

Public-Private Partnership Approach to Governance of Solid Waste Management Program of Batangas City

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Abstract— This research intended to determine the performance of the PPP Approach to governance in the Solid Waste Management Program of Batangas City. It utilized descriptive research design involving 393 urban and rural households. The tasks of solid waste collection and disposal were given to a private contractor based on a mutually agreed Terms of Reference. The PPP approach was found efficient in terms of cost efficiency, quick response time, manpower, and minimization of backlogs and effective in four dimensions – promptness, sustainability, equity and progressiveness, and ineffective on adequacy. Rural residents viewed the PPP approach as ineffective in terms of said dimensions. There is significant difference between the perception of urban and rural residents on the effectiveness of the PPP approach. The results of this study would seem to suggest that in developing countries, like the Philippines, it might be necessary to tap the private sector to partner with local government units, so that the management of solid wastes could be done in a more efficient and a more effective way.

Keywords— *Public-Private Partnership, Governance, Solid Waste Management, Efficiency, Effectiveness, Batangas City*

I. INTRODUCTION

Waste management as an environmental issue has in recent years become a concern of local government units (LGUs), considering the fact that the generation or production of such wastes begins at the household levels. While this issue used to be treated before as a national concern, more and more local government officials have recognized the fact that the responsibility of addressing it rests on them. Thus many LGUs have begun to adopt and implement policies that their residents need to comply with in order to achieve sustainable development. These LGUs are given the primordial task of waste collection and disposal of residual wastes. The Ecological Solid Waste Management Act of

2000 (RA 9003), states in its declaration of policies that “the state shall ensure the proper segregation, collection, transport, storage, treatment and disposal of solid waste through the formulation and adoption of the best environmental practices in ecological waste management, excluding incineration.” Eventually, the city of Batangas, enacted the Batangas Environmental Code, otherwise known as the Batangas E-Code in December 13, 2010. One whole article consisting of eleven sections of the Code is devoted to Ecological Solid Waste Management. (Batangas E-Code of 2010).

The garbage collection in Batangas City was privatized by the City Government in CY 2011 and was contracted to a private company – RTM Royal Waste Management Company under the supervision of the City Environment and Natural Resources Office (CENRO), thru the Terms of Reference agreed upon by it and the contractor. But prior to this collaboration between the government and the private sector, collection was being done by the General Services Division of the city. However, there was a growing consensus among the administrators of the program that with the increasing quantity of garbage in the service area, the city’s resources and facilities intended for this function fell short of addressing the challenge of maintaining cleanliness, health and sanitation in the urban barangays of the city. This then necessitated the tapping the private sector to do the job.

This research looked into the performance of the PPP approach to governance of Solid Waste Management, specifically in terms of its efficiency and effectiveness. Indicators of efficiency include cost, manpower, response time, and minimal backlog while indicators of effectiveness include promptness or regularity, adequacy, sustainability, equity, and progressiveness. Aside from the scant literature on the effectiveness of PPP as an approach to managing solid waste, the motivation for this research is hinged on the practical reason of ascertaining whether the PPP approach is

something that would ultimately bring benefits to the residents of the service area, as well as to the city in general.

II. REVIEW OF THE LITERATURE

Public-Private Partnership (PPP)

PPP combines the strengths of both the private and the public sectors, the former with its resources, management skills and technology; and the latter with its regulatory powers and the promotion of the public interest (UN ECE, 2008). PPPs have been seen as alternatives to full privatization. These arrangements demonstrate the flexibility and access to financial resources and technology of the private sector, and the concerns for promotion of environmental sustainability and employment generation of the public sector (Kruljac, 2012).

In the area of solid waste management, PPP has been studied as options in Brazil and Bangladesh (Kruljac, 2012; Bhuiyan, 2010). Kruljac stressed that “PPPs represent an industrialized-country public policy prescription applied in developing country settings” (Kruljac, 2012). He also emphasized that the critical success factor of PPP’s is meeting the demands from the public that cannot be satisfied by the government.

