

A Breakthrough in Solid Waste Management through Participation and Community Mobilization: The Experience of Los Baños, Laguna, Philippines

Vella A. ATIENZA
Ritsumeikan Asia Pacific University

Abstract

This paper describes the increasing trend of solid waste generation in most developing countries. I discuss the different definitions and views on waste, the factors that contributed to the accelerating volume of waste generated, and the hazardous effects of waste on the environment and human health. Because of this trend, the search for effective and sustainable solid waste management strategies to address problems on waste has become a challenge to most countries. The paper shows that despite some hurdles, there are some municipalities which have been able to develop innovative approaches in addressing solid waste management problems in their localities. The rest of the paper describes how participation and community mobilization can be an effective means to address solid waste management in most developing countries. The discussion focuses on the Philippine setting particularly in Los Baños, Laguna, one of the model towns in solid waste management in the Philippines.

Keywords: solid waste management, informal sector, participation, community mobilization, Los Baños, Laguna, Philippines.

Introduction¹

One of the most pressing problems in the world today is the escalation of solid waste generated due to an increasing population, leading to the deterioration of the environment. Based on the “World Population Data Sheet,” (Motavilli *et al.* 2005) there will be a 46 percent increase in worldwide population to about nine billion from 2005 to 2050.

¹ This paper is based on my experience as an Associate Project Leader of the project entitled, “Enhancing the role of the informal sector in solid waste management in Los Baños, Laguna (PSSN-PACAP-ISSWM-LB)”, and as a Science Research Specialist from the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development-Department of Science and Technology (PCARRD-DOST). PSSN-PACAP-ISSWM-LB project was implemented by the Philippine Society for the Study of Nature, Inc. (PSSN) and funded by the Philippine-Australia Community Assistance Program-Australian Agency for International Development (PACAP-AusAID). I would like to acknowledge the contribution of the PSSN-PACAP-ISSWM-LB project staff, the Los Baños Mayor Caesar Perez, and the member agencies of the Los Baños Science Community Foundation, Inc. (LBSCFI).

While the population trend in most developed countries is decreasing, there is an accelerating increase in the population in the developing countries. To cite some examples, Jakarta experienced a dramatic increase in its population from 530,000 in 1930 to 11.5 million in 1995; while Dhaka increased from 3.5 million in 1951 to 13 million in 1990s (Motavilli *et al.* 2005).

This rapid population growth aggravates the continuous increase in the volume of solid waste generated per day. In Asia alone the waste generation rate is predicted to increase from about 760,000 tons to about 1.8 million tons per day by 2025 (IBRD/WB 1999). The greater percentage of these wastes is not collected properly or is dumped illegally. For example, in Mexico City, out of an estimated 10,000 tons of waste generated per day, at least 25 percent is dumped illegally (Motavilli *et al.* 2005). Based on the 1998 report of the Japan International Corporation Agency (JICA), out of the 5,350 tons of waste generated per day in Metro Manila, only about 75 percent is collected while the rest is dumped illegally (Mercado n.d.).

The worsening condition of solid waste creates environmental and health problems. Garbage is “considered a third pollution inextricably interlocked with the air and water pollution creating environmental hazards” (Small 1971 as cited in Ancheta 2005: 2). Improper disposal of solid wastes contribute to air, soil, and water pollution. Solid waste clogs drains, creates stagnant water for insect breeding, and causes floods during rainy seasons especially in urban areas. Insect and rodent vectors can also spread diseases such as cholera and dengue fever due to improper waste disposal (IBRD/WB 1999).

Research also shows that developing countries are more affected than developed countries due to a lack of resources to purchase advanced and expensive technologies to support waste management activities. Most waste workers in developing countries are not protected from direct contact and injury. The disposal of hazardous and medical wastes mixed with municipal wastes poses a serious health threat. In Asia, it is reported that urban areas spend about US\$25 billion on solid waste management per year. It is projected that this figure will double by 2025 (IBRD/WB 1999). Thus, a growing population trend means that it will add more stress to the region’s limited financial resources and inadequate waste management systems especially in developing countries.

During the past decades, both developed and developing countries have continued to introduce and implement different technologies and strategies to address this problem of waste. However, despite government efforts to address this concern, many municipalities still have difficulty managing the growing volume of solid waste in their localities.

Often, developing countries have tried to apply western systems and advanced technologies in their local areas. But, usually they have failed because they were incompatible with local needs and conditions. Thus, in solving certain problems like solid waste management, it is important to study the particular situation and the available resources in the area.

Generally, the burden of collecting and disposing of solid waste is placed on the municipal government. But the weight of the responsibility is beyond the ability of local government. Many municipalities have failed to comply with solid waste management rules and regulations due to several reasons, such as limited financial resources, lack of political will, lack of technical knowledge about recent technologies, and lack of cooperation and participation of the community.

This leads to the conclusion that the government cannot solve the solid waste management problem alone. But neither the private sector, nor the NGOs, nor the community can solve the solid waste problems on their own either. The most successful strategies have surfaced when there is the involvement of different sectors of society such as the public and private sectors and the community. However, participation by these sectors “is not, in itself, a prior goal of solid waste policy” but rather a means to achieve an improved waste management system in developing countries (Klundert and Lardinois 1995: 10). Recognizing and enhancing the role of these sectors can lessen the burden of the government as these sectors will not only be mere recipients of the laws but can also be potential partners in carrying out solid waste management programs in the municipality (Atienza 2004).

Thus, this paper describes how participation and community mobilization can become an effective means to address solid waste management in most developing countries. The discussion focuses on the Philippine setting particularly in Los Baños, Laguna. It presents the strategies that contributed to the breakthrough of Los Baños in converting the town’s former open dumpsite into an Ecological Waste Processing Center (EWPC) and establishing the informal sector into a people’s organization, known as the Los Baños Solid Waste Organization (LB-SWO). The informal sector here refers to the group of individuals whose main source of livelihood is scavenging and selling wastes.

