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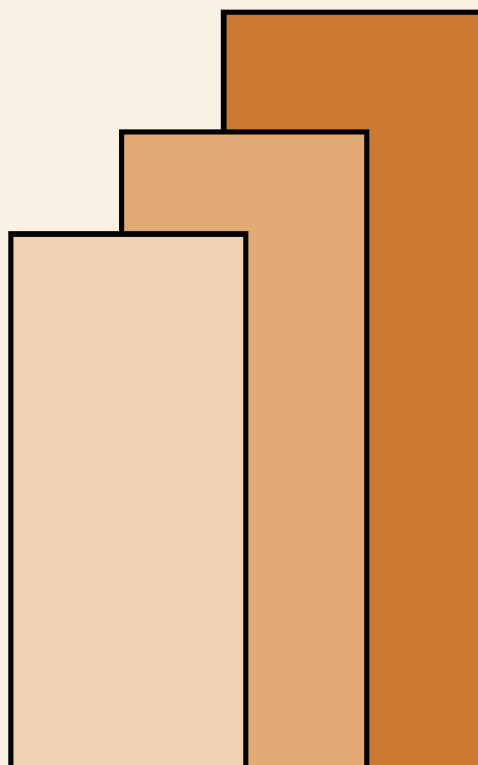
Ruben G. Mercado

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Environment and Natural Resources Management: Lessons From City Program Innovations

*Ruben G. Mercado*¹

1. Introduction

The enactment of the 1991 Local Government Code brought greater responsibilities for the local government units to manage their natural resources and the environment. In particular, the following environment-related mandates have been given to the city:

Solid waste disposal system or environmental management system and services or facilities related to general hygiene and sanitation (Sec. 17.b.2.v1)

Pursuant to national policies and subject to supervision, control and review of the Department of Environment and Natural Resources (DENR), enforcement of forestry laws limited to community-based forestry projects, pollution control law, small-scale mining law, and other laws on the protection of the environment; and mini-hydroelectric projects for local purposes (Sec. 17.b.3.iii)

Tourism development and promotion (Sec. 17.b.3.xii); Tourism facilities and other tourist attractions, including the acquisition of equipment, regulation and supervision of business concessions and security services for such facilities (Sec. 17.b.2.xi)

For some Philippine cities, the enormous responsibilities placed on them have brought more opportunities for greater dynamism and innovation. Strategies employed and programs undertaken vary in focus and form depending on the city's stage of development and, relatedly, on the features and priorities of the city environment that is to be managed. For instance, natural resources-rich cities have made the environment as a key development strategy especially in relation to resource conservation and tourism development. Within the same focus, variations are evident in both program content and the institutional dynamics that were involved. For largely urban cities, environmental problems are associated with growth of economic activity and for most of these cities special attention is given to the maintenance of air quality, cleanliness and managing solid waste. The strategies that have been adopted by these cities differ but achieved a relatively similar degree of success. There are a number of these successful programs whose features and implementation process may be considered unique or innovative. While these programs were crafted under the socio-economic and political milieu of the area where they were implemented, nevertheless, they provide valuable insights to other local government units wanting to better their program design and execution.

This paper aims to draw lessons from some selected cities which have undertaken innovative environment programs and to highlight the key elements that have made their programs successful and sustainable. The study shall conclude with a brief

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account of other environmental management concerns that have not been given significant emphasis and attention or where performance has been short of expectations and to suggest measures to address the same.

2. Brief Summary of Selected City Environmental Programs

2.1 Puerto Princesa City: *Oplan Linis and Bantay Puerto Programs*

There are two major programs on the environment that Puerto Princesa City have undertaken. These have been successfully implemented and for which the city has received national and international recognition. The city has become a source of inspiration to many local governments not only in the area of environmental management but in local governance in general.

2.1.1 Oplan Linis

Puerto Princesa's secret for being the cleanest and greenest city in the Philippines is the sustained implementation of the Oplan Linis Program. The program has significantly remade the image of the city from the haven of prisoners and malaria-causing mosquitoes to what is now the most envied city for its estimable cleanliness and for its being one of the major tourist destinations in the country. Puerto Princesa City also now claims to be larger than Davao City in terms of land area (253,982 hectares), and, therefore, takes pride in being the largest city in the world. Despite the huge size, the city has successfully managed to make the task of cleaning, greening and beautifying the city a not so difficult undertaking.

Oplan Linis Program is aims to sustain cleanliness and beauty in the city through program institutionalization and community participation. Table 1 presents a summary of the basic features of the program.

The Program is being managed by a full-time staff headed by a Project Manager (who, incidentally, is the wife of the Mayor), 2 Assistant Project Managers and a Program Supervisor for each of the Program component, i.e. for Cleanliness, Sanitation, Sagip Dagat, Beautification, Sagip Hangin, Dog Pound and Information and Education. At the lower level of the organization are 50 grass cutters, 70 street sweepers and gardeners, 50 garbage collectors and various other workers and volunteers.

Program cost at the start of the program in 1993 was 2.1 million pesos. This increased to 6.1 million in 1995 representing a mere 1.3 percent of the total budget. Initial program cost was spent on information and education campaign (e.g. media hour, printed materials, consultations etc.) which were considered essential to make the program effective and successful. In later years, cost for personnel services, mainly for street sweepers, exceeded the cost for operations with the expansion of the coverage area of the program.

Table 1
Basic Features of Oplan Linis Program

Component	Objectives	Activities
Cleanliness	Maintain cleanliness in all public places.	Street sweeping; Cleanliness contest in barangays and schools (Local version of Clean and Green Award); Award for Cleanest and Dirtiest Barangay Monthly general cleaning
Sagip-Dagat Operation Basura	Maintain coastal areas clean.	Operation of redemption centers in coastal barangays for wastes dumped in coastal areas. Low-cost housing program for squatters living near the coastal area
Beautification	Beautify the city.	Painting of sidewalks Planting of ornamental plants and trees Nursery for continuous supply of planting materials (Program buys from children 5 tetra packs for P1.00. They are used to grow seedlings/cutting of plants)
Sanitation	Promote sanitary practices.	Installation of garbage receptacles (donated by the business community) along main streets and other conspicuous places; Putting-up of comfort rooms in coastal and rural barangays
Information and Education	Disseminate information about the program.	Organization of information team composed of representatives from city government and civic organizations; Tapping government and private entities to assist in all information-related activities. Airing of a 5-minute local TV program to tackle issues on cleanliness; Formation of Oplan Linis Families (OLF) in each school composed of a minimum of 50 students providing cleanliness awareness in their immediate neighborhood. Each OLF is required to submit a regular accomplishment report
Operation Sagip-Hangin	Improve air quality in the city	Strict enforcement of the following ordinances: Anti-Littering, No-Smoking and Anti Pollution Violators are imposed fines and their names are flashed on TV and aired over the radio.
Solid Waste Management	Improve garbage collection and disposal.	Daily collection of garbage in the marketplaces and scheduled zone collection in residential areas. Program introduced to produce organic fertilizers from wastes disposed through IRREN Foundation (an NGO). For this purpose, classification of garbage at the household level is slowly being introduced. Target collection in residential areas is once a week with reduced garbage to be collected from households.

Source of Basic Data: Oplan Linis Story: The Puerto Princesa City Experience, Puerto Princesa City Government, 1996

2.1.2 Bantay Puerto

Palawan is considered the Philippines' "Last Frontier". Puerto Princesa City being the capital considers its critical role as a "steward of (its) biodiverse resources and as the active promoter of the balance of its total ecology" (Puerto Princesa City Government, 1997). Faced with illegal activities existing both in the forests and in the seas (e.g. illegal logging, kaingin method of farming, destructive forms of fishing such as use of dynamite and cyanide, muro-ami etc.), the City has responded to the call of conserving, preserving rehabilitating and sustaining the development of its forest and water ecosystem through the Bantay Puerto Program.

