

# The Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program: A Solid Waste Management Program of a Local Government Unit in Dumingag, Zamboanga del Sur

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**Abstract** –To support the continuing call against solid wastes in accordance with RA 9003, otherwise known as the Ecological Solid Waste Management Act of 2002, the Local Government Unit of Dumingag launched the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program in 2012. As such, this study was conducted to assess the effectiveness of the Program as a solid waste reduction strategy in the municipality of Dumingag, Zamboanga del Sur, Philippines. A total of 192 respondents, 14 program implementers, 75 local vendors, and 103 consumers from the six pilot barangays were involved in the study. The evaluative research design was employed with the questionnaire-checklist as main data-gathering instrument. Weighted Average Mean and the H-test were utilized to ensure accurate analysis and interpretation of the data gathered. The findings of the study revealed that the program implementers considered the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program as “Very Effective” while the local vendors and consumers regarded the said program only as “Much Effective” in reducing the solid wastes produced by the residents of the municipality. Furthermore, test of the hypothesis showed that the assessments of the program implementers, local vendors, and the consumers on the effectiveness of the program as a solid waste reduction strategy of the municipality significantly differed.

**Keywords:** basket, bayong, kinaiyahan (kalikasan), solid waste management

## INTRODUCTION

Industrial advancement is primarily meant to help make people's lives become easier. In several ways it has. However, this very “advancement” also worsens earth's environmental problems. Inventions and progress brought by industry have amazed us but their productions and frequent use have often resulted to the destruction of some parts of our world [1].

The rapid escalation of solid waste generated by unprecedented population growth becomes a very serious problem which leads to environmental degradation. According to World Population Data Sheet as cited by Motavilli et al. [2], a 46 percent increase from 2005 to 2050 would be recorded on worldwide population which could reach around nine billion people.

Solid waste management has become a major problem which has started several decades ago. According to Ancheta [3], the creation of solid wastes is mainly brought by human activities and the danger

it poses to the environment and public health greatly depends on how they are well-managed. Waste could only be made as resource if people could know how to manage it properly, however, mixed waste disposal has been a very serious problem since the 1960s and it has reached crisis proportions. Furthermore, waste management problem is worsened by affluent lifestyle that is brought by modernization and progress as well as the rapid growth of mega-cities during the 1990s.

With meager technology and resources, developing countries around the world could be seriously affected by waste management problems compared to developed countries which could utilize more advanced technologies. Waste collection inefficiency and shortage of disposal facilities become a prevalent problem among developing countries. Although solid waste management has been studied during the past decades, it has become a problem in cities and municipalities among developing countries [4].

With rapidly increasing population and inadequate disposal facilities, solid waste has become a serious problem among medium to large-sized cities in the Philippines. Recently, inadequacy of solid waste management systems poses severe health dangers in densely populated regions. As the country becomes industrialized and its population continually grows, certain adverse environmental changes that might bring serious health problems continue to be a key environmental health challenge [5].

As a developing country, the Philippines also faces many solid waste management problems and concerns. According to the IBRD/WB [6] report, the Philippines is among the Asian countries which is also facing serious waste management problems based on waste generation rate as well as availability of resources. The country's waste problem is brought by rapid population growth and urbanization. Its population registered a massive increase from 27 million during the 1960s to 88.57 million in 2007 [7]. Between 2000 and 2007, a population growth rate of 2.04% was recorded and out of 82.8 million in 2005, there were 51.8 million Filipinos or around 63% lived in urban areas [8].

This rapid population growth augments the increased production of solid wastes in the country. As estimated, one person could generate about half a kilo of waste daily and the kind waste generated is escalating due to modern lifestyles [9]. The country generates 19,700 tons of wastes daily and is estimated to rise by 47% in 2010.

The escalating problem on waste management in most communities of the country brought by the uncontrolled population growth, rapid urbanization and industrialization has become the national government's main thrust [10]. The public's low environmental literacy and awareness slightly contributes to the complexities of implementing and enforcing environmental protection laws and policies, specifically on cleanliness and sanitation [11].

To continually address global warming and waste problems, Republic Act No. 9003, otherwise known as Philippine Ecological Solid Waste Management Act of 2000 was enacted. This act calls for the provision of solid waste avoidance and volume reduction by source reduction as well as waste minimization strategies such as composting, recycling, re-using, recovery, green charcoal procedures, etc. before collection, treatment, and disposal in appropriately and environmentally-sound solid waste

management facilities in accordance with the ecologically sustainable development principles [12].

