

PRACTICES, KNOWLEDGE AND ATTITUDE ON WASTE SEGREGATION IN SELECTED AREAS IN METRO MANILA

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Introduction. The following report is part of the study, “Evaluation of Urban Solid Waste Segregation and Collection Scheme and Stakeholders’ Role, Perception and Attitude on Solid Waste Management”, which was one of the five studies (Metro Manila component) of the one-year diagnostic project “Biowaste Reuse in South East Asia” (see www.biowaste-reuse.org). The project was funded by the European Union under its Asia Pro-Eco Program. It aimed to enhance biowaste reuse practices through the assessment of conditions that make biowaste products (mainly compost) competitive with non-renewable fertilizers and soil conditioners in three key cities of South East Asia, namely Bangkok (Thailand), Ho Chi Minh (Vietnam) and Metro Manila (the Philippines).

The report focuses only on the results of the survey of households and market vendors in Metro Manila to determine their practices, attitudes and knowledge specifically on waste segregation. The study covered 5 sites in Metro Manila, which include Bgy. Holy Spirit, Quezon City; Bgy. 169, Caloocan City; Bgy. Concepcion Uno, Marikina; Bgy. Palanan, Makati and the city market of Pasig City. The general features of the survey sites are presented in Table 1.

Table 1. Profile of barangay/sites surveyed

Item	Location				
	Bgy. Holy Spirit	Bgy. 169	Bgy. Concepcion Uno	Pasig Market	Palanan
Location	Quezon City	Caloocan City	Marikina City	Pasig City	Makati City
Area (ha)	322	55	544	3	66
Population	120,000 (2005)	2,178	76,917	5,449 vendors	40,000
No. of households	20,000 (2005)	950	16,132	-	6,129 (2006)
Annual income (PhP)	16 M	1.6 M	14.5 M	49 M	17 M

A total of 250 respondents were interviewed in the study, 50 from each site. The age of the respondents ranged from 36 to 46 years old, with an average age of 43 years. They were also schooled having spent an average of 12 years in formal school. About 18% were high school graduates, 14% took some college courses and 20% graduated from college. Average household size was 5 which is well within the national average. The respondents’ average monthly income was PhP17,588.00. Half of the

respondents had a monthly income of PhP 10,000 and below, while 29% had earnings of more than PhP 20,000

Composition of Waste Generated. The waste generated in all five site is dominated by the ubiquitous plastics, mostly the locally known 'sando' bags, which replaced the sturdier native 'bayong', paper bags, and banana leaves and other sturdy but safe-to-handle broad leaves. Plastics are practically in all households. They were mentioned 93% or more of the time except in Palanan where plastics were reported only 88% of the time (Table 2.). Perhaps this situation pictures the lifestyles of people where poorer families do less buying and they also have less of the disposable plastic spoons, forks, and drinking utensils, a trademark of the take-out food orders in the fast food chains.

The second ranking waste generated is food wastes. This is understandable for even poor people also eat. In fact in Palanan, of all the barangays, food waste ranks first and plastics only second. Two other wastes that were mentioned more than 50% of the time are papers and tin cans.

One interesting observation in Table 2 is the higher frequency of mentions for all wastes cited notably tin cans, papers, pampers, napkins, glass bottles, and styrofoam in Barangay 169, considered the more affluent of all the study barangays. This appears to support the earlier suggestion that bulk and composition of waste is a function of the socio-economic status of households.

Table 2. Composition of Waste Generated by Households

Waste Generated	Palanan (n=50)	Concepcion Uno (n=50)	Holy Spirit (n=50)	Barangay 169 (n=50)	Pasig Market (n=50)	Total (n=250)
PERCENT OF TIME MENTIONED						
Plastics	88	96	94	94	94	93
Food Wastes	98	84	94	92	82	90
Papers	34	64	44	68	50	52
Tin Cans	30	42	52	82	48	51
Glass Bottles	10	38	38	52	30	34
Pampers/Napkins	32	24	22	60	28	33
Cardboard	2	4	4	20	28	12
Styrofoam	2	10	4	20	14	10
Old Appliances	2	2	2	2	0	2
Others	0	12	2	2	0	3

*Multiple answers

Knowledge of Solid Waste Management. Solid waste management (SWM) is one concept where majority (76%) of the respondents claimed they have heard about or know of, especially those from Barangay 169 which registered the highest proportion of respondents (88%) claiming knowledge of it (Table 3). It was in Palanan and in the Pasig Market where relatively more respondents (32% from each barangay) have not heard yet of SWM.