The Program originally had four components: City Forest Protection Project or the *Bantay Gubat*, City Coastal Areas Protection Project or the *Bantay-Dagat* (*Baywatch*), Special Task Force Unit and the Special Monitoring Unit. Lately, another component was added, i.e. operation of the Cyanide Detection Laboratory. Table 2 provides a general description of Bantay Gubat and Bantay Dagat projects and their accomplishments.

Table 2
General Information on Bantay Puerto Program Components

Program Component	Objectives	Strategies / Activities	Highlights of Major Accomplishments
Bantay Gubat	<p>To address the alarming reduction of forest cover in Palawan which reportedly decreased from 75 percent in 1976 to 50 percent in 1992.</p> <p>To conserve, preserve and rehabilitate the forest areas of the City, particularly in the identified 24 environmentally critical rural barangays .</p>	<p>Intensify information dissemination campaign regarding preservation and conservation of the City's forests;</p> <p>Strengthen partnership and cooperation of the City with DENR, DA, DILG-PNP, NGOs and PVOs in enforcement of forest-related laws;</p> <p>Organize and train 24 community-based forest protectors serving as Project managers in the identified critical areas;</p> <p>Establish four checkpoints (2 in the north and 2 in the south) equipped with radio communication system and motorcycles;</p> <p>Plan and conduct operations/raids against illegal activities;</p> <p>Apprehend and/or seize illegal forest products, equipments used in the commission of the crime including the violator/s;</p> <p>Investigate/resolve alleged involvement of any government and military official/s or employee/s in illegal logging, timber cutting, gathering or collection of forest products;</p> <p>Endorse to authorities concerned any confiscations or seizures for proper custody;</p> <p>Organize/create a foot patrol group in most critical areas.</p>	<p>During the first 100 days of the program, confiscated 33,302.17 board feet of illegally cut logs, 2,749 pieces of round poles, 3 chain saws and 50 illegally caught wildlife;</p> <p>Instilled in the community that the government is serious of enforcing and carrying out forest protection laws;</p> <p>Increased awareness and importance of forest conservation and rehabilitation by instituting the "Pista Y ang Cageban" (Feast of the Forest) held every June 7 of every year to reforest denuded watershed of Irawan;</p> <p>DENR devolved to the City the management of the Irawan Watershed and the St. Paul Subterranean National Park (Nagkan Tribe of Palawan, Haribon Found. and Ulugan Bay Found. sit as Board Members).</p>

Bantay Dagat (Baywatch)	To lessen, if not eliminate, the depletion of marine resources due to illegal fishing activities	<p>Daily (average of 8 hours) patrolling of the four strategic bays of the City;</p> <p>Intensify information dissemination campaign regarding preservation and conservation of the city's coastal areas;</p> <p>Strengthen partnership and cooperation of the City with government agencies especially the Philippine Coast Guard and NGOs;</p> <p>Maintain six outposts placed strategically in the different bays of the City;</p> <p>Plan and conduct operations/raids against illegal activities;</p> <p>Apprehend and/or seize illegally caught marine products and equipment used in the commission of the crime including the violator/s;</p> <p>Endorse to authorities concerned any confiscations or seizures for proper custody.</p>	<p>In the initial months of the Program, City Government passed an ordinance banning the shipment of all live fish and lobster out of the City;</p> <p>Daily patrolling of the bays resulted in the apprehension of a total of 482 seacrafts as of end of 1994:</p> <p>Apprehended 13 pumpboats engaged in illegal fishing activities; 184 pumpboats without license/permit from Philippine Coast Guard and BFAR. P309,000 was collected; one fishing vessel for fishing within seven-kilometer boundary of the city using muro-ami and for passenger overloading; one fishing vessel loaded with live fish without permit and manned by British nationals without passports and working permit.</p>
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Sources of Basic Data: Puerto Princesa City Government Documents (4th City Sharing Workshop Paper and Galing Pook Award² Application Materials)

The Special Task Force Unit (STFU) and the Special Monitoring Unit (SMU) lend support to both Bantay Gubat and Bantay Dagat Projects. The STFU evaluates and disseminates intelligence information and prepare plan of action relative to illegal activities and perform apprehensions or arrest of violators. The unit is a 21-person body headed by a Task Force leader from the PNP, a Civilian Task Force leader, 10 PNP personnel and 9 civilians. The SMU is composed of 10 monitoring officers tasked to monitor problems met in the implementation of the Program and gather information on specific areas of concern as directed by the Program Manager. The added feature in the Program is the establishment of the Cyanide Detection Laboratory which has been accredited by the NBI to assist in legal cases involving cyanide fishing.

The whole Bantay Puerto Program is being managed by the City Mayor assisted by the Project Managers of each of the major program components. The Bantay Gubat Project Manager is assisted by two Project Assistants, 24 Community Forest Patrol Officers, 24 Checkpoint Sentries and a Project Recording Secretary. The Bantay Dagat Project Manager is assisted by two Project Assistants, seven Banca Operators, 7 Deputized Bantay Dagats (Marine Guards) and a Project Recording Secretary.

² The Galing Pook Program is a national program that aims to recognize local governance or best practices in the following areas: health services, environmental management, public finance, peace initiatives, integrated approach to development, socio-cultural development, employment generation/livelihood and productivity improvement.

2.2 Baguio City: *Clean and Green and Eco-Walk Programs*

The active and substantial involvement of the community and the civil society in Baguio City in the affairs of the city government are more than exemplified in many of the programs on maintaining the cleanliness of the environment and preserving the forest resources of the city. The successful implementation of these programs have earned the city in addition to its previous titles as “The Summer Capital of the Philippines”, “The City of Pines”, “The Garden City”, “The Education Center of the North”, “The Regional Center of the Cordillera”, the title of “The Cleanest and the Greenest City”.

2.2.1 *Clean and Green Program*

The task of maintaining the city clean and green has been a great challenge considering the multiplicity of roles of Baguio City. The city serves as the regional administrative center of the Cordillera region, the commercial and retail trade center for agricultural products of Benguet province, the center for higher learning in the north and one of the favorite tourist destinations in the country. These roles carry with them a wide array of development activities that invariably put strain on the city’s environment. The difficulty in carrying out the task has been lessened with the city government’s strong partnership with active NGOs, media, business sector and the community residents themselves. The Clean and Green program of the city of Baguio has seven components. Table 3 lists these components and their respective activities and accomplishments.

Table 3
Baguio City Clean and Green Program Components

Program Component	Activities	Major Accomplishments
Solid Waste Management	<p>Daily garbage collection</p> <p>Organization of Quick Response Team tasked to be on call for emergency garbage collection especially during peak seasons of summer and Christmas</p> <p>Advocacy campaign through training of barangay residents on the 3Rs Principle of Solid Waste Management (Re-use, Reduce and Recycle)</p> <p>Local Clean and Green Contest</p> <p>Annual purchase of one garbage truck</p>	<p>117 out of 129 barangays are served with the city’s collection system (90 percent)</p> <p>20 barangays have already attended as of 1996</p> <p>Contests held every year in schools, public buildings, barangays, local departments of the City Government including jeepney terminals.</p>
Liquid Waste Management	<p>Installation of more lateral and secondary sewer lines</p> <p>Intensified monitoring of pollution levels in creeks and natural and man-made waterways within the city</p>	<p>Ten sewerage projects completed in 1995 (e.g. installation of 2422.1 lineal meters of sewer pipes, 25 manholes and 1 communal septic tank, repair and rehabilitation of 70 linear meters of old sewerlines and 256 manholes in various parts of the city)</p> <p>City Ordinance provides for mandatory connection to the public sewer system..</p> <p>City government undertake regular sampling and testing to determine the Bio-Oxygen Demand and Carbon Oxygen Demand levels of different tributaries in the city.</p>