Defining Waste: Its Issues and Concerns

There are different ways of defining waste. Laquian (2005: 187) defines waste as “materials left over after productive use or things that could no longer be utilized for the purpose for which they were meant.” According to the Philippines Republic Act 9003, known as the “Ecological Solid Waste Management Act of 2000”, solid waste “refers to wastes from households, construction debris, commercial establishments, agricultural sectors, and non-hazardous and non-toxic wastes from institutions and industries” (Republic of the Philippines 2006). In the context of Metro Manila, solid waste “refers to the non-liquid municipal waste comprising of kitchen refuse, paper, plastic, metal, grass and wood, leather and rubber, ceramic and stone, textile, and glass” (Ancheta 2005: 6).

Solid wastes can also be viewed as a “resource, rather than just a local problem” (IBRD/WB 1999: 25). The government’s efforts to promote the slogan to “reduce, reuse, recycle, and recover” waste, can shift people’s attitudes towards viewing waste as a “resource that can generate profit” (IIRR, LGSP, SANREM CRSP/Southeast Asia 2001: 180).

Solid waste management includes “all activities pertaining to the control, transfer and transport, processing, and disposal of solid wastes in accordance with the best principles of public health, economics, engineering, conservation, aesthetic and other environmental considerations” (Philippines-Canada LGSP 2003: 8). It is also argued that waste management is a “reactionary discipline, that is, causal activity: waste management is simply reaction to waste” (Pongracz 2002: 149).

The Solid Waste Management System in the Philippines

As a developing country, the Philippine government is also facing several issues and

concerns in solid waste management. In 2000, a landfill in Payatas collapsed that killed about 300 people, mostly waste scavengers (JEC 2005; Navarro 2002/2003). According to the IBRD/WB (1999) report, the Philippines is facing one of the greatest waste management challenges of the Asian countries based on the country's projected rate of waste generation and the resources available for dealing with the problem.

Rapid population growth and industrialization contribute to the country's problem of waste. The Philippines' population exhibited a huge increase from 27 million in the 1960s to 84.6 million in 2006 (Espaldon and Baltazar 2004; World Development Indicators Online 2007). The current annual population growth rate is 1.8 percent (World Development Indicators Online 2007). Considering the modern lifestyle, one person is estimated to generate about half a kilo of waste per day (Philippines-Canada LGSP 2003). It is projected that the Philippines will generate 40 percent more waste by 2010 (JEC 2005).

In response to the critical condition of solid waste management problem and the threat it poses to the environment and human health if it remains unsolved, the Philippine government enacted the Republic Act 9003. The law declares that the policy of the state is "to adopt a systematic, comprehensive and ecological solid waste management program". The act prohibits the establishment and operation of new open dump sites upon the act coming into force. It further states that open dump sites should be converted into controlled dumpsites by February 2004; and those converted dumpsites should be closed by February 2006. As an alternative, sanitary landfills should be developed as a final disposal site but they should be operated in accordance with guidelines presented in the act. It also promotes waste minimization through recycling, resource recovery, reuse, and composting (Republic of the Philippines 2006).

Many municipalities have difficulties in complying with the rules and regulations of RA 9003. National Solid Waste Management Commission (NSWMC) Executive Director Zoilo Andin said that the high cost needed by the local government for dump closure was one of the primary reasons why many local governments could not comply with the statutory deadline (*Business World Publishing Corporation*, 10 February 2006). Atty. Rita Linda V. Jimeno, president of the Philippine Bar Association, also said that some of the mayors and local government officials told her that the law did not provide financial and technical assistance and that it sets unrealistic deadlines (*Manila Standard/ Financial Times Information Ltd.*, 26 December 2005).

However, there are some municipalities that, despite these hurdles, have been able to implement solid waste management programs successfully in their localities. One of them is the town of Los Baños, a small urban area in the province of Laguna. With the successful implementation of its solid waste management programs, Los Baños became one of the model towns in solid waste management in the Philippines. The municipality of Los Baños also received two awards in 2005, namely: 1) the Pollution Control Association of the Philippines (PCAPI) award; and 2) the *Gawad Galing Pook* award by the *Galing Pook* Foundation. The *Gawad Galing Pook* award was given in recognition for the Los Baños Ecological Solid Waste Program as a "*Katangi-tanging Programang Pampamahalaang Lokal*" (Trailblazing Program) for the country as a whole for 2005. It was awarded by the Philippine President Gloria Macapagal-Arroyo on December 2005 at the Malacañang Palace.

Los Baños, Laguna, Philippines: Site Description and Opportunities

The town of Los Baños in Laguna is situated 63 kilometers south of Manila, and has a total land area of an approximately 5,650 hectares. It is composed of 14 barangays² with a total population of 92,071 (Perez 2006). Los Baños is known as a university zone because of the presence of the largest campus of the University of the Philippines, the University of the Philippines Los Baños. It is also the site of various local and international research institutions such as the International Rice Research Institute (IRRI); the Philippine Rice Research Institute (Philrice); the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEAMEO-SEARCA); and the Ecosystems Research and Development Bureau (ERDB). It also has other Department of Science and Technology (DOST) agencies like the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD); the Forest Products Research and Development Institute (FPRDI); and the Philippine Council for Marine and Aquatic Resources Research and Development (PCMARRD).

In recognition of its role as a center for research into agricultural development and environmental preservation, Los Baños was declared a “Special Science and Nature City of the Philippines” on 7 August 2000 through Presidential Proclamation No. 349. (Wikipedia 2006).

Aside from the town’s significant academic role in science and research, Los Baños is also known for its hot spring resorts which attract many tourists, especially during weekends and the summer season. Other areas of interest include the Jamboree Site, the National Arts Center of the Philippines, the Philippines High School for the Arts, Pook ni Maria Makiling, and Mount Makiling.