As defined by RA 9003, Ecological Solid Waste Management refers to the "discipline associated with the control of generation, storage, collection, transfer and transport, processing, and disposal of solid wastes in a manner that is in accordance with the best principles of public health, economics, engineering, conservation, aesthetics, and other environmental considerations, and that is also responsive to public attitudes" [12]. Meanwhile, Ancheta [3] argues that "solid waste disposal is a behavioral problem but commonly studied from a quantitative perspective." She states that most of the waste management strategies employed are not sustainable because "technical solutions" are only offered that do not actually address waste generators' disposal practices which are considered the "root cause" of the problem [3].

Moreover, this act is strongly supported by the Local Government Code mandate for local governments to develop Integrated Solid Waste Management (ISWM) programs. In compliance to the program, the Municipal Environment and Natural Resources Office (MENRO) spearheaded environmental campaigns, advocacies, and education which led to the launching of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program in 2012 under the Environmental Development Programs of the Local Government Unit of Dumingag, Zamboanga del Sur.

Relative to the program is the massive campaign intended both for business and consumer sectors to go back in using indigenous materials like bayong, basket, banana leaves, paper bags, net bags, and other biodegradable materials. Consumers have to bring with them their basket or bayong when they buy commodities in the market since business establishments are not allowed to use plastic in wrapping their products [13].

In July 2012, the program was pilot tested only in the six barangays of the municipality, namely: San Pablo, San Pedro, Guitran, Caridad, Libertad, and Lower Landing. In these barangays, implementers strictly enforced the provisions of the program by requiring vendors to use banana leaves, papers, and other biodegradable as packaging materials. Meanwhile, consumers were required to bring basket, bayong, and other biodegradable containers when they would purchase commodities in the market. They would not be able to buy commodities in the market

unless they had brought with them their own containers. Furthermore, corresponding penalties were imposed to both vendors and consumers when they had violated pertinent provisions of the program. A year after, the program was implemented throughout the whole municipality.

### **OBJECTIVES OF THE STUDY**

In view of the foregoing situation, this study was undertaken to assess the effectiveness of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program as a solid waste reduction strategy of one Local Government Unit (LGU) in the province of Zamboanga del Sur, Philippines.

Specifically, it aimed to determine the effectiveness of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program as assessed by the program implementers, local vendors, and consumers; and test the difference among the assessments of the program implementers, local vendors, and consumers on the effectiveness of the program.

### **METHODS**

#### **Research Design**

This study employed the quantitative method of research, specifically the evaluative design, in collecting the needed data on the assessments of the program implementers, local vendors, and consumers on the effectiveness of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program as a solid waste reduction strategy in the municipality of Dumingag, Zamboanga del Sur.

The evaluative research design, according to Ariola[14], is employed to gain sound judgment on the effectiveness of an existing program. It is directed to whether or not a specific program meets its goal or not and to simply find out whether the criterion set is achieved or not.

#### **Research Respondents**

A total of 192 individuals, comprising 14 program implementers, 75 local vendors, and 103 consumers, were the respondents involved in this study. These respondents came from the six pilot barangays of Dumingag, Zamboanga del Sur, namely: San Pablo, San Pedro, Guitran, Caridad, Libertad, and Lower Landing. The purposive sampling method was employed in determining the actual number of respondents. Using this method, only the program implementers, vendors, and consumers from the six

pilot barangays were chosen as the respondents of the study.

To guarantee strict compliance to existing ethical standards in conducting research, informed consent was duly accomplished by the identified respondents of the study and assured them that the responses they had provided on the questionnaire-checklists would be treated with utmost confidentiality. Furthermore, the researchers assigned particular codes to all the respondents to establish their anonymity.

#### **Data Gathering Instrument**

This study utilized the researcher-made questionnaire-checklist as the main instrument in gathering the needed data from the respondents of the study. The said questionnaire-checklist was formulated by the researchers based on the readings they had made on various literatures about the program and the personal interviews they had conducted with some program implementers, local vendors, and consumers of the said municipality.

Before the instrument was administered to the target respondents, it was first submitted to the Research Council composed by personnel from the college and LGU for their corrections and suggestions. After these were incorporated, the instrument was then pilot tested to the selected respondents in order to establish its content validity. After its validation, the final version of the instrument was prepared and reproduced and copies of which were administered to the respondents of the study.

To determine the effectiveness of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) program, a five-point adjectival scale was used.

Scale	Weight Continuum	Adjectival Equivalent	Interpretation
5	4.50-5.00	Strongly Agree (SA)	Very Effective (VE)
4	3.50-4.49	Moderately Agree (MA)	Much Effective (ME)
3	2.50-3.49	Agree (A)	Effective (E)
2	1.50-2.49	Disagree (D)	Ineffective (I)
1	1.00-1.49	Strongly Disagree (SD)	Very Ineffective (VI)

#### **Statistical Treatment of Data**

The Weighted Average Mean and the H-test were the statistical tools employed by the researchers in analyzing the gathered data.