Environmental Sanitation and Management	Conduct of regular inspections of food centers, recreational facilities, night spots and transient housing facilities including dormitories and boarding houses in terms of compliance of health and sanitation standards	Organized a special task force which conduct on-the-spot checks on compliance. Conducted regular and compulsory health testing and training of food handlers.
Abattoir Operations	Establishment and strict maintenance of a clean and sanitary environment of the new abattoir facility	New facility established which is provided with rails where animals are hanged and slaughtered. This way, floor dressing and carcasses are avoided and thus ensure utmost sanitation in the area and maintain freshness and disease-free meat. Liquid wastes and other effluents generated by the abattoir are disposed through the Sewerage Treatment Plant while solid wastes are collected regularly by garbage trucks for disposal in the city dumpsite. Part of solid waste are composted for use as fertilizer. Perimeter fencing of the City Abattoir to discourage further squatting in its vicinity .
Anti-Smoke Belching	Intensified compulsory testing of all motored vehicles especially diesel-fed vehicles	Acquired new smoke-testing machine. Intensified testing generated P796,190 income from fees and fines and more importantly raised awareness of the city's serious drive against smoke-belching and proper maintenance of vehicles. City's inter-agency Traffic and Transportation Management Committee conducted "Anti-Smoke Belching Contest", a search for model driver and model transport association with big cash prizes donated by the private sector.
Parks Maintenance and Reforestation	Regular maintenance of city parks and street islands Reforestation	Collection and propagation of seeds of ornamental plants and tree seedlings as a continuing activity. Evaluated success of city's reforestation activities through the conduct of evaluation of 57 reforested areas in the city (10 reforested by the City Government and 47 by various private organizations). Results showed about 70 percent survival rate representing 27,698 total surviving trees. Apprehension of 55 persons violating forestry laws and effecting the confiscation of various tools and equipment as well as forest products valued at P46,322.28 in 1995.
Advocacy	Tri-media advocacy campaign to generate people participation and enthusiasm	Public Information Office of the City Government spearheaded the campaign which also led to the implementation of the Eco-Walk Program. DECS launched in the different elementary and secondary schools in the city the "War Against Waste" Project Office of City Social Welfare and Development and Public Employment Services Offices incorporate clean and green agenda in their respective programs

Source of Basic Data: Office of City Planning and Development Coordinator (OCPDC), Baguio City, 1997 "Always Clean, Ever Green"

The entire program would not be possible if not for the partnership of the city government, the NGOs particularly the Baguio Regreening Movement and the Alay sa Kalinisan (ASK) and the national government agencies operating in the city. The organizational structure of the clean and green program shows graphically the extent to which the program has involved everyone to share in the program efforts. A separate structure has been established for the clean effort and for the green effort (Figures 1 and 2). Barangay/Baguio residents' inclusion in the organizational structure is a recognition of their important role in the success of the program and its sustainability.

Table 4
Clean and Green Program Budget and Sources, 1996

Sources	Amount (in Pesos)
City Government	45,000,000
Office of City Mayor	2,000,000
General Services	16,000,000
Public Utilities and Services	5,000,000
City Architect and Parks Superintendent	12,000,000
City Veterinarian	2,000,000
City Health Officer	4,000,000
Other Departments*	4,000,000
Barangays **	645,000
Association of Barangay Councils (ABC)***	12,080
Baguio Regreening Movement	1,680,000

Source of Basic Data: OCPDC, 1997

* All other departments share at least one percent of their respective budget to the program which they spend for at least once a month massive clean-up of creeks and main thoroughfares of the city.

** The 129 Barangays allocate at least P5,000 of their respective budget for the beautification and cleanliness campaign

*** The ABC launched "Piso-Piso para sa Kalinisan" which they turned over to the Alay sa Kalinisan, an NGO taking the lead in the clean effort.

Figure 1 Structure for the Clean Effort

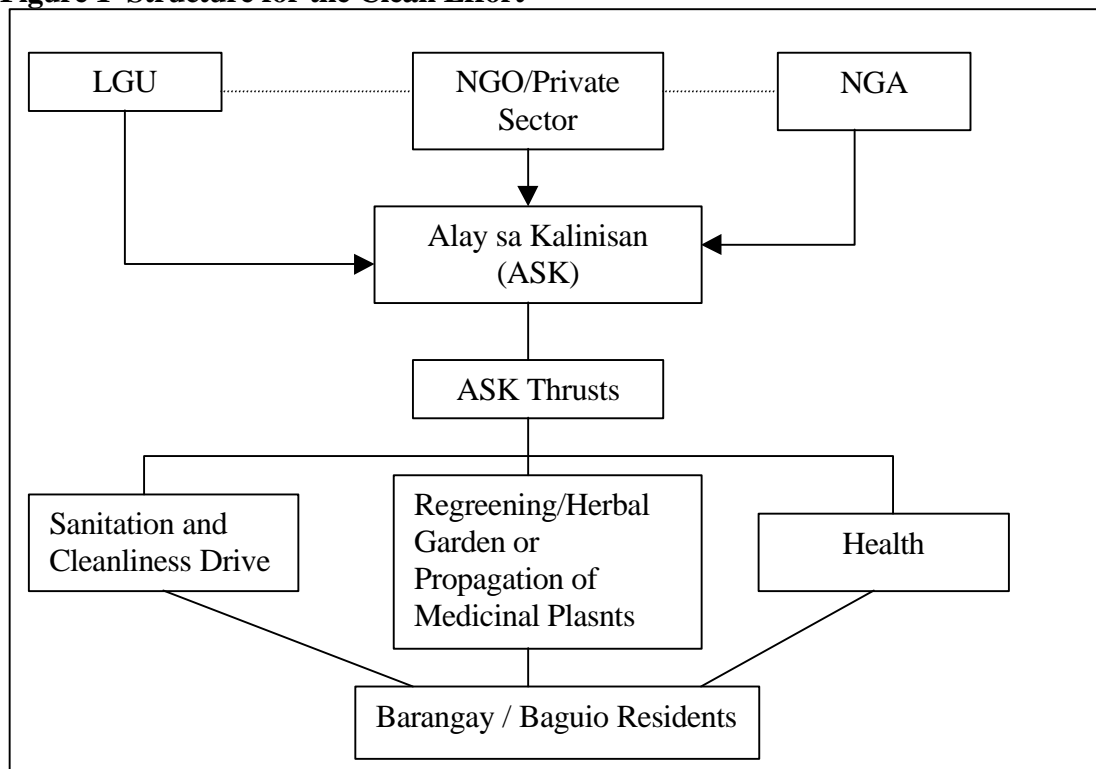
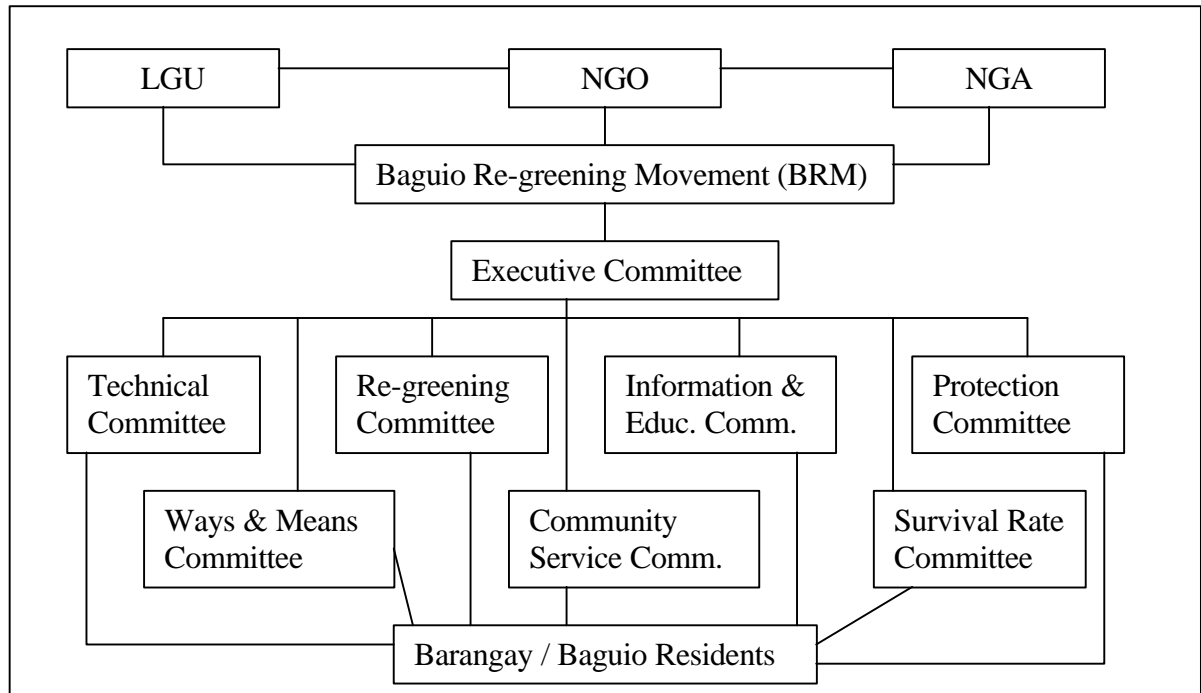