With all these opportunities and pleasures that the town offers, many undergraduate and graduate students, researchers and expatriates have wanted to settle in the area either temporarily or permanently. This has led to the influx of commercial establishments and a rapid increase of the population in the area over the past few decades. According to Perez, there are about 2,500 commercial establishments, two public markets, and 17,030 households in the municipality that contribute to the generation of approximately 33-35 tons of solid waste per day (Perez 2006).

Los Baños’ Waste Generation and Composition

A continuous increase in population and commercial establishments in the area gives birth to an alarming problem of solid waste management due to continuous acceleration of the solid waste generated per day. Based on a survey³ conducted by the Philippine Society for the Study in Nature, Inc. (PSSN) in 2004 among the garbage scavengers, the most commonly collected/ bought wastes are bottles, particularly round bottles (97.4 % of informants); followed by steel (93.81 %) (PSSN 2004). It also shows that plastics

² Barangay is a smallest political unit in the Philippines.

³ The survey was conducted by the staff of the PSSN-PACAP-ISSWM-LB project March 22-23, 2004. The 97 respondents were waste scavengers, waste pickers and small waste buyers in different barangays of Los Baños, Laguna, Philippines. The main objectives of the survey were to gather baseline information needed for the establishment of the people’s organization (PO) and for the development of the segregation and collection scheme in the municipality.

and paper comprise a higher percentage of the wastes collected (Table 1). This data also reveals that the community is generating many recyclable and saleable wastes, and that if properly managed, waste can really be a “resource” and thus, can provide income, particularly for those who depend for their living on picking, scavenging, and buying waste.

There are approximately 200 waste pickers in the area. If only this informal sector could be given formal training and assistance about opportunities for making a living out of this waste, it could be a great help in uplifting the lives of the people in this sector both economically and socially.

Former Solid Waste Management System in the Municipality

The influx of people and booming of commercial establishments in Los Baños in the past decades caused an increased generation of solid waste in the municipality. Open dumping was the common practice by the community previously, and there was no clear solid waste management system in the municipality. People had no discipline in managing their own wastes. Solid wastes were indiscriminately thrown everywhere without consideration to their negative effects on the environment and health of the community. Open dumps were also visible along the riverbanks and in flat areas near bodies of water.

Table 1 Wastes Being Collected/Bought

Wastes being collected/bought	Frequency N =97	Percentage of informants (%)
A –aluminum	81	83.51
B –steel	91	93.81
C1 -bottle (round)	95	97.94
C2 -bottle (longneck)	83	85.57
C3 -bottle (catsup)	80	82.47
C4 -bottle (medicine)	37	38.14
C5 -bottle (kwatro kantos)	78	80.41
C6 -bottle (softdrink)	72	74.23
C7 -bottle (bubog)	76	78.35
D - can (crushed)	67	69.07
E -old appliances	36	37.11
F1 -plastic containers	77	79.38
F2 -plastic (hard)	46	47.42
F3 -plastic (softdrinks)	71	73.2
G –stainless	48	49.48
H -tanso A	72	74.23
I - tanso B	62	63.92
J -tanso C	74	76.29
K -old metal sheets	66	68.04
L -white papers	77	79.38
M -assorted papers	73	75.26
N -old newspapers	16	16.49
O –carton	19	19.59
P –leftovers	15	15.46
Q –wood	18	18.56
R -wilted fruits and vegetables	17	17.52
S -old clothes	5	5.15
T –jewelries	6	6.19
U –coins	4	4.12
V -beverage case	6	6.19

Source: PSSN-PACAP-ISSWM-LB Project Midyear Progress Report (2004).

In addition, Mount Makiling, which was one of the most popular places for ecotourism activities, became the location of the municipality's dumping site. This open dumpsite became an eyesore to the municipality and a threat to the health of the nearby community due to leachates and the noxious gases from the burning of wastes.

The worsening condition of solid waste management brought many environmental and health hazards to the community of Los Baños. This situation posed an alarming threat to the status of the municipality being considered a "Nature and Science City" in the Philippines. This made the local government and other sectors of the municipality work together in the pursuit for a "better, cleaner, and healthier community" (Perez *et al.* 2002: 15).

Los Baños' Major Breakthroughs in Solid Waste Management

In the following pages, I will describe Los Baños' strategies and approaches that led to the town's breakthroughs in solid waste management (SWM). It is hoped that Los Baños' experience in SWM will provide some useful information in our quest for viable solutions to the various solid waste management problems and concerns besetting the country. It will specifically discuss the town's two major breakthroughs in solid waste management, namely: 1) conversion of the open dumpsite into an ecological solid waste processing center; and 2) establishment of the informal sector into a people's organization, known as the LB-SWO.

The problems of solid waste in Los Baños started more than 20 years ago. However, it was only in the year 2001 that these issues were given much attention when Mayor Caesar Perez took office as the Mayor of Los Baños. He started his programs of solid waste management with the implementation of the Municipal Ordinance 2001-08 of August 17, 2001, the "anti-littering and waste segregation program." This ordinance enforced the strict implementation of the waste and segregation scheme, a collection schedule for the biodegradable and non-biodegradable wastes, and penalties for non-compliance. As cited in the law, violators will pay ₱300.00 for the first offense; ₱500.00 for the second offense; ₱700.00 or imprisonment for the third offense; and ₱1,000.00- ₱2,500.00 or imprisonment of not more than six months for further offences.

In support of the implementation to this ordinance, the project dubbed "Malinis at maayos na kapaligiran, malusog at matinong pamayanan" (*Better, cleaner, and healthier community*) was also launched. This is led by the Local Government of Los Baños headed by Mayor Caesar Perez and in partnership with the Los Baños Science Community Foundation Incorporated (LBSCFI). LBSCFI is a multi-agency organization composed of 22 scientific, technological, academic, and developmental institutions in Los Baños (Perez *et al.* 2002).

