 1996; Rodic and Wilson, 2017; Wilson et al., 2015b), sustainable integrated trash management, and strategic planning for MSWM (Bimmoy, 2022; Read et al., 2005; NI DoE, 2000). The main focus for integration is governance factors such as local institutional coherence (Wilson et al., 2000; Whiteman et al., 2021), financial durability (UNEP and ISWA, 2015; World Bank Group, 2018; Velis and Mavropoulos, 2016; Wilson 2018b; Welivita et al., 2015; Ferronato and Torretta, 2019; Wilson and Velis, 2015; Vinti et al., 2021; Kabera et al., 2019; Cointreau, 2006), provider inclusivity (Arlosoroff, 1991; Wilson et al., 2000; Coad, 2005; Soos et al., 2014; Wilson et al., 2017; Soos et al., 2017; World Bank Group, 2018), user inclusivity (Cox et al., 2010; UNEP and ISWA, 2015; Seager et al., 2020; Beall, 1997; Dias and Ogando, 2015; Wittmer, 2022; Carpintero-Rogero and McGilchrist, 2015), and a framework for national laws and policies (Nyathi and Togo, 2020; LaGrega et al., 1994; Wilson, 1996; UNEP and ISWA, 2015; Godfrey, 2019; Rodic and Wilson, 2017; Xevgenos et al., 2015; Wilson, 2018b; Godfrey and Oelofse, 2017; Muposhi and Mpinganjira, 2022). The integration approach also focuses on ensuring provider inclusivity, user inclusivity, and the use of electronic waste. The main issues for integration include governance factors, financial durability, provider inclusivity, user inclusivity, and the framework for national laws and policies. The integration approach aims to address these issues and promote sustainable waste management practices (Cao et al., 2016).

Reflections on Present and Future Priorities 2020–2030

Over the past 50 years, waste and resource management has significantly evolved in the Global North. This has led to a shift in priorities, including global action on plastic pollution, waste, and climate, open burning of waste, and the establishment of international science-policy panels on chemicals, waste, and pollution prevention (UNEA, 2022b; UNEP, 2022; UNEP and ISWA, 2015; Kossoff et al., 2014; UN-Habitat, 2021a; GIZ et al., 2020; UK Defra, 2022; Ihsanullah et al., 2022; Duan et al., 2008; Kanwal et al., 2022; Su et al., 2022). The changing landscape of waste management (UN Population, 2022; UN Population, 2018; OECD, 2002; Hoornweg, et al., 2013; Velis et al., 2023; Hoornweg et al., 2015; UNEP and ISWA, 2015; Velis et al., 2023; UNEP and ISWA, 2015; Karak et al., 2012; UNEP and ISWA, 2015; Karak et al., 2012; UNEP and ISWA, 2015; Das, et al., 2019; Manggali and Susanna, 2019; Mahyari et al., 2022; Singh et al., 2022; Kenny and Priyadarshini, 2021; Liang, et al., 2021; WHO, 1999, 2014; Townend, et al., 2009), including the UN Population, OECD, and various international organizations, has prompted a need for a comprehensive approach to address these issues.

The focus should be on addressing the challenges posed by the changing landscape, such as plastic pollution, waste, and climate (Bagui et al, 2021; Coracero et al., 2021; IPCC, 2013; FAO, 2013; Wilson et al., 2015c; Diaz-Bone et al., 2021; WRAP, 2021; Savino, 2009), open burning of waste (Gómez-Sanabria et al., 2022; Ramadan et al., 2022; Kodros et al., 2016; Saikawa et al., 2020; Powrie et al., 2021; Mebratu and Mbandi, 2022; UNEA, 2022a; Cook and Velis, 2020; Velis and Cook, 2021), and the need for international collaboration on waste and pollution prevention (Geyer et al., 2017; OECD, 2022a; Barnes et al., 2009; Rochman et al., 2013; Jambeck et al., 2015; Mundus Maris, 2017; Rapid Transition, 2019; Velis et al., 2017; Lau et al., 2020; Pew and Systemiq, 2020; OECD, 2022b; Zhu and Rochman, 2022; Cottom et al., 2023; GRID-Arendal, 2022; UNEA, 2022a; UN-Habitat and NIVA, 2022). However, waste is considered a problem at all times which begins with the consumption of any type of fruits that has extra parts that cannot be consumed. Every time of human history try to manage the wastes properly but yet undiscovered of perfect management strategies or ways. We are still trying to solve these problems in proper ways.