Table 3. Distribution of respondents as to their having heard of SWM

Have heard	Palanan (n=50)	Concepcion Uno (n=50)		Holy Spirit (n=50)		Barangay 169 (n=50)	Pasig Market (n=50)	Total (n=250)	
		P	E	R	C				E
Heard of SWM									
Yes	68	76	80	88	68	76			
No	32	24	20	12	32	24			
Sources of information re SWM*									
	(n=34)	(n=38)	(n=40)	(n=44)	(n=34)	(n=190)			
		PERCENT OF TIME MENTIONED							
City/barangay officials	32	55	68	66	3	47			
TV	53	3	20	59	47	36			
Other people/organizations/ associations	32	11	15	25	32	23			
Radio	3	0	5	20	35	13			
Family members	18	8	5	2	15	9			
Newspapers	3	0	3	27	6	8			
Seminars attended	0	8	5	2	12	5			
Others	3	0	3	0	0	1			
Specific items about SWM recalled*									
		PERCENT OF TIME MENTIONED							
Waste segregation	79	92	65	91	91	84			
Disposal and collection of waste	3	5	3	7	0	4			
Recycling	0	0	10	5	0	3			
Cleanliness of environment	6	0	3	2	0	2			
Composting and use of fertilizer	0	0	10	0	0	2			
Solution to garbage problem	0	0	0	0	3	1			
No answer/can't remember	12	3	20	0	6	8			

*Multiple responses. Respondents only those who have heard of SWM

The city or barangay officials were the most frequently mentioned sources of information regarding SWM except in Palanan and in the Pasig Market where TV was the most frequently mentioned source. Quite surprising is the observation in Pasig Market where only 3% of the respondents mentioned the local government officials as their information source. In fact this is the least frequently mentioned source of the seven sources identified.

One item that stands out in what they can recall of the SWM they have heard is that it is about waste segregation. This was mentioned 84% of time. The other items such as disposal and collection of waste, recycling, etc. were mentioned less than 5% of the time.

Surprisingly, while only 76% said they have heard about SWM, all of them said they know what biodegradable and non-biodegradable wastes are, giving food wastes as their number one example of biodegradable wastes and plastics (bottles, spoons, forks, bags etc.) for non-biodegradable wastes. All of the Palanan, Concepcion Uno, and Pasig Market respondents also said they know what are recyclable wastes

compared to the 94% from Holy Spirit and from Barangay 169 who claimed such knowledge. Plastics and papers and cartons were their most frequently mentioned examples of recyclable wastes.

However, when it comes to knowledge of local ordinances regarding SWM only a little over majority of the Concepcion Uno (64%), Holy Spirit (56%), and Barangay 169 (54%) respondents claimed they know some local ordinances. In Palanan and Pasig Market, a relatively small proportion of the respondents, 22% and 28%, respectively, said they have heard of such ordinances.

Among those who claimed knowledge of local ordinances, waste segregation was the most frequently recalled content of the ordinance. It may be interesting to note that this is also the item that stood out in what they could recall of SWM. These observations strongly suggest that the likely focus of those implementing solid waste management programs is on waste segregation.

Segregation of Waste. It may be noted that waste segregation played very prominently in the items recalled by the respondents when asked about SWM, ordinances on SWM, and their knowledge of Republic Act 9003 (Ecological Solid waste Management Act of 2000). For instance, 84% of the time they mentioned that SWM is about waste segregation (Table 3). However, when asked if they segregate waste, only 76% answered in the affirmative. By barangay, the proportion of respondents doing waste segregation was highest in Concepcion Uno (96%) and in Holy Spirit (94%). It was lowest in Palanan (48%) (Table 4).