The implementation of the Republic Act (RA) 9003, known as the Ecological Solid Waste Management Act of 2000.

Previously, the town of Los Baños practiced the open dumping of wastes, with the open dump located on the foot slopes of Mt. Makiling, which is within the watershed of the Mt. Makiling Forest Reserve. According to RA 9003, existing open dumps located within an aquifer, groundwater reservoir, or watershed area should also be phased out.

To begin with, just like other municipalities, the local government of Los Baños experienced difficulty in complying with the law. The large amount of funding needed

to develop sanitary landfills as an alternative site for open dumps, and a lack of the technical and human resources were major constraints.

Mayor Caesar Perez acknowledged that the local government could not address the problems of solid waste management alone. Thus, he conducted a series of consultations, meetings, and dialogues among different sectors of the community. After years of labor, the town's former open dumpsite commenced its conversion into an ecological waste processing center on June 14, 2004.

Factors that led to the conversion of the formerly open dumpsite into an EWPC

In his presentation on "Local ecological governance: Viable solutions to the solid waste management problem of Los Baños," Mayor Perez listed three important factors that contributed to Los Baños' breakthrough in attaining successful and sustainable ecological solid waste management, the social, political, and technical dimensions (Perez 2006).

Social dimensions

In addressing the issues of solid waste management, the local government of Los Baños used a participatory approach to identifying and solving problems. Mayor Perez conducted a series of multi-sector dialogues and consultations with different sectors of the community such as the researchers and academics; barangay officials; food chains, restaurants, shopping malls and supermarkets; homeowners and housing resident's associations; transport, gasoline stations, and repair shops; junkshops and waste traders; the religious sector; resort and hotel operators; hospitals, clinics, funeral parlors; computer shops and cell phone dealers; and people's organizations.

The local government also created a technical working group from the LBSCFI to study and discuss different issues and concerns in solid waste management and to develop a viable solid waste management strategy suited to the community. Other activities involved launching waste segregation and anti-littering programs; and conducting massive information, education, and communication (IEC) campaigns for effective implementation of solid waste management programs and activities in the area. In addition, the local government of Los Baños also promoted the "non-use" of plastics, Styrofoam, and disposables in restaurants and fast food chains.

Through this approach, the different sectors of the community shared not only their knowledge, skills and expertise but at the same time the financial burden accompanying implementation of the different solid waste management programs. Also, by organizing the different stakeholders, the burden of implementing the different policies, rules and regulations became not only the responsibility of the LGU but of the whole community.

In addition, Mayor Perez believed that solid waste management problems arose because citizens were spoiled by the government, so that even a small volume of garbage would be collected by the LGU. Therefore, he promoted the idea that citizens should do their share and be responsible in managing their own waste through reduction, composting, recycling, and other methods. He emphasized that "self-discipline among individuals is the key towards a successful solid waste management."

Political dimension

Implementation of the solid waste management programs in the municipality was

reinforced by the formulation and creation of several municipal ordinances and memoranda such as: the Municipal Ordinance No. 2001-08 known as the “Waste Segregation and Anti-littering Law”, and the Memorandum Orders that empower barangay officials in implementing SWM programs, among others. Some groups have also been created to assist the implementation of the ordinance such as a municipal solid waste management board; a task force *kalinisan* (cleanliness); and volunteer enforcers from various sectors.

Technical dimensions

After a series of consultations with different sectors of the community, the garbage collection schedule was finalized and implemented. For biodegradable wastes, collection would be from Monday to Friday at 8:00-9:00 in the evening; and for the non-biodegradable wastes, collection would be done every second and fourth Saturday at 8:00-9:00 in the evening. There would be no collection of wastes on Sundays except for market wastes (Perez 2006).

In the EWPC, operations included the following procedures: segregation at source, unloading of bio-wastes, final sorting of bio-waste, and shredding and composting of residual wastes, specifically plastics. Other initiatives included fabrication and distribution of composting drums to pilot barangays, and a campaign on composting at source or at the household level. Mayor Perez and representatives from LGUs and the LBSCFI are also conducting a dialogue with the Philippine Plastics Industry Association (PPIA) and the Polystyrene Packaging Council of the Philippines (PPCP) to discuss issues and concerns on recovering/recycling plastic wastes particularly film plastics and Styrofoam.

Another major breakthrough in the town of Los Baños was the establishment of the informal sector into a people’s organization, known as the Los Baños Solid Waste Organization in May 2004.

Mayor Perez does not want to keep this success in his municipality alone. His passion and sincerity to serve and be an agent in having a better and breathable environment remains in his heart. He is now sharing the Los Baños experience on SWM with different municipalities and other government and non-government institutions in different municipalities in the country.

In this time when there are limited financial resources, sharing information and experiences are very important in addressing perilous problems like solid waste management. It is true that there is no instant “package solution” in solving certain problems, but learning from the experience of others might help avoid repeating the same mistakes done by others in the past. Also, through this sharing of experiences other municipalities can learn some ideas and strategies that might be applicable in the present condition or problems in their localities.

Establishment of the Los Baños Solid Waste Organization (LB-SWO)

Background of the Project

The informal sector composed of waste pickers, buyers, and scavengers contributes much in the reduction of solid waste in the municipality. However, their contribution was not recognized, rather they were often mistreated and demeaned, or worse mistaken as thieves. This condition of the informal sector stimulated Dr. Ricardo Bagarinao, the

then President of PSSN, to respond to the call by the World Bank Group of Companies for innovative projects in the First Philippine Development Innovative Marketplace (PDIM) dubbed “*Panibagong Paraan: Making Services for the Poor*” in October 2003.