Figure 2
Structure for the Green Effort



Source: OCPDC, 1997

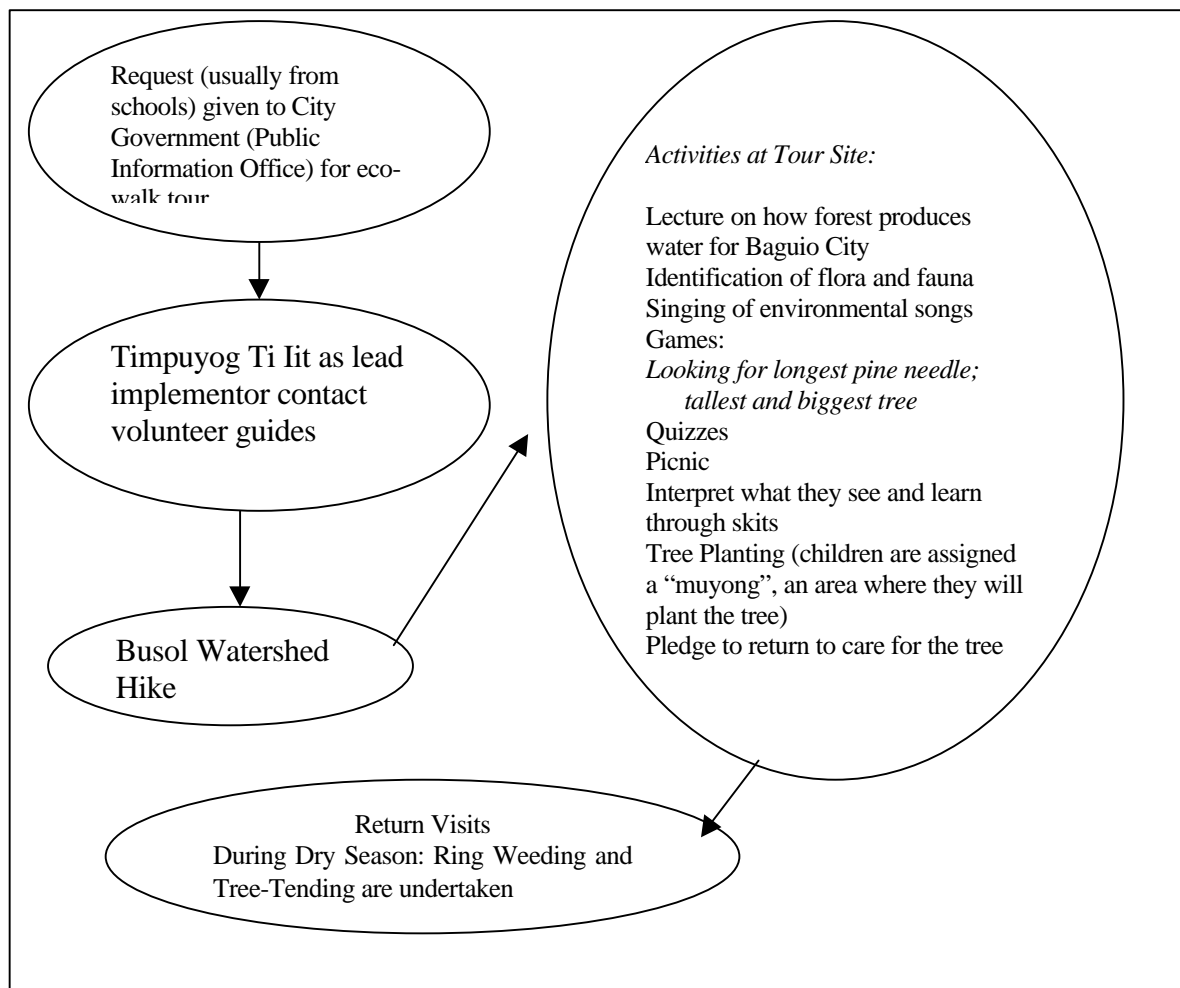
Financing the program is not solely the responsibility of the city government. Although mainly financed by the city government (17 percent of its annual budget in 1996), barangays and NGOs share a relatively large amount to sustain the program. Table 4 shows a summary of contributions from the various groups to the program in 1996.

2.2.2 Eco-Walk Program

Baguio City was a Galing Pook Awardee in 1995 for its program entitled: “Eco-Walk: An Environmental Awareness Program for Children”. The program is actually a revival of a similar program in 1992 started out by the Baguio Regreening Movement which was not sustained due to lack of volunteer tour/hiking guides. In 1993, an NGO, *Timpuyog Ti Iit* whose members are composed mainly of barangay captains pledged support to the program and for its members to serve as volunteers as a lifetime commitment. Currently, volunteers come from other NGOs and government agencies who believe on the program’s rationale and objectives. Figure 3 shows graphically the process involved and the activities undertaken as part of the Eco-Walk Program.

The basic objective of the program is value-formation considered the foundation for the protection, conservation and rehabilitation of the city’s environment. In particular, the program hopes to make the children aware of the importance of trees and forest and for them to learn how they contribute to the supply of water in the city. Busol watershed was chosen as the site of the eco-tour walk since it is the city’s major source of water but currently, due to denudation, barely produces 250 to 300 gallons per minute (gpm) from its original generating capacity of 4,000 gpm.

Figure 3 Eco-Walk Program Essentials



Sources of Basic Information: Various Galing Pook Documents (1995)

Program Objectives

Organization

The seven member staff of the Public Information Office of the City Mayor’s Office serves as the coordinator and overseer of the Eco-Walk Program. Volunteers who serve as guides of the children in their hikes come from the “Timpuyog Ti Iit”, the Baguio Re-greening Movement (BRM), media practitioners, the Department of Environment and Natural Resources (DENR) and the Baguio Water District.

Financing The Program

The program started with very minimal funding but as the programs proceeded, there were activities and projects that would require bigger funding. A fund drive was launched for the construction of a picnic shed. About P50,000 was earned through this drive. The City Government now has a standing budget of P20,000 for purchase of reforestation tools. The BRM and the Timpuyog Ti Iit have shelled out P10,000 and P30,000 for the program, respectively. In the future, financing would be needed for the

establishment of a tree nursery, audio-visual equipment for lectures, documentation requirements, office and salaries for a regular staff, and regular forest guards to help protect the children’s seedlings and the watershed as a whole.