Coad (2005) argued that the private sector is more efficient in terms of discharging the function of maintaining cleanliness, health and sanitation in the local communities. He further stated that compared with the government, the private sector can deliver better service at a much cheaper cost than the former. Furthermore, in terms of labor-efficiency, the private sector is more flexible in utilizing its labor, through provision of incentives as well as opportunities for career advancement. Lastly, the private sector is more effective, administratively, due to its simpler procedures and freedom from intervention by political authorities (Coad, 2005).

One characteristic of public organizations of the future is connectedness, which means “openness to the active involvement of key stakeholders with an impact on public services outcomes” (“Public-Private Partnership”, n.d.). Their need to partner with private entities becomes increasingly necessary due to their meager resources. Such partnerships lead to the development of network models which are far better than hierarchical, bureaucratic organizations characteristic of public agencies. Thus, there is the evolution of such organizational models as PPPs, outsourcing and shared services (“Public-Private Partnership”, n.d.).

Solid Waste Management (SWM)

The poor performance of the public sector in SWM led to the participation of the private sector, particularly in the area of solid waste collection and disposal. In the case of Bangladesh, the accumulation of garbage in public places forced some civil society activists to form community based organizations tasked with refuse collection to clean in their respective localities. Bhuiyan stressed that PPPs have contributed largely to the success of SWM, especially in the aspect of good governance (Bhuiyan, 2010).

In the Philippines, one of the first systematic studies undertaken with the end of evaluating the extent of compliance of program beneficiaries with existing municipal ordinances on SWM was done by Ocenar in 2002 covering two municipalities in Laguna. His study revealed a high level of compliance, such that the beneficiaries often observed the proper way of garbage disposal required by existing regulations on garbage collection and disposal. But his actual observations on the matter showed otherwise. While almost all the respondents expressed high compliance with existing regulations on SWM, piles of garbage in various parts of the municipalities. Such practices clearly reflected non-compliance to SWM regulations.(Ocenar, 2002).

There are currently best practices in SWM, mostly situated in Luzon. In Teresa, Rizal, the operation of Materials Recovery Facility (MRF) led not only to environmental sustainability but also to economic well-being. There was a sustained partnership between the government and the citizenry in promoting cleanliness and hygiene in the community (“Best Environmental Practices”, n.d.)

In Los Banos, Laguna, two major breakthroughs occurred in connection with their best practices in SWM. One is the conversion of the open dumpsite into an ecological waste processing center (EWPC) and the other is the establishment of the informal sector into a people’s organization, the Los Banos Solid Waste Organization. The factors contributing to these breakthroughs include people-orientation and strong political leadership, strong collaboration among the various stakeholders of the community, and linkage and networking with different agencies and organizations (Atienza, 2007).

In Puerto Princesa, Palawan, every household maintains its own style of MRF and there is also one central MRF being managed by the barangay. Vegetable and ornamental gardens are also popular in the area since the people are using biodegradable wastes as soil conditioner to enhance the soil productivity. This aspect is traceable to proper segregation of wastes at source to attain the sustainability of the MRF. External inspectors observed that the reason for

their success is the full support and cooperation of the community and barangay folks. In every endeavor that the barangay is undertaking, the command comes from the barangay captain and everything falls into place ("Best Environmental Practices", n.d.)

According to Bovis (2013, pp. 186-187), PPPs can be viewed as *public service instruments*. As such, he emphasized that :

"the State opts for an externalized model in the delivery of public services and heralds a departure from an asset based to an enabled-based format in public services. Through risk transfer mechanisms, the PPP is treated as an emanation of the State and reveals a different ethos in public sector management, that of the State as enabling and facilitating agent. However, the strategic role of private actors in financing and delivering infrastructure and public services by providing input into the various phases such as finance, design, construction, operation and maintenance, reflect the need for longevity of the relations between public and private sectors" And this entails strengthening governance at the local government level.