Dr. Bagarinao and I, as an affiliate member of PSSN, worked together on the conceptualization of the proposal and submitted it to the World Bank Group of Companies. Out of 1,800 entries nationwide, the project entitled “*Enhancing the role of the informal sector in solid waste management in Los Baños, Laguna*” was chosen as one of the 51 winners. It was announced during the Awarding Ceremony of the competition held at Manila, Philippines on January 2004. The project is also a recipient of the Australian Ambassador’s Choice Award.

The project started its first year of operation in February 1, 2004 with funding from the Australian Agency for International Development through its Philippine-Australia Community Assistance Program (PACAP-AusAID). It was implemented by PSSN in collaboration with the School of Environmental Science and Management, University of the Philippines Los Baños (SESAM-UPLB) and the Local Government of Los Baños.

Objectives of the Project

The project aimed to raise the status of this informal sector by acknowledging their contribution and forming them into a people’s organization (PO). In addition, the project hoped to give financial and technical assistance to improve the economic and social condition of the beneficiaries. Uplifting the lives of this sector would be of great benefit to the community and to the society as a whole. Also, the project aimed to reduce the volume of solid waste generation in the community. Waste will always be a part of our everyday lives. We cannot avoid waste. As long as we are consuming goods, waste will always be there. But, waste will not be a problem as long as it is managed properly.

In addressing solid waste management problems, the conventional approach is the development of landfills. This is also what is cited in RA 9003 which mandates the closure of dumpsites and the development of sanitary landfills as an alternative. However, as discussed earlier, many municipalities cannot comply with the mandates despite many municipal mayors being sued for non-compliance of the law. Aside from being expensive, finding land where the sanitary landfill is to be constructed is often very difficult. Because of the danger or threat of failed SWM systems, the “not-in-my-backyard” (NIMBY) problem becomes more intense. Another strategy is the implementation of a segregation scheme starting from the source of waste. This approach might look nice but the problem is that even when households and establishments are carrying out segregation from source, problems occur during collection where segregated wastes are recombined.

In this project, an innovative approach to enhancing the role of the informal sector composed of waste pickers, buyers, and scavengers in solid waste management was introduced. It acknowledged the importance of a strong collaboration with the local government units (LGUs), funding institutions, research and academic institutions, non-government organizations (NGOs), and the local community to assure the sustainability of the project.

Establishment of the people’s organization

A socio-demographic survey of the target beneficiaries was conducted to gather

background information needed for the establishment of the people's organization. Among the 97 respondents, the majority were married (72.2 %), mostly adult (56.7 %), and slightly more women (52 %) than men (48 %). Forty percent of them had finished only elementary education, whether because of poverty (26.8 %), the need to work (19.6%), or early marriage (12.4 %) (PSSN 2004).

After the necessary processes and criteria for selection, 54 beneficiaries became members of the LB-SWO. The members also elected a set of officers from among themselves. LB-SWO officers and members were formally introduced to the different sectors of the Los Baños municipality (LGU, LBSCFI, households and homeowners, commercial, religious, schools, transportation, etc.). They were given an official ID signed by Mayor Perez and the LB-SWO president and they were formally proclaimed as the official waste collectors of the municipality.

Post-establishment activities

Human resource development (HRD) and training for the officers were also conducted by the Project Management team and other volunteers to equip them for their roles and responsibilities for the organization and to the community. Topics shared include training need assessment (TNA), personality and values, leadership, organizational operation and management, teamwork, communication and feedback, financial management, and drafting of by-laws.

Based on the information gathered from the survey, waste classification, segregation and collection scheme were formulated by the project management team in consultation with LB-SWO and LGU. IEC campaigns were also conducted to introduce the project itself, the LB-SWO officers and members, and the waste segregation and collection scheme to the community.

The project also gave seed money, official uniforms, and pedicabs to the members of the LB-SWO. Members of the PO were given the right to borrow a certain amount from the seed money as starting capital for trading in wastes. The people's organization also conducted regular meetings to discuss updates, issues, and concerns about the organization. The PSSN staff and the LB-SWO president also attended meetings with the LBSCFI and other LGU meetings to promote and discuss matters about the organization and its activities.

However, since the project only got an initial funding for its first year of operation from February 1, 2004 to January 1, 2005, they are still waiting for the approval of the second phase of the project from the funding agency. But, to assure that the project will continue its activities even while waiting for the budget, the local government of Los Baños has temporarily taken over of the monitoring of LB-SWO activities.

Key features of this project

The success of the project can be attributed to its key features: a) its people-orientation especially towards the less-privileged; b) recognition of the importance of capability building for the beneficiaries; c) large-scale information, education, and communication (IEC) campaigns; and d) strong collaboration with the LGU, funding institutions, research and academic institutions, NGOs, people's organizations, and the local community.

Participation by the beneficiaries and their contribution to the project's activities

played a very important role in the success of the project. Also, the cooperation of the people's organizations and their attitude towards the project proved that if given continuous training and assistance, the people have the potential to become significant partners of the local government in the implementation of SWM programs and activities. The team also envisioned these people not merely as waste collectors but as waste traders or small entrepreneurs in the future.

Benefits of the Project to LB-SWO Members, the LGU, and the Community

Sustainable source of income for the LB-SWO members

Before the project, most of the waste pickers, scavengers, and buyers were not able to accumulate their own capital to buy waste. Thus, they had no choice but to borrow capital from junkshop owners. However, in this case they had to sell their collected waste to the junkshops from which they borrowed capital in a price which was normally cheaper compared to that of other junkshops or other big companies which were buying waste. This was not beneficial to this informal sector because even though they did all the "dirty" work of collecting waste, they were earning only a little because the price was dictated by the junkshops. Therefore, while the junkshop owners grew richer, the condition of the informal sector remained the same or even worsened.

With the establishment of the project, members of the LB-SWO were given their own capital to buy waste. Thus, they could sell their collected waste in any junkshop offering higher prices leading to increased incomes. In addition, since they are now considered as the official waste collectors of the municipality and their job is recognized by the local officials and the community, they can also operate in new areas in which they could not before.