Major Accomplishments

The active participation of school children (about 15,000 grade schoolers as of 1995) has not only allowed for the reforestation of the Busol watershed of about 25,000 tree seedlings. It has reaped socio-economic benefits in terms of minimized squatting, logging and forest fires despite the lack of forest guards because of the sight of small children caring for the tree seedlings. It has also generated savings for the government in maintaining and guarding the watershed. Most important is the unquantifiable benefits of the eco-walk experience for the children especially on their present and future regard for the environment.

2.3 Olongapo City: Solid Waste Management

Olongapo City is one of the pioneer innovators in local governance particularly in the aspect of solid waste management. As in most cities, Olongapo has been faced with problems of garbage management – irresponsible disposal of waste and a disorganized collection system. Part of the problem was the lack of financial resources to put up an efficient system since the cost of available technology and system was beyond the city’s financial capacity. The city has been striving to attract more investments in the area. A major strategy identified was the improvement of the quality of the environment in the city. Given its meager resources, the city government introduced an innovative program on garbage management. The program rests on the principle that solid waste management is not the sole responsibility of the local government but rather a shared obligation with the community. The implementation of the program that basically involves user fees was initially met with strong opposition but with the display of the city government’s honest-to-goodness program, the people were convinced and took the program seriously. In the aftermath of the removal of the US Base in 1991 and the eruption of Mt. Pinatubo, the city has taken on a greater challenge of maintaining and improving the environmental condition of the city as a major strategy in attracting investors. Table 5 summarizes the innovative features of the program.

Table 5
Olongapo City Solid Waste Management Program, 1989-present

Component	Activities/Innovations
Collection and Monitoring	Residents required to put garbage in plastic bags or else they will not be collected. They are encouraged to use the prescribed plastic bags as follows: <i>Yellow</i> plastic bags (dry recyclable wastes) to be collected on following schedule: Zone 1 – Mondays Zone 2 – Tuesdays Zone 3 – Wednesdays <i>Green</i> plastic bags (wet biodegradable wastes) Zone 1 - Thursdays Zone 2 – Fridays Zone 3 – Saturdays <i>Orange</i> plastic bags (hazardous wastes such as hospital and clinical wastes) to be collected on a designated day) disposed through incineration

	<p>Collection schedule is strictly followed (Twice a week in residential areas and daily in commercial zones and markets)</p> <p>Garbage collectors (called <i>Garbage Technicians</i>) and truck drivers wear uniforms and IDs (to mark professionalism in the service.</p> <p>Sanitary inspectors from City Health Office regularly inspect the assigned areas. Citation tickets are issued to residents and establishment owners violating the sanitation ordinances</p> <p>Junk dealers, scavengers, pushcart boys, ambulant and sidewalk vendors organized and integrated in the program; Children srictly kept out of the dumpsites</p>
Information and Value Education	<p>Garbage trucks have public address system broadcasting jingles and reminders for people to guard their health, keep surroundings clean and dispose garbage properly; Garbage trucks are emblazoned with slogans as “Keep Olongapo Clean” and “Bawal ang Tamad sa Olongapo” Slogan, Essay-writing and poster-making contests conducted though DECS.</p> <p>City Tourism Council organized cleanliness competitions among 17 barangays which facilitated the adoption of the program by the barangays</p>
Organization	<p>Established the Environmental Sanitation and Management Office (ESMO) headed by the Public Service Officer oversees the entire program. ESMO is divided into three sections: garbage collection, street cleaning and motorpool.</p> <p>City Planning and Development Office (CPDO) provides technical assistance through program documentation, interagency negotiation and sharing the city’s experience with visitors and researches.</p> <p>City Health Department provides support through its Sanitary Inspectors who issue citation tickets to violators</p>
Financing	<p>Garbage Fees collected; To make collection easier and efficient, garbage fees are imbedded in the electricity bill: P10 to P20 for households depending on floor area of housing structure P30 to P300 for business establishments depending on the type of business</p> <p>Garbage Trucks financed through donations</p>
Legal Orders	<p>Ordinance No. 31, Series of 1988 (Use of the Material Recovery Plant at New Cabalan) amended by Ordinance No. 13, Series of 1997</p> <p>Ordinance No. 34, Series of 1988 (Schedule of Fees for the Use of Sanitary Landfill Area at New Cabalan) amended by Ordinance No. 7, Series of 1997</p> <p>Ordinance No. 1 Series of 1989 (Schedule of garbage fees and other requirements for proper waste disposal) amended by Ordinance Nos. 6, 8, and 33, Series of 1997</p> <p>Ordinance No. 56 Series of 1995 (An Ordinance Adopting an Environment and Sanitation Code of Olongapo City) embodying the city residents’ goals, aspirations, efforts and discipline with respect to environment and sanitation management</p>

Source of Basic Data: Various Olongapo City Government Documents and Personal Interviews With City Officials

Table 6
Environmental Sanitation and Management Office
Income and Expenditure, 1990-1996 (in 000 pesos)

Particulars	1990	1991	1992	1993	1994	1995	1996
Income (Garbage Fees)	5,755.621	5,713.556	5,339.960	4,812.435	5,126.496	5,390.840	5,721.217
Expenditures	4,384.815	5,073.625	6,031.195	6,050.645	6,992.013	10,193.578	11,377.673
Salaries & Other Personal Services	2,976.495	3,737.870	4,149.577	4,283.927	5,572.468	8,327.621	9,345.924
Gasoline/Repair/ Maintenance and Other Expenses	1,408.320	1,335.755	1,881.618	1,766.717	1,419.544	1,865.956	2,031.749
Net Income/ (Loss)	1,370.805	639.930	(69,234)	(1,238.210)	(1,865.516)	(4,802.737)	(5,656.455)

Source: City of Olongapo, Comparative Income Statement (1997)

The city's solid waste management program has been financially self-sustaining in the first two years of the program through income derived from garbage fees. As shown in Table 6, the city has a net income of about 1.4 million pesos during the first year and more than half a million pesos during the second year of the program's implementation. Starting in 1992, however, and until 1996, the city has incurred more expenses than income derived from garbage fees reaching about P5.7 M in net loss in 1996. The expenditure increase over these years was due to the provision of benefits under the Salary Standardization Law and the hiring of more SWM personnel in view of greater demand for services with increased population. One will note that garbage fee collection dwindled in 1991 to 1993 in view of population loss due to outmigration from the city as a result of the eruption of Mt. Pinatubo and the US Base removal. Thereafter, population grew (attributed to return migration and migration from areas displaced by the calamity) in view of the various development activities in the city triggered by the implementation of projects under the Subic Bay Metropolitan Authority.

The highly increasing expenditure of the city for solid waste management and the relatively small increase in the income derived from garbage fees have placed the SWM program budget to a deficit since 1992 and contributed to the total city budget deficit since 1995. In view of this, new ordinances to amend the 1989 program of fees for garbage collection and use of landfill site have been issued in 1997 which aim to raise the much needed revenue to sustain the program. The mayor has consulted with the people on the new range of rates which will be up from P10-20 to P30-40 for households and from P30-P300 to P50-P500 for business establishments.

2.4 Marikina City: River Park Management

The success of the Marikina River Development Program or what has been more popularly known as the Save the Marikina River Project provides fresh perspective and valuable lessons on river rehabilitation and river park management in the metropolis. The program, which started in 1992, has received numerous citations and awards from

regional and national bodies and has been an inspiration to the current efforts to rehabilitate the Pasig River of which the Marikina River is a tributary. The city's project also drew popularity with the holding of the Philippine Earth Day Festival in April 1996 and the World Earth Day Festival in April 1997 where major activities took place in the river park.

The current features of the river park were far more ambitious than what were originally conceived. The simple objective of the city leadership is just to revive the river and its traditional use as a people's park the way it has been prior to the 1970s before the squatters settled along the river banks. The task is to simply relocate the squatters and to clean the 22-kilometer stretch, plant shade trees, carve out jogging, biking and walking paths along both banks, set-up park benches and put park lights. To date, about 12 kilometer stretch has been paved with the following features: a skating rink, picnic and camping grounds, water fountains, a Roman Garden, gazebos, a floating restaurant (a small ship turned into a restaurant) and a floating stage (used for public performances). The fountains and the ship are lighted to enhance the view at nighttime.