Carino (2007) emphasized that a major element of governance is that it transcends the state and includes activities of the private sector and civil society. Governance, she continued, has not diminished the state as it has included all state institutions within its purview – including the legislative and judicial systems. Governance encompasses not only the activities of public agencies, but also emphasizes the proactive role of the private sector and civil society in development. It is concerned with an ethical dimension in its focus on the responsible exercise of power. This means adhering to the key principles of sound development management – accountability, participation, predictability, and transparency (NCPAG, 2007).

Viewing government in terms of public management rather than public administration places greater emphasis on the needs of citizens and treats them as partners instead of being mere recipients of government programs and services (Lucas and Tolentino, 2007). One area that has not been studied yet is how the PPP approach to governance can be made to apply in local government settings, particularly at the level of cities/municipalities and barangays.

The research questions to guide the researcher in this study are: What are the components of the PPP approach to governance of solid waste management in Batangas City? How effective is the PPP approach to governance of SWM in Batangas City? Is there a difference in the effectiveness of the PPP approach as viewed by urban and rural households?

III. METHODOLOGY

This research utilized the descriptive and differential research designs, the former being used when the researcher's concern is to understand the nature, characteristics and components or aspects of a situation or phenomenon (Garcia and Reganit, 2010), while the latter compares two or more groups that are differentiated on the basis of some preexisting variables (Graziano and Raulin, 2007). Whether defined qualitatively or quantitatively, the group differences existed before the study was conducted. The researcher attempted to determine if there is any difference in the effectiveness of PPP as viewed by urban and rural households. Likewise he also tried to ascertain the differences in the PPP approach vis-à-vis the city managed garbage collection and disposal. Since the purpose of this study was to determine the efficiency and effectiveness of the management of solid wastes by the private contractors, respondent household heads were asked to rate the level of effectiveness based on the indicators used by Carino and Associates namely: promptness, adequacy, sustainability, equity, and progressiveness.

Participants, Sampling and Setting

This research was conducted in Batangas City, one of the three cities of the province of Batangas. There were two types of respondents: the members of the households of Poblacion barangays, labeled as urban barangays and those outside the Poblacion, labeled as rural barangays, all comprising the local government of Batangas City. The households were derived from the forty-one (41) barangays which were included in the service area of the SWM program of the city. These were the twenty four (24) poblacion barangays and the seventeen (17) rural barangays. Multi-stage sampling technique yielded a total number of 393 respondents.

Data Collection

Instruments in the form of self-constructed survey questionnaires were validated through pre-testing with thirty (30) respondents, which were then administered to the respondent households. This instrument was based on the definition of effectiveness by Carino and Associates, who looked at it in terms of satisfaction with the service. Such satisfaction involves seven dimensions namely: (a) ampleness or adequacy; (b) equity; (c) timeliness; (d) continuity; (e) progressiveness; (f) accessibility; and (g) demeanor of service. The present study utilized the first five (5) dimensions embodied in the said study (Carino, 1983). Interviews were also conducted with key officials in-charge of solid waste management in Batangas City: the

CENRO Head of Batangas City and the former in-charge of the General Services Office of the City.

Data Analysis

The questionnaire consisted of three parts, the first covers personal information, the second covers the solid waste management practices and the third, the effectiveness of public-private partnership. Further, an interview guide was utilized in interviewing key informants who are involved in the implementation of the SWM program in Batangas City. Effectiveness was analyzed in terms of five indicators cited in the foregoing.

A four-point scale was used to determine levels of effectiveness. Descriptive and inferential statistics were used. Weighted means of the responses were obtained and in the test of hypotheses, the test of differences in means was used, the t-test.

IV. RESULTS AND DISCUSSIONS

The components of the PPP approach to SWM in Batangas City are embodied in the Terms of Reference (TOR) for Solid Waste Collection and Disposal Project. The general objective of the project is to ensure a healthy and clean environment in the city while the specific objectives include the following: (1) to ensure compliance with RA 9003 provisions and standards; (2) to ensure compliance with DENR issued ECC for the San Jose Sico Landfill Operations Manual as approved by the DENR Multi-partite Monitoring Team; and (3) to ensure that generated solid waste is collected promptly and disposed of properly.