## RESULTS AND DISCUSSION

Table 1 presents the data on the assessment of the program implementers on the effectiveness of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program.

The data reveal that the program implementers have strongly agreed that the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) is an appropriate and effective solid waste reduction strategy/program of the municipality, having the highest weighted average mean of 4.79; provides local residents with enough information on the helpful effects of using bayong and baskets to the environment, 4.71; encourages residents to use bayong/baskets when they buy their basic commodities in the market, strongly advocates the use of bayong, baskets, and other biodegradable materials as alternative packaging materials over plastic bags, and widens public awareness on protecting and conserving the environment, 4.64; reduces the use of plastic bags and other non-biodegradable packaging materials among the residents in the municipality, informs local residents that using plastic bags and other non-biodegradable materials has hazardous effects to the environment, a systematic, comprehensive, and ecological solid waste management program of the municipality, and

encourages residents to be responsible in bringing their own bayong/basket in carrying their things, 4.57. The foregoing statements only vary on their weighted average mean but they all have the same verbal interpretation of “Very Effective.”

Meanwhile, the same data disclose that the program implementers have moderately agreed that the program prohibits local vendors and consumers to use plastic bags and other non-biodegradable packaging materials because of their ill-effects to the environment, and lessens the demands of plastic bags and other non-biodegradable packaging materials in groceries and wet markets, 4.43; and helps local residents generate income and job opportunities (e.g. bayong/basket weaving projects), 4.29, having been interpreted as “Much Effective.”

Generally, the average mean of 4.57 with the adjectival equivalent of “Strongly Agree” elucidates that the program implementers consider the Balik Basket at Bayong para sa Kinaiyahan Program as “Very Effective.” The foregoing result indicates that the program implementers, as the forerunners of the program, highly believe that the program is extremely effective in reducing the solid wastes that are produced by the local residents in the municipality.

Table 1. Assessment of Program Implementers on the Effectiveness of the Program

Statements	WAM	AE	I
1. The Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program provides local residents with enough information on the helpful effects of using bayong and baskets to the environment.	4.71	SA	VE
2. Encourages residents to use bayong and baskets when they buy their basic commodities in the market.	4.64	SA	VE
3. Reduces the use of plastic bags and other non-biodegradable packaging materials among the residents in the municipality.	4.57	SA	VE
4. Informs local residents that using plastic bags and other non-biodegradable materials has hazardous effects to the environment.	4.57	SA	VE
5. A systematic, comprehensive, and ecological solid waste management program of the municipality.	4.57	SA	VE
6. Prohibits local vendors and consumers to use plastic bags and other non-biodegradable packaging materials because of their ill-effects to the environment.	4.43	MA	ME
7. Advocates the use of bayong, baskets, and other biodegradable materials as alternative packaging materials over plastic bags.	4.64	SA	VE
8. Helps local residents generate income and job opportunities (e.g. bayong/basket weaving projects).	4.29	MA	ME
9. Lessens the demands of plastic bags and other non-biodegradable packaging materials in groceries and wet markets.	4.43	MA	ME
10. Widens public awareness on protecting and conserving the environment.	4.64	SA	VE
11. Encourages residents to be responsible in bringing their own bayong/basket in carrying their things.	4.57	SA	VE
12. An appropriate and effective solid waste reduction strategy/program of the municipality.	4.79	SA	VE
Average Mean	4.57	SA	VE

Table 2. Assessment of Local Vendors on the Effectiveness of the Program

Statements	WAM	AE	I
1. The Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program provides local residents with enough information on the helpful effects of using bayong and baskets to the environment.	4.49	MA	ME
2. Encourages residents to use bayong and baskets when they buy their basic commodities in the market.	4.34	MA	ME
3. Reduces the use of plastic bags and other non-biodegradable packaging materials among the residents in the municipality.	4.38	MA	ME
4. Informs local residents that using plastic bags and other non-biodegradable materials has hazardous effects to the environment.	4.20	MA	ME
5. A systematic, comprehensive, and ecological solid waste management program of the municipality.	4.25	MA	ME
6. Prohibits local vendors and consumers to use plastic bags and other non-biodegradable packaging materials because of their ill-effects to the environment.	4.41	MA	ME
7. Advocates the use of bayong, baskets, and other biodegradable materials as alternative packaging materials over plastic bags.	4.10	MA	ME
8. Helps local residents generate income and job opportunities (e.g. bayong/basket weaving projects).	4.36	MA	ME
9. Lessens the demands of plastic bags and other non-biodegradable packaging materials in groceries and wet markets.	4.39	MA	ME
10. Widens public awareness on protecting and conserving the environment.	4.39	MA	ME
11. Encourages residents to be responsible in bringing their own bayong/basket in carrying their things.	4.35	MA	ME
12. An appropriate and effective solid waste reduction strategy/program of the municipality.	4.40	MA	ME
<b>Average Mean</b>	<b>4.34</b>	<b>MA</b>	<b>ME</b>