The river park project is one of the major programs of the city to address a broader city concern which is to improve the living environment and conditions of the Marikina residents. It should be mentioned that about a third of the people are living in depressed areas many of them settling in disaster-prone places such as those located in the river banks. Flooding is one of the biggest problems of the city. The city's geographical disadvantage being a valley makes it vulnerable to flooding. Excess flow of the Marikina River is not only caused by heavy rains but exacerbated by its being a repository of garbage largely coming from factories and homes mired in the waters especially squatter shanties along the river area.

A successful resettlement program, would be a prerequisite to the implementation of a more focused river rehabilitation and park development. While in-city resettlement was opted instead of relocating people outside the city, surprisingly, resettlement effort was not as easy as it was thought it would be. After a year of discussion which necessitated the hiring of community development experts and sociologists, the squatter families finally were convinced to resettle in Malanday and Tumana areas. Inasmuch as the land is privately-owned, the city government helped the families to organize themselves and facilitated their enrollment in the Community Mortgage Program so that they will eventually own the land and house they will occupy. One of the major factors that led people to cooperate was the city government's effort to ensure that the resettlement sites have the basic facilities such as water, electricity and sewerage.

After the successful resettlement, the city government issued an ordinance that would penalize garbage dumping into the river. A fine of P2000 was set for violators. The ordinance was strictly enforced and those who cannot pay the amount of fine are given the option to pay the equivalent amount in the form of community service. The construction of the 5-kilometer biking, jogging and walking lanes passing through 11 of the town's 14 barangays then proceeded. Electric lights were installed and park benches put up along the river stretch. In cooperation with DENR, eight hundred ornamental trees were initially planted along the river banks. Fish seeding (carp, plapla and tilapia) were also undertaken which at present continue to thrive in the river. Marikina river prides itself as the only biologically living river in the whole Metro Manila. Rise of numerous structures along the river followed. Included here are the playgrounds, picnic

groves, camping grounds, basketball courts, skating rink a floating restaurant and water fountains. From 1993 to 1997, the city government has spent about P34.7 million or an average of P6.9 million per year. The city has received from various national government entities including CDF from two senators about P1.6 million. Donations in kind were given by the city's private sector. The Chinese Chamber of Commerce built the Chinese Pagoda and the Marikina Zonta Club designed a Roman garden.

The Marikina River Park Authority (MRPA) under Office of the Mayor was created to oversee the whole river park program. It is presently an attached agency of the city government manned by about 50 personnel. MRPA coordinates with the City Engineering Office, City Settlements Office, City Health Office and City Public Safety and Security Office and the barangays. The program is also now being supported through the city's radio broadcast facility, DZBF, which airs public service programs and information about city programs daily from 6:00 in the morning to 7:30 in the evening. Marikina City is the only local government unit in Metro Manila adopting this form of communication service to its constituents.

The whole program has achieved more than its basic objective. It caused the recovery of valuable land for public use. It helped restore the people's confidence in the local government since the river now provides townsfolk a source of pride and recreation. Dredging activities currently being undertaken to alleviate the effects of La Nina can now be undertaken with less difficulty as big equipment can easily move around the river park. Lastly, Marikina City's experience provided hope and a tested model for rehabilitating waterways in the other parts of the metropolis.

2.5 General Santos City: "Adopt an Island" Program

There are numerous creative ways of taking on the task of beautifying the city extending beyond garbage management and the conventional activity of keeping and maintaining ornamental plants and trees around the city. General Santos City's simple but creative project provides such example.

Historically, General Santos City experienced the same fate as Central Luzon area with the eruption of a volcano 90 years ago. Many years have passed and the sight of lahar ashes are still evident especially along the uncemented roads of the city, making the place dusty. Planting and maintaining trees around the city help screen dust from the air. Thus as early as 1959, tree-planting as part of cleanliness and beautification project has been part of the major programs of the city.

Considering the city's economic boom in recent years resulting from the implementation of major infrastructure projects in the area and with the city's vision to attract more investments and to make a mark in the international trade scene, the task of cleaning and greening the city has elevated to the level of aesthetics. With the big support of the city mayor, the City Environment and Natural Resources Office (CENRO) embarked on a program that would call for the development and maintenance of parks and road islands in the city. The city has two major parks and seven road islands which have to be developed and maintained. Recognizing the meager resources of the city and the need to instill responsibility of managing the environment with its people, a program was launched based on a concept called "Adopt An Island".

Basically, the program enjoins business establishments, academic institutions and NGOs to adopt (i.e. develop and maintain) a park or a road island. The city government formulated a landscape design of the parks and road islands. Then it forged an agreement with any of the aforesaid groups to execute the plan and which shall then be in-charge of the maintenance as a partner of the city. The city's role is to provide planting materials/seedlings needed in the specific area of adoption and to assist in daily watering activities. The city has forged agreement with the following groups: Cutflower Vendors Association, Plaza Photographers Association, Coca-Cola Bottling Philippines, Inc., Rotary Club of Dadiangas, RFM Corporation, Notre Dame Dadiangas College, Mindanao State University-CETD, and the General Santos City Garden Club, among others. A mark with the name of their group or association is placed in each island for people to know the original developer and the one which maintains the island. The city government has also enjoined the cooperation of the media particularly the Bombo Radio to monitor the performance of these partner groups in terms of how well they are maintaining their respective islands or section of the park by airing praises and/or complaints from people through their radio program. Recently, the Bombo Radio has also joined the program and adopted a road island to develop and continuously maintain.

The city government spent at least about P25,000 for each road island as initial funding for landscape design and purchase of planting materials. Thereafter, the government spends only a small amount for watering assistance as major maintenance cost is shouldered by the adopter or partner group. Other maintenance activities include weeding of the island's peripheries, pruning or trimming as may be needed, insect spraying, painting of island fence etc.

The sight of the road islands in the inner core of the city and the city parks have brought beauty to the city. It has also increased the people's awareness and concern over the environment and provided them an opportunity to substantially contribute to the city government's program which in the end will be to their benefit and interest.

2.6 Las Pinas City: *Historical Corridor Project*

Another creative way to improve the city's environment is to introduce changes in the built structures of the city so that it will project a unified architectural theme. This strategy which aligns itself in the city's tourism master plan is exemplified by Las Pinas City's Historical Corridor project.

Las Pinas which has recently been declared a city (from a municipality status) is one of the cleanest and greenest places in Metro Manila. More especially, the city takes pride in having the Las Pinas (St. Joseph's Parish) Church and Bamboo Organ that have gained world-wide fame and which regularly draw local and foreign tourists in the area. This has triggered the realization that the city can develop further its tourism potentials by restoring its historical and cultural sites and artifacts.

The vision that has been laid down by the city in cooperation with the Congressional district office is to develop a 3.4 kilometer stretch of the city into a historical corridor bringing back and showcasing picturesque aspects of Spanish colonial heritage. This covers the old district of Father Diego Cera Avenue stretching from Barangay Manuyo, Daniel Fajardo, E. Aldana, Ilaya, Pulang Lupa towards Zapote. The

idea is to restore public historical buildings and to allow privately-owned structures within the coverage area to conform to an architectural master plan which is essentially a Philippine-Spanish colonial architecture. A prominent architect was commissioned to draw the city's architectural design. The architectural standards and guidelines include not only the design of buildings but also specifications on the design for sidewalks, lamp posts, walls, park benches, street signs, waiting sheds, pot planters and garbage bins.

The project kicked off in 1995 with the signing into law of Republic Act No. 8003 declaring the following as priority tourist spots: Las Pinas Church and Bamboo Organ, Las Pinas Bridge, Asinan Area, the Father Cera Bridge and the Old District Hospital and mandating the Department of Tourism to incorporate these spots in its overall development program starting 1996.

