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The Impact of Community-Based Solid Waste Management Programs on Waste Reduction and Environmental Sustainability

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I. INTRODUCTION

Solid waste management has been a problem in urban areas for centuries. This is due to the density of the population as well as the concentration of packed goods. Ineffective disposal and poor solid waste management (SWM) not only pose problems in the environment but also lead to health issues in the community. Coracero et al. (2021) stated that the Philippines has a continuously rising amount of waste, and this is expected to further increase in the succeeding years. Several measures have been implemented to circumvent this issue, including waste management policies stipulated in the Ecological Solid Waste Management Act of 2001 (Camarillo & Bellotindos, 2021).

In this sense, it is crucial to achieve effective solid waste management involving not only formal/government agencies but also individual/informal/voluntary actions to create a healthy environment (Brotosusilo et al., 2020). However, implementing community-based solid waste management programs even at the barangay levels has always been a challenge.

In Davao City, for example, City Environment and Natural Resources (CENRO) offices have intensified their information dissemination program on proper solid waste management in different barangays (City Government of Davao, 2023). Meanwhile, in Surigao City, the local government implemented daily waste collection through garbage trucks. However, as stated by Buenaflor & Bataan (2018), of the 33 barangays in mainland Surigao City, only five (5) urban barangays are presently included in the daily waste collection routes. Rural areas are scheduled monthly or as requested only.

Another existing implementation of a community-based solid waste management program in the regions of the Philippines is the Materials Recovery Facility (MRF). MRF has been established in all visible areas of the barangay to remove and sort recyclables from the waste stream. This is the hope of reducing if not eliminating solid waste in the community.

Furthermore, through literature reviews, the researcher aims to determine the impact of community-based solid waste management programs on waste reduction and environmental sustainability.

Solid Waste Management

Republic Act No. 9003 (Ecological Solid Waste Management Act of 2000) defined solid waste as all discarded household, commercial waste, non-hazardous institutional and industrial waste, street sweepings, construction debris, agriculture waste, and other non-hazardous/non-toxic solid waste (Molina & Catan, 2021). With this, Solid waste management (SWM) is vital to pursue because almost all economic sectors produce solid waste (SW). Factors that cause environmental concern are based on human reasoning and behavior (Brutosusilo et al., 2020).

As stated by Miret et al. (2021), Municipal solid waste management is becoming a complex problem in cities in developing countries. In developed countries, municipal solid waste management is efficient even if the average generation rate in the various industrialized countries is in the range of 0.8–1.4 kg/person/day (Bundhoo, 2018). Water quality in water bodies and watersheds is adversely affected by pollution, exacerbated by increasing population and urbanization (Nguyen & Tan, 2020).

1. Waste Reduction

The Philippines is a case of a nation in the Global South that has had difficulty dealing with the immediate effects of plastic bag use as well as the difficulties involved in passing and enforcing laws that prohibit these non-biodegradable items (Crowley, 2020).

In response to the challenge, the State adopted a "systematic, comprehensive, and ecological solid waste management program". It provides for the reduction and minimization of waste at source through composting, recycling, reuse, and recovery, among others s provided in RA 9003 (Nguyen & Tan, 2020). RA 9003 mandates the adoption of a systematic, comprehensive, and ecological solid waste management program as a national policy and recognizes the local government units as the lead implementors (Premakumara et al., 2013; Crowley, 2020).

Moreover, an efficient collection of plastic waste is perceived as a fundamental public service. However, most policies are strictly based on traditional waste collection methods with fixed schedules (Sidhu et al., 2021).

1.1 Community-Based Programs on Solid Waste Management

As stated by Nguyen & Tan (2020), it is expected that Local Government Units (LGUs) carry out their responsibilities in implementing national government-mandated programs, such as the Solid Waste Management

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(SWM) program, in accordance with the Local Government Code of the Philippines 1991 (Republic Act 9003).

Even with these measures, some communities continue to struggle to have accessible trash collection due to a lack of collection services, poor vehicle routing, or a lack of resources (Sidhu et al., 2021). Thus, the absence of any of the resources will make solid waste management programs fail. Thus, the community members will be unsatisfied (Lad et al., 2020).

Citizens' active participation is crucial to identifying issues in waste management. Efforts to preserve the environment must begin at the individual level by starting small transformations. As a result, changes may become ingrained in the family or community, leading to a noticeable change in public perception of household waste management and waste reduction at the source through community engagement (Ruliana et al., 2019; Brutosusilo et al., 2020). However, San Juan (2019) revealed that the participation of community members in solid waste management programs depends on the actions taken by their leaders or officials.