Furthermore, the result strongly suggests that as implementers of the program in the municipality, they possess a high level of knowledge about the nature of the program as well as the competence that is required for its efficient and effective implementation.

Table 2 displays the data on the assessment of the local vendors on the effectiveness of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program.

The data show that the local vendors have moderately agreed that the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program provides local residents with enough information on the helpful effects of using bayong and baskets to the environment, bearing the highest weighted average mean of 4.49; prohibits local vendors and consumers to use plastic bags and other non-biodegradable packaging materials because of their ill-effects to the environment, 4.41; an appropriate and effective waste reduction strategy/program of the municipality, 4.40; lessens the demands of plastic bags and other non-biodegradable packaging materials in groceries and wet markets, widens public awareness on protecting and conserving the environment, 4.39; reduces the use of plastic bags and other non-biodegradable packaging materials among the residents in the municipality, 4.38; and helps local residents generate income and

job opportunities (e.g. bayong/basket weaving projects), 4.36. Moreover, they have fairly agreed that the program encourages residents to be responsible in bringing their own bayong/basket in carrying their things, 4.35; encourages residents to use bayong/baskets when they buy their basic commodities in the market, 4.34; a systematic, comprehensive and ecological solid waste management program of the municipality, 4.25; informs local residents that using plastic bags and other non-biodegradable materials has hazardous effects to the environment, 4.20; and strongly advocates the use of bayong, baskets, and other biodegradable materials as alternative packaging materials over plastic bags, 4.10. The preceding statements only differ on their weighted average mean but they all have similar interpretation of “Much Effective.”

Overall, the average mean of 3.34 with the corresponding adjectival equivalent of “Moderately Agree” denotes that the local vendors regard the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program as “Much Effective.” The preceding result entails that the local vendors believe that the program is considerably effective in lessening the solid wastes that are generated by the residents of the municipality.

Moreover, the result implies that unlike the implementers of the program, the local vendors have a moderately high regard about the overall view of the program as well as their role or participation in its implementation.

Table 3 discloses the data on the assessment of the consumers on the effectiveness of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program.

The data indicate that the consumers have moderately agreed that the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program provides local residents with enough information on the helpful effects of using bayong and baskets to the environment, obtaining the highest weighted average mean of 4.47; informs local residents that using plastic bags and other non-biodegradable materials has hazardous effects to the environment, 4.43; reduces the use of plastic bags and other non-biodegradable packaging materials among the residents in the municipality, 4.42; prohibits local vendors and consumers to use plastic bags and other non-biodegradable packaging materials because of their ill-effects to the environment, 4.41; lessens the demands of plastic bags and other non-biodegradable packaging materials in groceries and wet markets,

widens public awareness on protecting and conserving the environment, and an appropriate and effective waste reduction strategy/program of the municipality, 4.38.

Furthermore, the same group of respondents have relatively agreed that the program encourages residents to use bayong/baskets when they buy their basic commodities in the market, 4.36; helps local residents generate income and job opportunities (e.g. bayong/basket weaving projects), 4.35; encourages residents to be responsible in bringing their own bayong/basket in carrying their things, 4.34; a systematic, comprehensive and ecological solid waste management program of the municipality, 4.27; and strongly advocates the use of bayong, baskets, and other biodegradable materials as alternative packaging materials over plastic bags, 4.12. All the previous statements have varied weighted average mean but they all have the same corresponding verbal interpretation of “Much Effective.”

In general, the average mean of 4.36 having the corresponding adjectival equivalent of “Moderately Agree” signifies that the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program as “Much Effective.”