In complying with its obligations, the Contractor shall have under its possession, ownership and control the minimum number of trucks as follows: twelve units of 10-wheeler trucks, five units of 6-wheeler or 10 cubic meter compactor, and thirteen units of mini dump trucks or 8 cu.m. compactor, totaling thirty. The minimum number of trips per day is 35.

Performance of the PPP approach to Governance

Efficiency of the PPP approach

Van Bruaene states that efficiency “should be viewed in terms of how an organization uses its resources, such as available funding and staff, to achieve organization (“Measuring Your Organization”, n.d.). The PPP approach to governance was assessed in terms of cost consideration, staffing, response time, and backlog.

In an interview with the CENRO Head of Batangas City, it was revealed that when the city government was responsible for managing the collection and transport of solid wastes, it allotted a total budget of 75 million pesos for solid waste collection, as against the total city’s budget

of 1.2 billion pesos. From 2011 to 2013, the city allotted an annual budget of 30 million pesos as against the total city’s budget of 1.8 billion pesos. In terms of absolute amount, the 30 million budget represents only 40% of the original allocation of PhP75 million. In terms of ratio, the budget then for SWM represents 6.25% of the total budget, while in the current budget, the allocation for SWM represents only 1.67% of the total budget. Clearly, this represents a lot of savings for the city which is a manifestation of the cost efficiency of privatizing the SWM program, without compromising the effectiveness of its implementation.

In terms of manpower requirements, the old system of collection and transport under the General Services Department relied on about one hundred fifty (150) dispatchers and helpers termed “pahinante” who would help man and assist the drivers of garbage trucks. In the current TOR, there are fifty laborers required to help man the thirty garbage trucks. The great discrepancy in the number of hired laborers can be explained by the fact that these workers were hired by local government officials of the city, as a way of repaying political debts for having supported them during the elections. As a consequence, the CENRO Head lamented that it was hard to exact obedience or compliance from them since their loyalty was reserved to their appointing officials, not to the head of the department involved in SWM. In 2011 when they were absorbed by the private contractors, they were not able to adapt to the more rigid and business-like approach of the contractors so they had to be terminated.

As to response time, the CENRO Head explained that if there were concerns or feedbacks from the community residents, such information would be relayed immediately to the private contractors who would respond by addressing the issue within one hour, unlike in the past when the CENRO monitoring staff would have to communicate the feedback to the department head, then to the supervisor or foreman, and then to the persons involved. Because of this communication protocol, one day was not enough to resolve the issue or concern at hand.

Lastly, occurrence of backlogs or the amount of work in queue waiting to be processed

had been reduced. The failure of the contractor to collect and transport solid wastes in an area of the barangay would be penalized by an amount equivalent to the cost of one truckload of delivery. Other punishable offenses include late dispatch and collecting waste before and/or beyond the prescribed collection schedule, and improper garbage collection based on the standards set forth in the TOR.

Effectiveness of the PPP approach

Table 3.1 presents the effectiveness of the performance of the designated private contractor, discussed in detail below: The rating done by both urban and rural residents indicated that the highest score was obtained by the first item – “garbage did not pile up due to regular collection” – obtaining a weighted mean value of 3.0 while the next two items – “garbage did not pile up because collection was

done on schedule time” and “the street where the collection points are located is always clean due to regular collection” – both got mean values of 2.94. Only one item was rated as not effective by the urban dwellers, that is, the one referring to the “presence of insects” after each and every collection.