Reduction in the volume of solid waste generated by the municipality

With the implementation of the project, members of the LB-SWO collect the saleable waste generated by the municipality. Therefore, only the non-saleable waste is left for the local government for collection.

Additional sources of income for households and commercial establishments

One important feature of the project is the promotion of waste trading between the people's organization and the households and commercial establishments. Unlike before when trading was not yet officially introduced, most of the time waste was collected for free, therefore, there were no earnings for households and commercial establishments. But with the implementation of the project, it is not only the waste traders who are earning but also the households and commercial establishments who are able to sell their waste.

Monetary savings for the local government

Since the saleable wastes are already collected by the members of the LB-SWO, only the non-saleable wastes are now collected by the trucks from the local government. Therefore, there are now fewer trips for collecting waste compared to before when both saleable and non-saleable waste was collected by the municipal waste trucks.

New found respect for the informal sector (LB-SWO)

One of the most important benefits experienced by the members of the LB-SWO is the recognition and respect given by the local government and the community to the informal sector workers. Before the project, these workers, despite their contribution to the reduction of solid wastes in the municipality, were treated as an “insignificant” sector of society. Their work was not recognized and most of the time they were demeaned because the significance of their work was considered much less than that of so-called “white-collar” jobs.

With the recognition given to this informal sector, their significance for society in general was realized and thus, in turn, allowed this sector to develop a sense of pride in their work. Most of the members of the LB-SWO also testified that through the project’s activities they were given an opportunity to interact with different kinds of people and their shyness was being replaced with eagerness to develop friendships not only with their fellow members but even with other sectors of the community.

At present, members of the LB-SWO are not just ordinary waste collectors but are recognized as the official waste collectors/traders in the town of Los Baños and an active partner of the local government in solid waste management activities in the area (*Truth Force!* 2005). This kind of recognition and sense of purpose, according to the members of LB-SWO, is enough encouragement for them to really work hard and aspire to be good stewards of the environment.

Factors Contributing to the Breakthrough of Los Baños, Laguna in Solid Waste Management

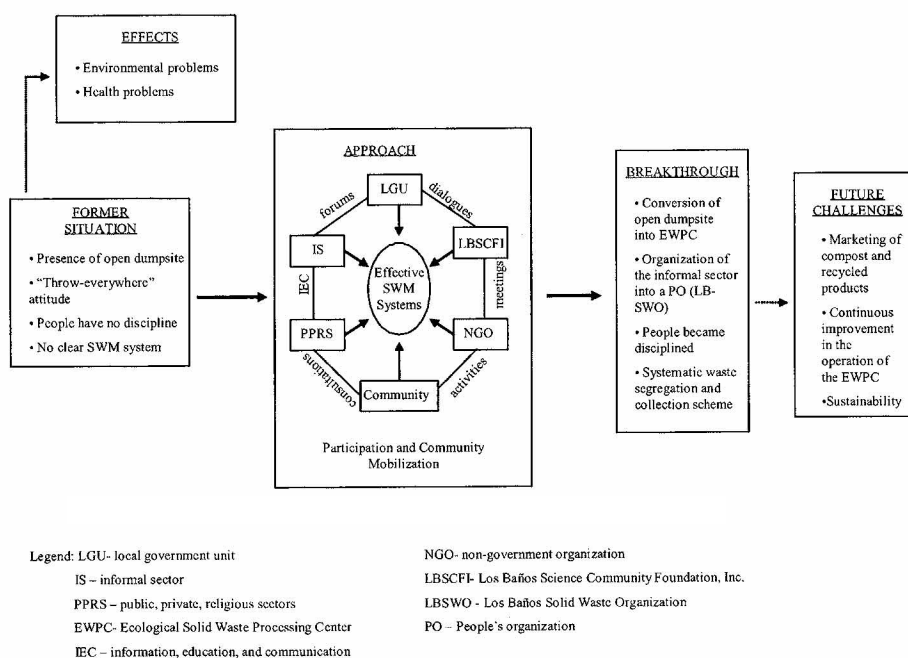
After conversion of the Los Baños open dumpsite into an EWPC, the establishment of the informal sector into a people’s organization, LB-SWO, and with the successful implementation of the solid waste management programs, the town is now indeed a “Nature and Science City” within the Philippines. Contrary to the former situation in the area, the municipality is now very clean and no visible garbage is present, even on road sides. The dump is also clean and odor-free. Products from recyclable materials like school chairs and desks made from recycled plastics, and compost products can also be seen in the EWPC. The community has become disciplined and more conscious about litter. Many visitors from different sectors and areas within the country are coming to the EWPC to learn from the town’s SWM strategies and activities. Figure 1 shows how a participation and community mobilization approach contributed to the Los Baños breakthrough on SWM. This success can be attributed to the following factors:

People-orientation and strong political leadership

To gain the support of the community in the local government program on solid waste management and in other government programs, Mayor Perez believes that a leader must lead his constituents by example. He has adopted a “hands on” approach. In pursuit of implementation of the SWM activities, he went himself to the former open dumpsite to see the real problems and to identify possible solutions. He made efforts to talk with the people directly involved in waste collection, and despite the poor conditions of the open dumpsite, he brought his staff, local officials, and the SWM team there to let them see for themselves and study the real condition of the area.

One staff member from the Community Environment and Natural Resources

Figure 1 Participatory and Community Mobilization as an Approach in Search of an Effective SWM System



Office (CENRO) of Los Baños, also commented to me that she saw in their mayor “the heart of a leader dedicated to his community and to implementing the law, no matter what trials came along the way.” Unlike other political leaders, he is not afraid to implement the law strictly even when there are some people who might be angry with him. Another apparent element of Mayor Perez’s leadership is the importance of instilling discipline among his constituents. He says that, “No amount of so-called high technology and financial capability can solve the garbage problem without discipline.” He further adds that, “discipline is the road to progress.”