Table 4. Proportion of respondents segregating solid waste and reasons for doing so

Segregation and Reasons	Palanan (n=50)	Concepcion Uno (n=50)		Holy Spirit (n=50)		Barangay 169 (n=50)		Pasig Market (n=50)	Total (n=250)
		P	E	R	C	E	N		
Segregates waste	48	96		94		76		66	76
Does not segregate waste	52	4		6		24		34	24
Reasons for segregating waste*	(n=24)	(n=48)		(n=47)		(n=38)		(n=33)	(n=190)
		PERCENT OF TIME MENTIONED							
Pressures	17	85		79		66		27	61
From local ordinances	(8)	(85)		(77)		(66)		(27)	(59)
From others	(8)	(0)		(2)		(0)		(0)	(2)
Economic considerations	50	13		34		39		52	35
Reuse/recycle purposes	25	2		6		61		21	21
Health and Environmental considerations	13	4		11		0		21	9
Other considerations	13	4		9		0		6	6

*Multiple responses

Reasons for Segregating Waste. The reasons for doing waste segregation is something that SWM implementers should think twice about. It appears that they do the practice not so much because they see the need to segregate considering the myriad of problems that unsegregated wastes brings, but because of the fear of punishment that could be meted out to them by virtue of local ordinances on SWM. The pressures such as the no-segregation-no-collection policy of the local governments and fines for

unsegregated wastes appear to be the strong motivations to get them to toe the line. Pressures as reasons for segregating waste was observed to be particularly highest in Concepcion Uno, 85% of the time (and this was the barangay that registered the highest proportion of respondents segregating their waste) and in Holy Spirit, 79% of the time, (the second highest in proportion of respondents segregating waste). Would they continue to segregate waste if these sanctions are removed?

Economic considerations such as the money they will earn from selling recyclable wastes as a reason for segregating waste was mentioned only 35% of the time. It was lowest in Concepcion Uno (13%) which may be considered as a middle class barangay but highest in the Pasig Market (52% of the time) and in Palanan (50%). It must be noted that respondents from Bgy. Palanan were the poorest of the five groups of respondents studied.

Segregating for reuse or for recycling purposes was mentioned only 21% of the time. Bgy. 169 respondents, considered the richest of those studied, registered the highest proportion of respondents giving this reason (61% of the time). Could this be a suggestion that the richer people are the ones who see the value or have more possibilities of reusing or recycling solid waste? Or is it because of the nature of the solid waste they generate which gives these possibilities?

Surprisingly health and environmental considerations do not seem to be concerns in waste segregation as reflected by the 9% who mentioned this as reason. It is respondents in Pasig Market who appear to see the connection between segregation and a clean environment.

Segregation Practices. The most common practice followed in waste segregation is simply to put the waste in separate plastic bags without labels. This was reported 69% of the time. They know what goes into each bag even if there are no labels to identify them. This practice was mentioned by the big majority in Barangay 169 (87%), in Palanan (83%), and in Pasig Market (82%). But it was not so in Concepcion Uno where only 48% said so. The majority of them, 63%, use properly labeled or color-coded garbage containers. They use green ribbons for containers for biodegradable wastes and pink ribbons for non-biodegradable wastes.

Problems in Waste Segregation. It appears that segregation of solid waste is not a difficult activity as reflected from the 81% of those segregating waste who said they encounter no problems in the activity. Those having problems reported a family-related one, i.e., not everyone in their household do it. Surprisingly it is among the richer respondents, in Barangay 169, where this problem was most frequently mentioned, 81% of the time. This simply suggests the need for every potential waste generator to be made conscious of wastes and their proper management.

Reasons for Not Segregating Waste. It will be recalled that some 24% of the respondents do not segregate their waste. There are two major reasons forwarded. The first is that they see the impracticality or at times irrationality of segregating waste (91% of the time mentioned). Moreover, the explanations they gave appear to be likewise irrational. For instance, they see no need to segregate waste when there is not much waste generated, when others do not do it, that segregation simply doesn't really matter, or that nobody is caught or apprehended for not segregating waste, or that waste is regularly collected anyway, or that there was really no segregation done in the earlier years. However, one reason for this impracticality is worth looking into: that all

efforts of segregation at source become meaningless and wasted when at collection time all wastes are simply dumped into one collection truck.

The second most frequently mentioned reason for non-segregation is the time element (85%). The respondents see segregation as time consuming and they simply have no time to do it. It appears that the respondents for this study were so tied up with work that they cannot spare a few seconds to put the waste in an appropriate container at throwing time. Or could it simply be a problem of developing correct habits or the right attitude?

Attitude Toward Waste Segregation. The study tried to determine attitudes of the respondents with regard certain aspects of waste segregation (Table 5).