The city passed an ordinance in this regard (City Ordinance No. 275-96) which was enacted in March 1997 entitled "*An Ordinance Regulating Construction, Renovation, Alteration or Repair of Properties and Establishments or Infrastructure Works Undertaken Within the Tourism Development Zone of Las Pinas, Requiring the Conformity of Whatever Works in Zone With the Philippine-Spanish Colonial Design*". The ordinance has included other structures not covered under RA 8003 as priority areas for development, as follows: Plaza Quezon, Zapote Hall, Public Library, Fire Station, and the Gabaldon Hall in the Las Pinas Elementary School. The Countrywide Development Fund has been used to start restoration and reconstruction work of some public buildings including the Old District Hospital, Manpower School and most recently the Daniel Fajardo Public Library.

In implementing the project, the city ordinance has stipulated the following provisions as to compliance process relating to privately-owned structures, to wit:

Section 5. In implementing the Las Pinas Tourism Master Plan....the local government shall respect personal and property rights. Thus, it shall resort only to expropriation for specifically approved projects. For this purpose, it shall exert all efforts towards arriving at negotiated purchases and shall encourage donations by private sectors/individuals of their properties.

Section 6. The local government, through the Office of Tourism and Cultural Affairs, shall give full support and encouragement to the development of private properties in order for them to conform to the Philippine-Spanish colonial design by extending technical and other forms of assistance, including incentives and financial grants.

Section 7. Development or demolition of properties of private individuals and entities and government agencies within the zone shall be undertaken only after a construction clearance has been issued by the Office of Tourism and Cultural Affairs.

Section 8. Construction, renovation, alteration, repair or demolition undertaken without the construction clearance shall be subject to summary demolition or removal by the City Engineers Office, immediately after a notice is posted in the construction, renovation or repair site and the owner of the building constructed, renovated, altered, repaired or demolished in violation of this ordinance shall be subject to civil action for damages, the amount of which shall be based on the historic, cultural or aesthetic value lost.

The project has received support from residents, private groups and business clubs. Some even gave donations and offered free services to support the project. The Federation of Las Pinas Homeowners Association (FOLPHA) expressed no hesitation in fully supporting and endorsing the project. The Las Pinas Chamber of Commerce and Industry has organized a fund-raising activity for the project. The Las Pinas Garden Club offered their services of propagating plants, flowers and trees that grace old Filipino homes. The Zonta Club of Las Pinas donated P5000 for the purchase of two lamp posts. The Philippine Dental Association-Las Pinas Chapter donated P1000 as a sign of support. The Las Pinas Lions Club pledged for the construction of a Spanish-design waiting shed. The Philippine Tourism Authority has fielded a Technical Team to estimate project cost for the improvement of the Bamboo Organ and the Church.

To date, the city is discussing more detailed policies and guidelines particularly on Section 6 of the City ordinance concerning incentives and financial grants for the development of private properties to comply with the required design. The use of tax incentives is being considered as a possible scheme to effect support and compliance to the program.

3. Lessons Learned: Key Elements for Program Success

The preceding section provided some models of successful environment programs and illustrated the diversity in programs that have been implemented thus far by Philippine cities. Reflecting on the cases presented, one can draw some key elements that have made these programs achieve their objectives successfully. It should be pointed out this early that one particular element does not stand alone to guarantee program success. In other words, these elements are interwoven and cannot be taken in isolation.

Participation: Involvement of Local Institutions and People in the Implementation Process and Funding

The involvement of as many sectors of the society helps ensure effective and efficient program results. This has been one of the important findings of a recent study on local governance in Latin America and Caribbean where it found the element of participation present in the 20 successful program innovations analyzed (Campbell, 1997). The five Philippine cases presented above echo the same finding. The case experiences further showed that substantial participation of the civil society, people's organizations, media, private sector, barangays and community residents cannot only be limited to the aspect of implementation but can go beyond in terms of mobilizing financial and non-financial resources in support of the program.

Puerto Princesa and Olongapo's experience showed greater participation when the community are involved in decision-making in program design and its actual implementation. Ownership of the program by the people has helped Olongapo in particular to demand compliance to payment for garbage services thereby lessening the city government's burden relative to the increasing cost for garbage management. The scheme adopted by General Santos has encouraged almost full participation of non-government groups in terms of financing and implementation solidified through a formal agreement as partners of the city. The active participation of the civil society in Baguio City, even taking the leadership over the city government in program implementation

has allowed for greater success of the city program. The voluntary support of various groups in Las Pinas showed that getting people to participate in the program would not be too difficult if the program is appealing and worthy of their support.

Participation is an important ingredient in any development program but is most especially critical in environmental management. Participation does not necessarily refer to quantity (i.e. number of groups and individuals enlisting themselves in the program) but more importantly to the quality of participation based on clearly defined roles in the entire program framework. The case studies have amply illustrated the fact that local government programs relating to the environment extend beyond normal bureaucratic responsibility as they demand greater coordination and collaboration of various institutions. The setting up of a framework and organization to effect a properly planned participation and some kind of a machinery to resolve conflicts have been important in this regard. As have been shown by the city experiences presented, bringing together the various actors and stakeholders in an organized fashion of participation has lessened the cost of implementing the program, helped sustain its implementation (even with change in political leaderships) and impressed on the people that environmental management is a shared responsibility with the city government. Surely “*better* participation” is more important than “*more* participation”.

Communication: Improving Knowledge and Understanding

Effective communication is necessary to achieve program success and to solicit meaningful participation in the program. The cases presented above have recognized the crucial role a well-informed citizenry can play to smoothly implement the programs. A change in the behavior of people through information and greater understanding of the general intents of the program can bring about unfettered acceptance of the responsibilities, costs and inconveniences of any environmental policy or program.

The identification of target beneficiaries and communicators of the program has been important in designing the communication strategy of Puerto Princesa’s Oplan Linis and Olongapo’s SWM Program. Oplan Linis targets the children as both beneficiaries and the ones that will disseminate the program information in their households and communities. Thus, the Project Team covered all schools both elementary and high school to discuss the value of cleanliness and orient them on the program. In each orientation, a measure of communication success is determined whether the students fully grasped the program concept. They were given biscuits and juices and the team observes whether the students after consuming them will find a trash can to throw their garbage. If they do so, then the orientation has achieved its objective. For Oplan Linis, every resident knows about the program. School children and tricycle drivers are the most active program campaigners and implementation monitors of the program. In Olongapo, since the major component of the program require instilling discipline and financial sharing by households, the city mayor along with the city officials hold meetings in each barangay to discuss and get their suggestions and or confirmation on the program to be implemented. Regular barangay meetings offer the avenue for discussion and resolution of conflicts.

The importance of including information, education and advocacy as an integrated component of an environmental program cannot be overemphasized. In the case studies presented, programs extensively used government and private entities and

especially the media both in program dissemination and in monitoring program implementation. The use of local media to report violators in the program such as those programs of Puerto Princesa and General Santos illustrate that program advocacy and instilling program awareness can be done in more creative ways than one. Marikina City's radio station DZBF is an effective means to monitor program implementation and inform the people of the city's further efforts relative to the program, thus ensuring its sustainability.

Leadership: Vision, Popular Support, Clout and Managerial Acumen

Analyzing the five city program innovations presented, four leadership themes gain prominence: vision, popular support, clout and managerial acumen. The leader that is being referred to here is not necessarily just the city mayor. These leadership themes may be present among other leaders or groups in the city and their interplay helped achieve program success.