This commitment and passion of Mayor Perez is one of the important factors that lead to the breakthrough of Los Baños, Laguna in solid waste management. Because even though there are a lot of research institutions, NGOs, and other environmental groups who are interested in the implementation of solid waste management programs, without the support and approval of the local government, it would be difficult for any projects and programs to succeed.

Strong collaboration among the different sectors of the community

Governance does not refer to the government alone. It means collaboration among local people, businesses, citizens, NGOs, and administrative authorities. Thus, the local government of Los Baños conducted a series of meetings with different sectors of the community in the search for, and implementation of, an effective SWM management programs in their locality.

The local government as the governing body passed the municipal ordinances and implemented the policies regarding solid waste management. The research and academic sectors led by LBSCFI contributed in sharing their technical knowledge, expertise and financial and human resources in the development of innovative and effective technologies and approaches in solid waste management. Other public,

private, and religious organizations, and the community also helped in carrying out the implementation and dissemination of the different SWM programs in the municipality. NGOs like PSSN helped in organizing the community and in training and capability building, especially of the less-privileged sectors of the community. The informal sector, particularly members of the LB-SWO, also acted as partners of the local government in disseminating SWM information to the whole community. Through this approach, the expertise and ideas of each sector were acknowledged whilst lessening the burden of the government in solving the solid waste management problems. In this way, everybody developed a sense of significance and accountability with the different issues and concerns of the community.

Community organizing is a “process or approach which mobilizes people of the community in self help and organizing effort towards problem solving and establishing opportunities for development” (Espaldon and Baltazar 2004: 104). It means organizing individuals, organizations, or the community to identify a problem and the solution, providing opportunities especially for the less-privileged poor to make decisions concerning their own development.

Mass information, education, and communication (IEC) campaign

Awareness campaigns also played an important role in the successful implementation of the SWM programs in the municipality. The local government of Los Baños, in cooperation with the different sectors of the community, conducted mass information, education, and communication (IEC) campaigns to build the right attitudes among members of the community towards environmental issues and thus made them more cooperative in SWM activities and practices.

The local government unit (LGU) of Los Baños and LBSCFI also launched an IEC campaign to minimize the use of plastic bags and to promote the use the biodegradable packaging materials instead such as *bayong* (baskets made from coconut fiber), *telang supot* (bags made from cloth) and paper bags. The “non-use” of plastics, Styrofoam, and disposable plates and cutlery in restaurants and fast food chains is also encouraged.

PSSN through the PSSN-PACAP-ISSWM-LB project in collaboration with the LGU also conducted an IEC by distributing flyers containing information about the solid waste segregation and collection scheme in the municipality. The list of LB-SWO members, who are the official solid waste collectors in the municipality, were also included in the flyers.

Other solid waste management activities included a series of seminars and workshops, an annual clean-up drive of the creeks and tributaries, planting bamboo along creeks and tributaries, and the launching of the “adopt-a-barangay” program. In this program, LBSCFI agencies adopted certain barangays to oversee the implementation of the different solid waste management programs at the barangay level.

Through these activities, people in the municipality become knowledgeable about the different solid waste management concerns and programs in the municipality and they themselves become interested about these different endeavors. By becoming aware about the different issues and concerns in solid waste management, people become empowered and this influences them to develop discipline among themselves and actively participate in the solid waste management activities and programs.

Linkage and networking with different agencies and organizations

As mentioned above, governance does not mean government alone. In addition, the lack of financial and technical capability is the common constraint in different municipalities for the implementation of solid waste management programs in the municipality. Thus, linkage and networking with different organizations is very important.

As previously mentioned, the PSSN-PACAP-ISSWM project was funded by PACAP-AusAID. Due to financial support from the Australian government, the project was able to organize the LB-SWO, and members of this people's organization have become active partners of the government of Los Baños in the implementation of the different solid waste management programs in the municipality.

Another problem in addressing the problems of solid waste management is the lack of technical skills and equipment to process residuals. Thus, Mayor Perez and representatives from LGUs and the LBSCFI are also conducting a dialogue with the Philippine Plastics Industry Association (PPIA) and the Polystyrene Packaging Council of the Philippines (PPCP) to discuss issues and concerns on recovering/recycling plastic wastes particularly film plastics and Styrofoam.

Through this linkage and networking with different agencies, the local government does not bear the burden of solid waste management alone. On the other hand, through linkages and networking also, the experience of Los Baños, Laguna in effectively implementing its solid waste management programs is being shared in other municipalities through seminars, meetings, and other activities. Thus, there is sharing not only of financial aid but also of information and experiences which are very important especially in municipalities with limited resources.

Summary and Conclusion

To summarize, there are four major "facts" about waste that answer the question why participation and community mobilization is important in addressing problems on solid waste management.

First, there is an increasing trend of population growth especially in developing countries. This means that the volume of waste generated per day is expected to continue increasing and therefore, might create serious damage to the environment and to human health if not be managed properly. In addition, this also reveals that "people are the problem, therefore people are also the solution" (Mother Earth Foundation n.d.: 10).

Second, based on research, it appears that the majority of waste generated is biodegradable and recyclable. To cite an example, the profile of Philippine waste shows that 30 % of total waste generated is recyclable and around 45 % is biodegradable. Thus, if proper waste management is implemented, only 25 % of waste will be left for the local government to worry about (IIRR, LGSP, SANREM CRSP/Southeast Asia 2001). This case also reveals that waste is not always a problem but can also be considered a "resource" and therefore can generate a profit. In most developing countries like the Philippines, unemployment is one of the major problems. Therefore, if waste can be properly managed, it can also be a potential source of livelihood.