Table 5. Attitude towards waste segregation

Statements	Response	Palanan (n=50)	Concepcion Uno (n=50)				Holy Spirit (n=50)		Barangay 169 (n=50)		Pasig Market (n=50)	Total (n=250)
			P	E	R	C	E	N	T			
1. Considering the reported waste-related tragedies, there should be stricter enforcement of municipal ordinances regarding segregation of wastes by households.	Agree	100	100		98		94		98	98	98	
	Disagree	0	0		0		6		2	2	2	
	No comment	0	0		2		0		0	0	0	
2. When there is not much waste generated by a household, there is no need for that house to segregate waste.	Agree	54	22		14		8		32	26	26	
	Disagree	40	72		82		78		66	68	68	
	No comment	6	6		4		14		2	6	6	
3. In a household, the maid should be held responsible in segregating wastes.	Agree	38	20		30		24		26	28	28	
	Disagree	36	74		66		72		68	63	63	
	No comment	26	6		4		4		6	9	9	
4. To help minimize nonbiodegradable wastes, vendors should be given incentives for non-use of plastic bags.	Agree	40	54		48		50		56	50	50	
	Disagree	26	36		40		34		36	34	34	
	No comment	34	10		12		16		8	16	16	

As regards enforcement of local ordinances on waste management, almost all of the respondents (98%) see the need for stricter enforcement of these ordinances, considering the number of reported garbage-related tragedies that shocked the country some years back. Still worth noting, although in smaller proportions, are the dissenting opinions from Barangay 169 (6%) and Pasig Market (2%).

Likewise, whether waste segregation is to be done only by those who generate a big amount of waste and not by those with less waste generated, is something the respondents could not unanimously disagree with. In fact, only 68% disagreed with the statement. Even in what were considered the richer communities, only 78% (Barangay

169) and 72% (Concepcion Uno) disagreed with the statement. In Palanan, the poorest of the respondents, 54% agreed that waste segregation is not for all waste generators to do. These observations suggest that there are still some misunderstandings with regard waste segregation.

In a household, should managing the waste segregation activity be the responsibility of the maid? Some 63% of the respondents disagreed with the idea. Among the barangays, the proportions responding 'disagree' were almost the same, ranging from 66% to 74%, except in Palanan where only 36% gave this response. This is understandable since having a maid is not a common household phenomenon among the respondents from this barangay.

Asked if it is okay to stop or minimize the use of plastics by vendors by giving them some incentives for doing so, only two barangays had majority of the respondents agreeing. These are Pasig Market (56%) and Concepcion Uno (54%). So used to the convenience of vendors providing plastics for the items one buys, perhaps it would take some time or a lot of efforts if one were to advocate non-use of plastics especially what locally are called "sando-bags"

Conclusions. On the basis of the findings in this study, the following conclusions are arrived:

1. Plastics – bags, cups, spoons, forks, and the like – still dominate the solid waste generated in the households, canteens and restaurants, and the markets.
2. Knowledge about solid waste management in general, ordinances related to solid waste management, and of RA 9003 appears to be focused on waste segregation.
3. The concept 'biodegradable' and 'non-biodegradable' waste is now a household vocabulary with only a negligible number of respondents finding difficulty in giving examples of these terms.
4. Waste segregation has already gained acceptance among a greater majority of the respondents although their doing so does not seem to be motivated by a correct understanding of why it should be done but by fear of sanctions or punishments from the local government for not segregating waste
5. The general practice of segregating waste at source does not really follow any sophisticated procedure. Segregated wastes are simply put in separate containers, usually plastic bags, without labels or codes.
6. Problems in waste segregation at source are still attitudinal in nature – where the feeling is someone could do it for the household and so not every household member segregates his/her own wastes.
7. There is reason for nonsegregation of waste if at collection time, the biodegradable and non-biodegradable wastes are all dumped together in one collection truck. It appears that segregation stops at source.
8. There appears to be a positive attitude towards certain aspects of solid waste management such as stricter enforcement of local ordinances regarding segregation of waste;; segregating waste no matter if amount of waste generated is small; that segregating waste is for all members of the household to do; not just the maid's responsibility; that incentives be given to vendors if they do not use plastic bags,
9. There is an acceptance of an important role the households have to play in solid waste management particularly in their being conscientious and disciplined in segregation of waste.