Table 3.1 Effectiveness of Public-Private Partnership

	Urban			Rural			Over-all		
	WM	VI	R	WM	VI	R	WM	VI	R
Promptness/regularity of service (availability of service whenever needed)									
1. The garbage did not pile up because collection was done regularly.	3.00	A	1	2.41	DA	1	2.70	A	1
2. The garbage did not pile up because collection was done on scheduled time of day (say for example, 6-7 pm)	2.94	A	2.5	2.31	DA	2	2.62	A	2
3. The street where the collection points are located is always clean due to regular collection.	2.94	A	2.5	2.22	DA	3	2.58	A	3
4. There are no insects that serve as carriers of diseases (flies, mosquitoes, etc.) in the collection point as a result of regular collection.	2.39	DA	4	2.08	DA	4	2.24	DA	4
Composite Mean	2.81	A		2.25	DA		2.53	A	
Adequacy of service (sufficiency of the service being performed)									
1. Garbage trucks are always in proper condition; they are not out-of-order.	2.39	DA	3.5	2.28	DA	2	2.34	DA	3
2. There are enough crew members of each garbage truck in-charge of regular collections.	2.61	A	1	2.45	DA	1	2.53	A	1
3. There are no leftovers or remains in the designated collection points.	2.39	DA	3.5	2.05	DA	4	2.22	DA	4
4. The garbage crew left the streets clean after collection (street sweepers clean the streets after collection).	2.58	A	2	2.12	DA	3	2.35	DA	2
Composite Mean	2.49	D		2.23	D		2.36	D	
Sustainability of service (continuity of the service over a period of time)									
1. There is continuity of collection regardless of weather conditions.	2.69	A	2	2.29	DA	3	2.49	DA	2
2. There is continuity of collection in our area even if collection in some areas was not regularly done.	2.65	A	3	2.31	DA	2	2.48	DA	3
3. There is continuity of collection especially in times of peak production of garbage like fiestas, Christmas season, and All Saints’	2.98	A	1	2.53	A	1	2.76	A	1

Day.									
4. Announcements to the public are made in the event that operator and crew of garbage trucks are unable to collect.	2.47	DA	4	2.11	DA	4	2.29	DA	4
Composite Mean	2.70	A		2.31	D		2.50	A	
Equity (availability of the service to everyone, regardless of personal circumstances)									
1. Garbage collection was done in all places, regardless of their distance (near or far).	2.65	A	2	2.25	DA	4	2.45	DA	3
Table continued...									
2. Garbage collection was done in all places, regardless of the community's economic status (whether rich or poor)	2.61	A	3	2.49	DA	1	2.55	A	2
3. Garbage collection was done in all places, regardless of the amount and kind of wastes produced by the community.	2.84	A	1	2.41	DA	2.5	2.63	A	1
4. Garbage collection was done in the community, regardless of the difficulty of accessing the place.	2.47	DA	4	2.41	DA	2.5	2.44	D A	4
Composite Mean	2.64	A		2.39	D		2.52	A	
Progressiveness (ability of the service Improve over time)									
1. There is marked improvement in the present solid waste collection and transport compared to the previous collection system (where the city government was in-charge of collection).	2.92	A	1	2.28	DA	4	2.60	A	1
2. The garbage collection crew (truck driver and laborers) have been very consistent in the day-to-day collection efforts.	2.65	A	3	2.35	DA	1	2.50	A	3
3. There is marked improvement in the cleanliness and sanitation of the community or barangay due to the sustained efforts of this company.	2.61	A	4	2.32	DA	2	2.47	DA	4
4. There is marked improvement in the garbage collection as evidenced by the reduction of flash flooding during rainy seasons.	2.90	A	2	2.31	DA	3	2.61	A	1
Composite Mean	2.77	A		2.32	D		2.54	A	
The partnership between the city government of Batangas and RTM company on solid waste management-									
1. has diminished the occurrence of garbage dumping in vacant lots and waterways.	2.66	A	5	2.50	A	2	2.58	A	4
2. has brought about cleanliness and sanitation in our barangay.	2.77	A	2	2.35	DA	5	2.56	A	5
3. has led to greater awareness of residents on the need for waste segregation at home.	2.69	A	4	2.49	DA	3	2.59	A	3
4. had led to greater awareness of residents	2.90	A	1	2.51	A	1	2.71	A	1

on the damaging effects of littering and dumping their wastes in prohibited areas										
5. has led to greater involvement of people or barangay residents in all aspects of SWM - from reduction at source to segregation and disposal.	2.74	A	3	2.48	DA	4	2.61	A	2	
Composite Mean	2.75	A		2.47	DA		2.61	A		
Over-all Composite Mean	2.70	A		2.33	DA		2.51	A		