The implementation body also needs available capacity and capability to implement policies that involve strong teamwork and processing leadership, resource utilization in an effective way, a holistic approach, and sustainable processes. A holistic approach will include the involvement of consultative leadership and equal coordination management necessary to harness related skills and experience from within the body, and more public participation (Mir et al., 2021).

1.2 Solid Waste Laws and Policies

The Ecological Solid Waste Management Act of 2000, also known as Republic Act 9003, was passed with the intention of safeguarding the environment and public health while promoting resource recovery and conservation as well as public participation and accountability. The formal devolution of waste management to local levels, together with investments in facilities, the reduction and appropriate treatment of solid wastes, and the compulsory closure of illicit dumpsites, were some of its most important features (Domingo & Manejar, 2021).

In addition to RA 9003, the government has passed several laws to provide a secure and clean environment for Filipinos. These policies emphasize how the government and the Department of Environment and Natural Resources (DENR) work together to ensure that people's lives are in safe environments. One example is how the Department of Education integrates environmental education and the development of environmental awareness in compliance with R.A. 9512, issued DepEd Order No.52,s. 2011 on "Strengthening of Environmental Education in Public and Private Schools". As noted by Tadena & Salic-Hairulla (2019), this is because teaching environmental education could be a beneficial initial phase in resolving local environmental challenges.

The Philippines Clean Water Act of 2004 (Republic Act 9275) stipulates the state shall pursue economic growth within the framework of sustainable development, but consistent with "protection, preservation, and revival of the quality of fresh, brackish and marine waters. Meanwhile, the Republic Act 8749 also known as the Philippine Clean Air Act of 1999 states that centers on pollution prevention and provides a comprehensive management program for air pollution with DENR leading its implementation.

In addition, the Republic Act 9729 also known as the Climate Change Act of 2009 stated that the state should establish a framework strategy and program on climate change, integrate climate change into government policies, and create the Climate Change Commission to coordinate, monitor, and evaluate programs and plans relating to climate change. Also, the Toxic Substances and Hazardous and Nuclear Waste Act of 1990 (Republic Act 6969) stipulated that the government should control and regulate the importation, manufacture, processing, sale distribution, use, and disposal of hazardous and nuclear wastes with DENR as the principal agency.

Furthermore, the state also implemented Presidential Decree No 1685 also known as the Environmental Impact Statement (EIS) system in the Philippines, mandating all public and private organizations to submit an environmental impact statement (EIS) for any planned project that has a major impact on the environment in order to strike a balance between environmental protection and socioeconomic progress.

2. Environmental Sustainability

Over several decades, policies on sustainability have developed and spread from the global to the local level of governance (Howes et al., 2017). In order to attain ecological sustainability and sustainable development, nations implement environmental rules. However, unless they are effectively enforced, environmental regulations do not ensure the sustainability of the ecosystem (Ahmed et al., 2021). As suggested by Danish et al (2020), countries should implement comprehensive environmental policies that could promote the transition toward green energy efficiency and reduce the combustion of the sources of fossil energy.

Considering the state of society today, the slow depletion of natural resources, environmental factors, and the unequal distribution of wealth has resulted in the depletion of both limited and unlimited resources, which has led to climate instability, significant environmental impacts, and a decline in biodiversity (Olah et al., 2020).

Many international development agendas, charters, and goals place emphasis on the role that SWM plays in attaining sustainable development. The Sustainable Development Goals (SDG) of the United Nations, for instance, can be met in part through sustainable SWM (Abubakar et al., 2022). Moreover, it supports the development of a circular urban economy, which minimizes the use of finite resources and encourages the reuse and recycling of materials in order to reduce waste, pollution, costs, and promote green growth.

II. Conclusion And Recommendation

The paper reviewed the literature and provided an analysis of societal issues about the management of solid waste in communities, as well as solid waste management practices. Therefore, it was thought that one way to achieve and enhance solid waste management in the community was to involve the unorganized sector, residents, and government organizations.

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Adopting current laws and policies may also play a significant role in encouraging sustainable waste management. From this vantage point, it is evident that in order to lessen health problems and environmental concerns, initiatives and policy implementation should be started at the barangay level. It should be noted as well that improper handling of garbage has an effect on local and municipal communities in addition to being a worldwide issue.

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