Examining the state of garbage and waste management in the municipality was the primary goal of this paper. More specifically, the study was also conducted to know the roles of NGOs in awareness building among inhabitants of the municipality about managing waste; to know the current practice among the inhabitants; and to explore the initiatives taken by the various NGOs concerning reducing waste and contamination.

METHODS

This study was fully designed as qualitative in a manner where only qualitative data was used for interpretation. A municipality in Bangladesh was selected as a study area due to the existence of NGO's initiatives implemented there. A total of four focus group discussions were conducted. Along with this, twelve key informant interviews were also conducted to collect data. The interview schedule was used as a research tool for key informant interview data collection. In addition, a focus group discussion guiding questionnaire was used for the conduction of group data collection.

RESULTS AND DISCUSSION

Reduction in Water Pollution and Diseases

Automobile emissions, gases from factories and brick kilns, and a build-up of dust from many sources are Bangladesh's primary sources of pollution. The FGD participants as a whole agree that water pollution has somewhat decreased. however, not entirely diminished. One FGD member from SHG stated that water pollution Still not completely down but 2 out of 4 down. Water safety and quality in the country have improved over the past 50 years, but there are still risks to these factors. Results indicated that some factors that have contributed to a decrease in water pollution, for instance, few people throw their trash down the drain as a result of increased awareness, the fact that we dump the trash before it enters the water, and the fact that people no longer flush their trash down the toilet.

Additionally, despite speaking with the KII responders separately, the same information was revealed in this instance. They said that compared to earlier, there has been a discernible decrease in

the waste's impact on water pollution. Reducing water pollution brought on by garbage also depends on community participation in pollution prevention efforts, such as recycling and safe waste disposal. According to KII respondents, public awareness (built through meetings, posters, banners, street play, etc.), not disposing of waste into drains and water sources, and active role-playing of the various groups like WG, GC, WC, etc. are the factors that have specifically contributed to reducing water pollution caused by waste. It is less, according to the Cleaners, because we aim to discharge garbage before combining it with water sources and drains.

Additionally, both communicable and non-communicable diseases result in millions of deaths each year, billions more spent on healthcare, and subsequently trillions more lost in global economic output. Everyone who took part in the FGD agreed that "Studied municipality sickness has lowered a lot". People used to burn polythene earlier, and the smoke produced by burning polythene contained many harmful substances, said a GC FGD member. They caused a lot of harm to people, and as a result, many diseases were spread. The occurrence of diseases has greatly decreased when people stopped burning polythene. Some of the causes of a decline in diseases were cited by a working group FDG participant named Depend Chandra Roy, including an increase in public knowledge, a shift in how people dispose of their trash, and the efforts of NGOs to raise people's awareness. The same thing took place when it came to whether poor solid waste management led to a drop in illness incidence. Compared to before, it has somewhat lessened. The main causes are changes in habits and increased awareness of safe garbage disposal. As the effects of pollution lessen, diseases decline.

Structure Waste Management System

Trash management is the control, supervision, and regulation of garbage generation in addition to the collection, handling, and disposal of waste. It also includes the prevention of waste production through process improvements, recycling, and reuse. The FGD participants articulated that "structure waste management is not yet fulfilled as it should be". Reduced pollution, resource conservation, and the avoidance of environmental harm are waste management's three primary benefits. By properly disposing of our rubbish, we can drastically reduce the amount of hazardous chemicals and toxins that find their way into our water, air, and soil. A working group participant stated that "our municipality has no structure for waste management". Although there is no formal system for trash management, there has been a change in how the community as a whole manages waste. According to the ward committee members, "There has been a little change in people's behavior in the community waste management through awareness raising and education". Similarly, FGD participants opined that "30%-40% of community members alter how they handle garbage by increasing awareness and altering their behavior". We used to put all the dirt in one spot, according to the FGD participants. We now maintain it in three distinct portions. We learned how to create compost out of trash and how to create a roof garden from plastic bottles. The reduction, Reusing, and Garbage may be appropriately managed and disposed of through recycling. Reduction means a decrease in the amount of waste produced. Reuse is the act of utilizing something more than once, whereas recycling is the process of converting waste or garbage into new resources or goods. Participants in the FGD from the word committee stated that beneficiaries follow the necessary waste management practices. With cooking trash, organic fertilizers are produced. With polythene, they also produce door mats, backpacks, and laptop coverings.