Legend: 3.50 – 4.00 = Strongly Agree (Very Effective); 2.50 – 3.49 = Agree (Effective); – 2.49 = Disagree (Less Effective); 1.00 – 1.49 = Strongly Disagree (Not Effective)

Very worthy of notice are the ratings of disagreement, corresponding to “not effective” given by the rural residents on all four items under promptness and regularity. Seemingly, rural residents experienced irregularity in the collections of garbage, or non-adherence to the scheduled time of collection. And because of these, it would be expected that the streets are rendered unclean most of the time, and insects would be found hovering around the uncollected piles of garbage. This means that either collections were not done on a “regular basis” or when they do collect, it was either earlier or later than the scheduled time. The overall mean rating of 2.24, or not effective, indicates that the private contractor was unable to deliver well the required service on a regular basis, or on scheduled time.

Adequacy of service

The four items included in this criterion are: garbage trucks are always in proper condition; there is enough crew members of these trucks in-charge of regular collections, there are no leftovers or remains in the collection points, and the garbage crew left the streets clean after collection since there are street sweepers who sweep whatever remains there are.

Urban residents disagreed on the first and third items, and agreed on the second and fourth items. This means that garbage trucks are not always in proper condition and that there are leftovers or remains in the collection points. On the other hand, rural residents responded “disagree” on all four items. The composite mean for adequacy is 2.36 or disagree, which corresponds to the rating of not effective. Obviously, both urban and rural residents viewed the collection and transport service of the private contractor as not effective.

Sustainability of service

This criterion indicates that there is continuity of collection under the following conditions: regardless of weather conditions, even if collection in some areas was not done

regularly in other places, in times of peak production of garbage like Christmas and New Year.

Urban residents were in agreement to the first three items while they are in disagreement to the fourth item. The message being imparted here is this: that regardless of weather condition, the garbage collectors would still deliver their service. They may not be prompt and there may be inadequacies as noted above, but they would still continue to deliver the service especially in times of great need by the resident. On the other hand, rural residents disagreed on all items, except the third, that is the collection of garbage during peak seasons. The overall mean of 2.50, though quite low, indicates that the performance of the contractor with respect to this criterion can be described as still effective.

Equity of service

This criterion includes four items namely: garbage collection was done in all places regardless of distance; community’s economic status; the amount and kind of wastes produced; and the difficulty of accessing the place.

Urban residents responded “agree or effective” to the first three items while they rated the last item as disagree or not effective. The mean rating of 2.64, equivalent to agree or effective shows that this criterion is being complied with by the private contractor. On the other hand, the rural residents rated all four items as disagree or not effective. This may be attributed to the distance factor. Because some barangays are too large and there are many sitios or puroks to be served, there were instances whereby the collectors are unable to reach the remotest villages. When one compares this situation to the urban barangays that are very contiguous to each other, it is definitely more difficult to collect and transport garbage from those remote parts of rural barangays. But the composite mean of 2.52 indicates that on the whole, the contractor had performed effectively in complying with the requirement of equity.

Progressiveness of the service

This criterion includes four items namely: there is marked improvement in the present solid waste collection and transport; the garbage collection crew have been very consistent in the day-to-day collection efforts; there is marked improvement in the cleanliness and sanitation of the community, as evidenced by the reduction of flash flooding during rainy seasons.

Urban dwellers rated all four items as Agree, corresponding to effective. It can be noted that the highest mean value of 2.92 was given to the first item, that is, the marked improvement in the present solid waste collection compared to the previous system. The CENRO Head himself admitted in the course of the interview that owing to the of the huge outlay of financial resources needed to undertake this project and because of the lack of trained manpower and supervisory staff, the system of collection then was not able to regularly respond to the daunting task of maintaining a clean and sanitary environment in the coverage area. The second highest mean value of 2.90 was received by the last item, the one pertaining to the reduction of flash floods during rainy season. This is definitely a positive impact of the current SWM system as this problem brings about a host of other problems like traffic, land and water pollution, and even landslides in some areas.