Third, the government alone often cannot solve the problem of solid waste management due to limited finances and lack of technical skills and human resources

especially in developing countries. Thus, participation and cooperation of different sectors of society is deemed necessary. In addition, as cited above, “people are the problem,” therefore waste is the concern of all.

Lastly, the solution to solid waste management problems does not always mean using expensive and advanced technologies, but rather identifying the local and appropriate technologies in the community. As the “appreciative inquiry” approach says, we should “focus on building capacity, valuing the strongest features of the community, envisioning what ‘might be’, discussing what ‘should be’, and achieving innovative solutions” (Badshah 1996: vix).

Acknowledgements

I would like to thank Professor Jeremy S. Eades for his valuable comments and input, for his support and encouragement, and for editing this paper; and Professor Francisco F. Fellizar for his comments and suggestions in the final stages of writing.

References

- Ancheta, Arlen A. 2005. “Power and Claims-making in the Social Construction of Solid Waste in Metropolitan Manila.” Unpublished Ph.D. Thesis, Faculty of the Graduate School, University of the Philippines, Los Baños.
- Atienza, Vella A. 2004. “Enhancing the role of the people’s organization, non-government organizations, and local government units in solid waste management: Experiences from the Philippines and Japan.” *Journal of Asiatic Studies*, 23 (1): 45-53.
- Badshah, Akhtar A. 1996. *Our Urban Culture: New Paradigms for Equity and Sustainability*. USA: Zed Books.
- Business World Publishing Corporation*, 10 February 2006.
- Espaldon, M.V.O. and M.R.M. Baltazar, eds. 2004. *Participatory Natural Resource Management for Sustainable Agriculture*. Quezon City, Philippines: Department of Geography, College of Social Sciences and Philosophy, University of the Philippines, Diliman.
- IIRR, LGSP, SANREM CRSP/Southeast Asia. 2001. *Enhancing Participation in Local Governance: Experiences from the Philippines*. Philippines: International Institute of Rural Reconstruction, Philippines-Canada Local Government Support Program and SANREM CRSP/Southeast Asia.
- Institute for Local Self-Reliance. 2000. “Wasting and recycling in Metropolitan Manila, Philippines.” Washington, DC.
- International Bank for Reconstruction and Development/World Bank. (IBRD/WB). 1999. “What a waste: Solid waste management in Asia.” U.S.A.
- Japan Environmental Council (JEC), ed. 2005. *The State of the Environment in Asia 2005/2006*. Tokyo: Springer-Verlag.
- Klundert, Arnold van de. and I. Lardinois. 1995. “Community and private (formal and informal) sector involvement in municipal solid waste management in developing countries.” Paper presented at the Ittingen Workshop jointly organized by the Swiss Development Cooperation (SDC) and Urban Management Programme (UMP). Ittingen, Switzerland. 10-12 April 1995.

- Laquian, Aprodicio A. 2005. *Beyond Metropolis*. Washington, D.C.: Woodrow Wilson Center Press.
- Manila Standard/ Financial Times Information Ltd.*, 26 December 2005.
- Mercado, Ruben G. n.d. "Megalopolitan Manila: Striving towards a humane and world class megacity."
- Motavilli, Jim, Divya Abhat, Shauna Dineen, Tamsyn Jones, Rebecca Sanborn and Kate Slomkowski. Sept-Oct 2005. "Cities of the future: Today's "Mega-cities" are overcrowded and environmentally stressed.(Cover Story)." *Earth Action Network, Inc.* 26(11): E16.5. <*InfoTrac Custom Database*. Thomson Gale. Ritsumeikan Asia Pacific University>.
- Mother Earth Foundation. n.d. "Ecological Waste Management Manual: Reduce, Segregate, Compost, Recycle," Hiyas Press, Inc.
- Navarro, Rhea Abigail. 2002/2003. "A Systems Approach on Solid Waste Management in Metro Manila, Philippines," Master's thesis, Lund University International Master's Programme in Environmental Science, Lund University. <www.lumes.lu.se/database/alumni/02.03/theses/navarro_rhea_abigail.pdf>.
- Perez, Caesar. 2006. "Local ecological governance: Viable solutions to the solid waste management problem of Los Baños." <<http://www.pcarrd.dost.gov.ph/>>.
- Perez, Caesar, Patricio Faylon, Leozardo Pantua, and Vivian Valdez. "Managing Town-Community Solid Waste: Malinis at maayos na kapaligiran malusog at matinong pamayanan." Paper presented at the 2002 PACS Seminar Series of the Philippine Association of Career Scientists; Philippines. 11 April 2002.
- Philippines-Canada Local Government Support Program (LGSP). 2003. "Solid Waste Management: Mapping out Solutions at the Local Level." Manila, Philippines.
- Pongracz, Eva. 2002. "Re-defining the concepts of waste and waste management." University of Oulu.
- PSSN n.d. "Enhancing the role of the informal sector in solid waste management in Los Baños, Laguna, Philippines: Project Proposal", Los Baños: Philippines Society for the Study of Nature. Unpublished paper.
- PSSN. 2004. "Enhancing the role of the informal sector in solid waste management in Los Baños, Laguna, Philippines: Midyear Progress Report" (February 1, 2004- July 31, 2004), Los Baños, Laguna, Philippines. Unpublished paper.
- Republic of the Philippines. "RA 9003: Ecological Solid Waste Management Act of 2000," <<http://www.psdn.org.ph/piencl/ra9003.htm>>.
- Small, W. E. 1971. *Third Pollution*. London: Pall Mall Press.
- Truth Force! Mobilizing Truth for Integral Sustainable Development (ISD)*, 5 February 2005.
- Wikipedia: The free encyclopedia. <http://en.wikipedia.org/wiki/Trace_College>.
- World Development Indicators Online (WDI Online). <<http://devdata.worldbank.org/dataonline/old-default.htm>>.