Additionally, the majority of KII respondents stated that no set structure for waste management has been reached. By involving the municipality, the project has been attempting to accomplish that. Additionally, according to the KII respondents, the targeted area does not currently have a defined and well-organized system for managing garbage. The project stated is making an effort to deal with this problem by collaborating with the local government to create a framework for trash management. The ex-mayor of the studied municipality stated that the municipality's inability to properly manage garbage because of a lack of people and a sound plan is the biggest obstacle. To create effective waste management practices, local government and community leaders must work together, according to KII respondents. Another responder stated that for building a mutually agreed-upon framework of the waste management system, community engagement is necessary and extremely vital.

Waste Management Practice Including Waste Segregation

Garbage management is the process of collecting, moving, processing, or getting rid of different kinds of garbage while also keeping an eye on and managing them. The respondents from diverse categories reportedly acknowledged that education and awareness-raising efforts were quite successful in encouraging alterations in waste management-related behavior. Increasing recycling, decreasing overall waste creation, correctly disposing of hazardous materials, and supporting sustainable waste management techniques are a few examples of how to do this. The working group was essential in bringing about these reforms. At least 80–90% of the target households are aware of suitable garbage disposal techniques. All of the FGD participants made it clear that "in the past, people used to throw the waste everywhere, in the drain, but now people are keeping the waste separately, putting it in the dustbin, and some have started making money and earning with the waste". However, not everyone began to perform these things. This technique is being practiced more by those who have newly joined this initiative.

Garbage segregation is also essential to reduce the impact of garbage on the environment and to prevent health issues that could arise from incorrect rubbish and pollutant disposal. Waste division is a financially advantageous strategy since it makes recycling much simpler. We divide the waste into three portions and place them in three bins, according to FGD participants. Compostable garbage is placed in the green bin. Glass and hazardous waste go in the red bin, whereas recyclable plastic, polythene, and bottles go in the yellow bin. Even though it's essential to building livable and sustainable communities, waste management is still a problem in many developing countries and towns. A participant in the FGD from the working group asserted that "Not all of us have three trash cans in our homes. However, practically everyone has a trashcan at home. Daily separation of household waste into distinct dustbins for every type of waste, including wet and dry waste that needs to be disposed of separately, is recommended. Participants in the SHG FGD observed that "only those who can afford are using 3 bins, but those who cannot afford are using only 1". They gave a positive response when asked if they adhere to good waste management procedures. They all claimed to have more than two practices in their homes. The proper disposal of hazardous trash and the segregation of household garbage are very popular procedures. Composting garbage is a common household activity that is done for the vegetable garden.

In the target community, it is now extremely normal practice to separate household waste. Respondents to the KII segregate their trash into various bins or containers. Decomposable wastes, plastic wastes, and hazardous wastes (such as glass and metal wastes) are separated into distinct containers that are colored green, yellow, and red, respectively. One KII respondent recycles by creating new things out of plastic and polythene. Another respondent claimed that she utilizes polythene to create reusable items like showpieces, laptop coverings, vanity purses, and table mats. Typically, homemade fertilizers for gardens and green roofs are prepared from organic and vegetable waste. For individuals who don't recycle or produce useful things, they typically sell them to manufacturers or companies. According to a member of the Green Club (GC), there are three distinct types of trash cans available for pupils to use in their school.

Importance of Waste Management in the Municipal Budget

Bangladesh's highly populated nation and enormous, quickly rising population provide significant difficulties for waste management. Therefore, it is necessary to give waste management more weight in the municipal budget. The municipality "does not give much importance to the waste management sector", according to SHG Anita Devi, a participant in the focus group discussion. However, since the NGO project began, it has begun to get attention. The majority of participants in the FGD agree that "we do not know whether the municipal budget is made in the waste management sector, when the budget is made, and how much money is budgeted".

Training on 'Waste into Wealth' IGA

By waste management, the ecosystem is shielded from the harmful impacts of the inorganic and biodegradable components included in rubbish. Inadequate waste management can lead to soil erosion, water contamination, and air pollution. Waste can be recycled with proper collection and

management. Beneficiaries of the training program use the training's lessons to their advantage. Beneficiaries raised their income by applying the knowledge and training they received. A SHG Minara Khatun FGD participant said, Earlier I used to spend my time sitting at home and watching TV, but now I am working with a sewing machine, which earns me money and supports my family. FGD participant stated that she used to dump the trash from our house here and there earlier, but now we produce compost from the waste instead of discarding it around. Our income rises as a result. With that money, we have paid for our son's admission to school.