Rural dwellers, on the other hand, disagreed on all four items, thus their rating in the progressiveness criterion is "not effective." It is lamentable to think that considering the time, money, and energy being poured into the project by the city government, the rural residents failed to see any marked improvement in the current program, as evidenced by the composite mean of 2.32, or not effective. On the whole though, this criterion got an overall rating of 2.54 or effective.

In terms of the overall assessment of effectiveness, the item that got the highest rating for urban residents with mean value of 2.90 or effective, is one which says that the PPP had led to greater awareness of residents on the damaging effects of littering and dumping their wastes in prohibited areas. This finding is very significant in that that the community's level of awareness on these damaging effects will make them act cautiously with respect to littering and dumping of any kind of waste. This was also rated highest by the rural residents, implying that because of the PPP approach, the community developed greater awareness on the ill-effects of these behaviors. Boadi and Kuitunen (2005) stressed that in order to solve the problem of improper waste disposal, it would be necessary to conduct information campaigns to make the citizens aware of the impacts of sanitation practices on their health. The second

highest rating of 2.77, or effective was obtained by the item which states that the PPP approach has brought about cleanliness and sanitation in their barangays. The item obtaining the third highest rating of 2.74 or effective is that the PPP approach has led to greater involvement of people or barangay residents in all aspects of SWM - from reduction at source to segregation and disposal. This item is closely linked to the first one on awareness. Atienza (2004) argued that the most successful strategies in SWM have surfaced when there is involvement of different sectors of society such as the public and private sectors of the community.

The item that ranked fourth in effectiveness was one which states that the PPP approach has led to greater awareness of residents on the need for waste segregation at home. This was followed by one stating that the PPP approach has diminished the occurrence of garbage dumping in vacant lots and waterways. In other words, the latter situation is still prevalent in the urban areas owing to the preponderance of wastes amidst scarcity of vacant spaces. The composite mean of 2.75 or effective indicates that the urban residents view the PPP approach as having been effective in creating a level of awareness among them which in turn led to active involvement in maintaining cleanliness and sanitation in their respective areas.

Rural residents, on the other hand, viewed the PPP approach as effective in having diminished the occurrence of garbage dumping in vacant lots and waterways since this obtained a mean value of 2.50 or effective, as well as in their having developed an awareness on the damaging effects of dumping and littering in prohibited areas, with mean value of 2.500. They rated the other three items as not effective, which implies that unlike their urban counterparts, their level of awareness is not that high, and consequently, their level of participation in solid waste management projects is likewise not high. This may be due to the inability of the barangay officials to cascade the guidelines and information coming from the city government with respect to segregation and disposal, as well as their failure to strictly enforce the city ordinances on segregation and plastic ban in their localities.

On the whole though, the PPP approach has been effective enough in bringing about the needed changes in the mindset and habits of both urban and rural residents, as evidenced by the composite mean score of 2.61. However, there is still a need for enhancement of practices to make the approach very effective.

Difference of Responses on the Effectiveness of the PPP approach

Table 3.6 Difference of Responses on the Effectiveness of Public-Private Partnership Between the Two Groups of Respondents

Indicators	GROUP	Mean	t-value	p-value	Interpretation
Promptness	urban	2.8145	3.76	0.000	Highly Significant
	rural	2.2548			
Adequacy of Service	urban	2.4919	1.785	0.075	Not Significant
	rural	2.2259			
Sustainability	urban	2.6976	2.905	0.004	Significant
	rural	2.3103			
Equity	urban	2.6411	1.73	0.085	Not Significant
	rural	2.3907			
Progressiveness	urban	2.7702	3.171	0.002	Significant
	rural	2.3167			
Partnership between the city government and RTM company	urban	2.7548	2.05	0.041	Significant
	rural	2.465			

Legend: Significant at $p\text{-value} < 0.05$

Table 3.6 shows the difference of responses on the effectiveness of the PPP approach between the two groups of respondents. Indicators of promptness, sustainability, progressiveness, and the overall impact of the partnership showed significant difference while the adequacy of service and equity did not exhibit any significant difference at the .05 level of significance.