Table 3. Assessment of Consumers on the Effectiveness of the Program

Statements	WAM	AE	I
1. The Balik Basket at Bayong para saKinaiyahan (Kalikasan) Program provides local residents with enough information on the helpful effects of using bayong and baskets to the environment.	4.47	MA	ME
2. Encourages residents to use bayong and baskets when they buy their basic commodities in the market.	4.36	MA	ME
3. Reduces the use of plastic bags and other non-biodegradable packaging materials among the residents in the municipality.	4.42	MA	ME
4. Informs local residents that using plastic bags and other non-biodegradable materials has hazardous effects to the environment.	4.43	MA	ME
5. A systematic, comprehensive, and ecological solid waste management programof the municipality.	4.27	MA	ME
6. Prohibits local vendors and consumers to use plastic bags and other non-biodegradable packaging materials because of their ill-effects to the environment.	4.41	MA	ME
7. Advocates the use of bayong, baskets, and other biodegradable materials as alternative packaging materials over plastic bags.	4.12	MA	ME
8. Helps local residents generate income and job opportunities (e.g. bayong/basket weaving projects).	4.35	MA	ME
9. Lessens the demands of plastic bags and other non-biodegradable packaging materials in groceries and wet markets.	4.38	MA	ME
10. Widens public awareness on protecting and conserving the environment.	4.38	MA	ME
11. Encourages residents to be responsible in bringing their own bayong/basket in carrying their things.	4.34	MA	ME
12. An appropriate and effective solid waste reduction strategy/program of the municipality.	4.38	MA	ME
<b>Average Mean</b>	<b>4.36</b>	<b>MA</b>	<b>ME</b>

The foregoing result suggests that the consumers also believe that the program is considerably effective in mitigating and reducing the solid wastes that are produced by the local residents of the said municipality. Furthermore, the result strongly indicates that similar to local vendors, consumers possess a moderately high regard to the nature and provisions of the program as well as their view on the

Table 4. Significance of the Difference among the Assessments of the Program Implementers, Local Vendors, and Consumers on the Effectiveness of the Program

Respondents	Sum of Ranks	df	H – value	
			Computed	Critical
Program Implementers	14	2	16.35	5.991
Local Vendors	75			
Consumers	103			

\*Significant at  $p < 0.05$

As indicated, the computed H-value of 16.35 is greater than the critical value of 5.991 having 2 degrees of freedom at the 0.05 level of significance. Therefore, there is a sufficient evidence to reject the null hypothesis and establish significant difference.

The foregoing result signifies that the assessments of the program implementers, local vendors, as well as the consumers on the effectiveness of the Program as a solid waste reduction strategy of the municipality of Dumingag significantly differ. The result indicates that the program implementers, as pioneers of the program, have a higher regard about the nature of the program and their active participation in its effective and efficient implementation in the municipality as compared to the local vendors and consumers as their counter parts of the said study. The result further implies that necessary steps must be undertaken by program implementers in order to make local vendors and consumers more aware of the pertinent provisions of the program. These steps could include intensive information drive through conducting seminars and conferences about the program regularly as well as involving the local vendors and consumers in the planning and implementation of the program to help them realize that their active involvement would bring overall success to the program.

## CONCLUSION AND RECOMMENDATIONS

The findings of this study explicate that the program implementers assess the Balik Basket at

importance of their active participation in ensuring the effective and efficient implementation of the said program.

Table 4 presents the analysis on the significance of the difference among the assessments of the program implementers, local vendors, and consumers on the effectiveness of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) Program.

Bayong para sa Kinaiyahan (Kalikasan) Program as “Very Effective” while local vendors and consumers only assess the program as “Much Effective” in reducing the solid wastes produced by residents of the municipality. Test of hypothesis reveals that the assessments of program implementers, local vendors, and consumers on the effectiveness of the program as a solid waste reduction strategy significantly differ which imply that necessary steps should be undertaken to improve the effectiveness of the program. From these findings, it is recommended that the Local Government Unit and barangay officials must intensify the implementation of the program in the municipality through employing more innovative and effective strategies to ensure ecological awareness among the residents on environmental protection and conservation and their obedience to the pertinent provisions of the program. Program implementers could also conduct benchmarking activities for them to learn and adopt better strategies that will help improve the effectiveness of the program. As stressed by Al-Khatib et al. [15], Matunog and Awa [16], lack of awareness, technical knowledge, legislative policies, and innovative strategies must be adequately and properly addressed to achieve ecological and sustainable solid waste management programs like the one being studied.

The present study, however, has certain limitations. Considering that the sample size is small, its findings might not generally reflect the assessment of the whole populace on the effectiveness of the Balik Basket at Bayong para sa Kinaiyahan (Kalikasan) as a solid waste management program of the municipality. Parallel studies might be conducted in wider scope and with an increased number of respondents to attain a more comprehensive generalization of the findings. Furthermore, an extensive study could be undertaken by other researchers utilizing other data collection instruments such as personal interviews, observations, focus group discussions, etc. in order to provide a clearer view of the program, its implementation, and

effectiveness as a sound solid waste management program.

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