The targeted beneficiaries now have additional sources of income thanks to the training on waste transformed into riches. Given that many of the project's target population consider collecting rubbish and recycling to be their work, the various supports and training they received allowed them to raise their revenue. A housewife said that the IGA training has helped women, especially the most vulnerable ones, overcome their financial difficulties. They added that many needy women were making money off of collecting and selling reusable rubbish. A plastic innovator claims that he is using the lessons learned from the course to generate income. Members of self-help groups (SHGs) use their income to save money and earn money by lending that money to other members at interest.

Sustainable Impact on the Community

Efficient sustainable waste management (SWM) preserves resources, lessens adverse impacts on the environment and public health, and improves the livability of cities. However, increased urbanization, institutional and financial constraints, as well as unsustainable SWM practices, harm public health and environmental sustainability. A participant in the FGD from the word committee said that “people have only mentally made the position, the sustainability work has to go now”. An additional FGD participant opined that “the effect on the group member or family will be long lasting but its effect on the rest of the people will not be permanent”. Even though the majority of KII respondents felt that more time was needed to bring about significant improvements in the waste management system, the effort and support have so far resulted in some adjustments. The intended recipients' awareness and degree of knowledge regarding trash disposal have changed significantly.

Waste Management & Municipality

The management of waste is an essential public service that the municipality is in charge of providing. To improve the situation and make the neighborhood cleaner and healthier, the initiative is working with the municipality to build a structure for garbage management. Since the community members will be the ones most impacted by the waste management system, it is crucial to include them as well as the municipality in the process. Most KII respondents, except for the mayor, concurred that the municipality didn't place much emphasis on trash management. Budget priorities should have included trash management. Nowadays, the environment is changing. The projects are attempting to involve the local authority in a proper waste management system, and as a result, they became active.

Use of Ecofriendly Products

Key Informants claimed that he used 90% less plastic in his home for a variety of uses. To protect the environment, they stated that we are attempting to expand the use of eco-friendly products in place of polythene or plastic products and encourage neighbors to do the same. According to other KII respondents, the targeted homes only use eco-friendly products to a limited level for a variety of household needs. They continue to use plastic products and polythene bags. According to this claim, the targeted households only occasionally employ environmentally friendly items in their routine home tasks and continue to rely on conventional, environmentally unfriendly materials like plastic and polythene bags. This may point to a lack of knowledge about or access to environmentally friendly solutions, as well as a lack of drive to make the change. To stimulate the adoption of eco-friendly items in family consumption, it may be helpful to educate and increase awareness about the advantages of using them. The KII respondents claimed that despite this, the targeted households are eager to convert to eco-friendly items if they are accessible and reasonably priced.

The Core Policy Priorities in WRM

We are recommending a few issues that need to be taken upfront to influence how waste and resource management are evaluated going forward,

based on the results and reviews of the literature. Prioritizing policy issues include sustainable financing (Whiteman et al., 2001; Brunner and Fellner, 2007; Bundhoo, 2018; UNEP and ISWA, 2015), rethinking sustainable recycling in the Global North (Iacovidou et al., 2017, 2021; WRAP, 2022; Cahill et al., 2011), and rethinking sustainable recycling in the Global South (GA Circular, 2020; World Bank Group, 2018; Whiteman et al., 2021; Matter et al., 2013; Velis et al., 2022; Pfaff Simoneit, 2023).

CONCLUSIONS

A smart strategy to create less trash is to avoid things that are unnecessarily packaged in boxes and bags or that are wrapped in plastic. Still, the people of Bangladesh are unaware of waste management, and therefore, it is needed to take more awareness-building steps from the government and non-government sides. Moreover, installing a permanent disposal facility, fixation of waste collection date, developing a market of recycled waste, whistling before collection of waste, and installing more bins are suggested for proper management in the municipality area should be taken by the concerned authorities. Along with this, women, public and municipal authorities, particularly councilors, should be made more aware by introducing new interventions for the municipality area.

Based on the findings, here are some suggestions for the better operations of waste management programs in municipality areas of Bangladesh are as follows:

1. It is preferable to blast the whistle, remove the dirt, and collect trash door to door.
2. The need for a permanent disposal facility.
3. Women should participate more in the waste management.
4. A date should be set for the cleaners to pick up trash in a certain location.
5. More education is required in waste management.
6. More trash containers need to be available.
7. Public and municipal authorities, particularly councilors, should be made more aware.
8. Every educational institution should set up an environment-friendly club.

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