Visionary leadership refers to the ability to see the big picture of what to achieve and how to get there. "Without vision, people perish" may be a trite expression but the articulation of a vision for the city has propelled the five program innovations to move and get things done. For instance, Puerto Princesa's Oplan Linis and Bantay Puerto programs were formulated based on the city's vision of "Kalinisan, Katahimikan and Kaunlaran" (Cleanliness, Peace and Order and Development). Baguio City's Clean and Green Program and how it is implemented anchor on the city's vision of a "...progressive, peaceful, clean and green Baguio- a center for education, trade and family-oriented tourism--- managed by God-loving and strong-willed leaders in partnership with self-reliant and disciplined citizenry". Olongapo's simple vision to clean the city and create a better image of itself as a city and people have driven the program to greater organization and sustainability. Improving the external environment of General Santos City as a means to attract people and investors and contribute towards becoming a competitive city in the international trade market has placed environmental efforts in the context of the city's overall development framework. The shared vision of the city of Las Pinas and the Congressional Office "to bring back the old charms of Las Pinas while at the same time raise the quality of life of its people in a way they can be truly proud of" has led to the implementation of the Historical Corridor Project which will develop the city into a must-see tourist attraction in Metro Manila. Marikina City's vision of letting people "touch and smell the water" has driven efforts to rehabilitate a dying and unsightly river.

Popular support derives itself from the leader's ability to communicate the vision to the people and rally them behind that vision. Credibility and trust on the leader is important more than the leader's personal charisma and proficiency in public speaking. Credibility is gained through consistency in public utterances and actions. In the case programs presented, all of the local leaders in their respective cities have established some form of credibility and trust among its people. While people's belief on the program per se and the benefits they may derive from them are important, leader's credibility is critical in their fully embracing the program and having a positive attitude towards its success. This is exemplified for instance in Puerto Princesa's Oplan Linis Program. The program was actually not a new program but a remake of past programs. However, local leaders have shown more political will to see through its implementation

by getting more organized, issuing ordinances and strictly enforcing them as well as appropriating sufficient funds to sustain the program.

Clout refers to the leader's capacity to influence critical institutions and individuals to support program implementation process and financing. The ability to influence the City Council is important so that critical legislation or ordinances are passed and budget appropriations are approved. The skill to get the support of government agencies, business groups, NGOs and the media to take part in the program in terms of funding and technical services is an important leadership factor. With reference to the case cities, city leaders have all displayed political and administrative clout in the process of undertaking their respective programs. Such led to timely passage of needed laws or ordinances, sufficient funds for program operations and active participation of various groups both in the implementation of the various activities of the program and the provision of grants and donations.

Managerial Acumen refers to corporate and administrative capacity to lead or to intelligently choose people to oversee the program's implementation. From among the case studies presented, the first was exemplified by Puerto Princesa's mayor in personally steering the Bantay Puerto program. The rest of the programs have relied upon the leadership of mayoral appointees. It is interesting to point out that program managers do not necessarily come from the city environment office: Puerto Princesa's Oplan Linis program had the First Lady at the helm; Baguio City has the Public Information Officer as coordinator of the Eco-Walk Program; Las Pinas has the Office of Tourism and Cultural Affairs playing a major role in the program. General Santos, though, had the City Environmental and Natural Resources Officer as program overseer. In Olongapo, the program overseer is a unit especially created for the program (Environmental Sanitation and Management Office) coordinating also with the City Planning and Development Office and the City Health Office. In Marikina City, a parks authority was created to oversee the river park program. Management of the programs have proceeded under a formal organizational set-up within the city government and clear organizational lines with other agencies and institutions.

Program Design: Creative Adoption of Local Culture, Values and Beliefs

The adoption of local values, beliefs and practices can become a creative tool in designing effective and culture-based programs. In Puerto Princesa, for instance, the transformation of the yearly Irawan Town Fiesta into a Pista Y Ang Cageban (Feast of the Forest) has combined a new meaning to an annual religious festival towards an environment awareness and concern on the need to reforest Irawan. In Baguio City, the Eco-walk program has adopted the concept of "muyong", an Ifugao term for man-made forests of the Ifugao which are the sources of water for the Banawe Rice Terraces. The term has been used for the planting area designated for a group of children reforesting an area of the Busol Watershed. As part of the "muyong" tradition, no one can enter any "muyong" without the permission of its "owners". Because of the sacredness of this concept, the reforested area have gained respect from outsiders and allowed for high survival rates of tree seedlings planted.

Fund Management: Variety of Funding Sources Not Limited to City Government Budget

One of the big lessons that can be derived from the five programs presented is that the limited financial resources of the local government should never pose a constraint to implement sound environmental programs. No matter how costly the program is, there are creative means of fund sourcing and there are alternative programs that can be designed but still achieve the same ends. If the people realize the worthiness of the program, then they can share resources, even voluntarily. The programs presented have shown the creative use of Countrywide Development Fund (CDF), user fees, donations in kind and fund drives initiated by various groups and NGOs.

Program Regularity and Institutionalization

Successful programs usually stand the test of time. Except for Las Pinas, the other programs have more than three years of sustained implementation. The secret lies not only in program leadership but more importantly in undertaking regular activities that is contributing towards the institutionalization of the program in the city. For example, Oplan Linis has a regular Saturday clean-up in a designated area, Eco-walk is a continuous program, Olongapo's garbage services follow a regular schedule according to zones, General Santos Road Island Program are regularly checked and maintained by the city and the partner institution.

National Support

The support and involvement of the national government over the city programs, though admittedly limited, come in various forms. For one, the devolved powers and increased IRA shares have helped cities in providing greater clout and resources to undertake the program. This is especially true for cities whose annual budget relies mostly on IRA. The other support of the national government are the awards and recognition it accords to program innovators which continue to motivate further the local government to innovate and to see through the successful implementation and sustainability of laudable programs.

5. Concluding Remarks

The five model programs presented have illustrated the diversity of environmental programs that have been implemented thus far by Philippine cities. Reflecting on these programs, the paper identified the elements and preconditions that make programs successful from the point of view of goal achievement as well as program sustainability. The study also emphasized the collective or the participative nature of environmental management programs as all sectors of the society can play a dual role as implementors and as beneficiaries of the program. Participation has been operationally defined in the paper to pertain to involvement in the implementation process and in terms of resource sharing.

Managing the environment is a huge task that local governments have to deal with not only for the reason that it is mandated to them by the Local Government Code but, more importantly, because failure to address environmental concerns would

undermine the entire city's development efforts and affect people's welfare. While each city or any local government unit for that matter is expected to craft its own program for the environment, there are instances that inter-local programs have to be made in view of program interdependencies and economies of scale that are achieved in doing so. This is most especially true in the aspect of solid waste disposal. While many cities have been successful in cleaning their surroundings, final disposal of wastes has not achieved the same degree of sophistication as waste collection. The huge cost required in establishing a sanitary landfill and the similarly expensive maintenance requirement pose constraint on the LGUs to undertake waste disposal activities that are environmentally sound than providing for an area or areas for dumpsites. Interlocal arrangements show a lot of promise in this regard in terms of joint financing and maintenance.

On a long-term view, management of the environment and natural resources would entail the scientific accounting of environmental damages and use of natural resources. Such determination would not only ensure sustainable management of resources and the environment but would also provide revenues for the local government units when these are used as basis for the implementation of regulatory instruments or other more effective instruments to minimize further environmental damage and natural resource depletion. At present, a number of LGUs are already using regulatory schemes (e.g. anti-smoke belching, etc.) to avert activities damaging the environment in the form of fines and penalties. However, these fines do not reflect the full cost of the environmental damage as the determination of these fines are not based on sound scientific costing. In some developed countries, such as Norway and New Zealand, full cost accounting of environment and natural resources are being used as basis for managing forest resources, minimizing vehicular emissions, reducing industrial effluents, installation of waste treatment plants and facilities, among others. In the Philippines, a number of efforts are being undertaken (e.g. Environment and Natural Resources Accounting Project (ENRAP), Metropolitan Environmental Improvement Program (MEIP), etc.) which in the future can help LGUs improve the management of their respective environment and natural resources in a sustainable fashion through a more sound determination of environment and natural resource use.

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