There is a highly significant difference at $p\text{-value}$ of 0.00. As noted in the foregoing discussion, the rural residents were not satisfied in the way the private collector complied with the scheduled time and days of collection. Apparently, there were delays in the collection time or there were days when the garbage trucks did not arrive at all. However, from their agree responses on all four items, it can clearly be seen that they were satisfied with the contractor's compliance with the scheduled days and time for collection. Sustainability is another indicator in which there is significant difference in responses between urban and rural residents. This aspect relates closely with promptness of collection in the sense that the more compliant the contractor has been in the targeted day and time of collection, the more likely would they sustain their collections regardless of weather, distance, or occurrence of peak production of solid wastes. Again, urban residents thought that the contractor was able to sustain their collections even under exceptional circumstances while rural residents think otherwise.

As to progressiveness, the two groups manifested significant difference in their responses. Urban residents tended to think that there had been marked improvements in

cleanliness and sanitation as evidenced by the reduction of flash floods during rainy seasons, and this can be gleaned from their consistency and regularity of collection. Rural residents did not see any marked improvements after almost four years that the private contractor had been collecting solid wastes in the coverage area.

As to the impact of the PPP partnership, urban residents showed significant difference in their assessment of effectiveness compared with their rural counterparts. As previously noted, the PPP had led to a greater level of awareness on the need to segregate solid wastes as well as on the damaging effects of littering and dumping. This heightened level of awareness had made them more actively involved in all aspects of solid waste management – from segregation to disposal. On the other hand, rural residents viewed that the partnership had created impact only in the diminished occurrence of dumping in vacant lots and waterways as well as in the development of awareness in the damaging effects of littering and dumping of solid wastes in prohibited areas. Thus, the null hypothesis that there is no significant difference in the assessment of the PPP approach between the urban and rural residents is rejected.

V. CONCLUSIONS AND RECOMMENDATIONS

The PPP approach was adopted by the city government of Batangas after the SWM program implementers realized that the city-managed garbage collection program was a failure. This study revealed that the PPP approach was more

efficient than the traditional city-managed solid waste management in terms of cost efficiency, manpower quick response time, and minimization of backlogs. This approach was viewed as effective by urban residents in four dimensions as promptness, sustainability, equity and progressiveness, and ineffective only in terms of adequacy. On the other hand, rural residents viewed the PPP approach as ineffective to governance in terms of all dimensions cited. Urban households differed significantly from the rural households in their perception of the effectiveness of the PPP approach. The former rated the PPP approach as effective while the latter rated it as less effective.

The results of this study would seem to suggest that in developing countries, as has been practiced in Bangladesh, India and lately, in the Philippines, it might be necessary to tap the private sector to partner with local government units, especially those that are plagued by technical and financial deficiencies associated with the current system. That sector had proven to be more effective and efficient— cost-wise, than the public sector especially in urban centers, in managing solid wastes. Besides, it would certainly be less draining for government's meager resources since these will no longer be allocated for solid waste collection and disposal purposes.

On the basis of the findings of this study, the following recommendations are advanced: There is a need for the policy makers at the city and barangay level to consider enacting ordinances that would implement the policy recommendations made in the foregoing as well as to strictly implement those that are already embodied in the Batangas E-Code and its IRR. A different system of collection and transport may be adopted for rural barangays vis-à-vis the system being adopted for urban barangays. This system may involve a different set of private contractors who would be in-charge of solid waste collections in the far-flung barangays. There is a need to reactivate and strengthen the Barangay Solid Waste Management Council that shall implement the SWM Program at the local level. It may be necessary for the rural barangays, through their representative in the Sangguniang Panglungsod to propose different kinds of collection scheme whereby the barangay officials and residents would have close coordination with the private contractors. The operations of the Material Recovery Facilities in the barangays must be reactivated so that recycling activities can take off and pave the way for a greatly reduced volume of solid wastes in the city. There is a need for future researchers to conduct studies on the effectiveness of the

PPP approach covering other locales and including other variables.

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