Promoting Cleaner Production through Local Government: Philippine Clean Cities Center (CCC) Project[1]

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ABSTRACT

The Pacific Northwest Economic Region (PNWER) has partnered with the League of Cities of the Philippines (LCP) to demonstrate that local governments can successfully reduce resource use and waste generation in their own operations and in businesses and communities by applying the principles of Cleaner Production. The project design has proven to be remarkably cost-effective and should serve as a model for other municipal associations in Asia Pacific region concerned about sustainable resource use and waste management.

1. INTRODUCTION

Solid waste management has long been a major concern for cities around the world. In some regions, the available disposal facilities have reached their capacity and local governments are faced with difficult decisions. The city of Seattle was faced with closure of its major landfill and a serious need to control waste volumes. The city responded by aggressively promoting waste separation and recycling by residents and businesses. This generated large quantities of recovered materials. However, this was not matched by an increase in the processing technologies and markets for these materials and the city quickly found itself with stockpiles of paper, plastics, and other materials for which no commercially feasible processing technologies or markets existed.

Realizing that other cities in the state would soon face similar problems, in 1988 the Clean Washington Center (CWC) was established. Over the next ten years, the CWC became a national Recycling Center of Excellence and produced over 300 technical reports on recycling technologies and market development. From 1997 onward, the CWC's remaining projects and its knowledge base were merged into the Pacific Northwest Economic Region.

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In 1998, PNWER received a grant from the US-Asia Environmental Partnership (US-AEP) to bring the CWC's recycling expertise to the Philippines. The objective was to share the experience in Seattle, and identify the champion stakeholder in the local scenario. PNWER found that the private sector was relatively uninterested in recycling technologies, because they have relatively low costs for waste disposal and little governmental incentive to pursue recycling. However, PNWER made contacts with the League of Cities of the Philippines (LCP) and found great interest in recycling and waste minimization. The LCP represents over 100 cities in the Philippines, including almost all the largest cities and provincial capitals. This paper introduces the implementation of cleaner production education at local government level, where massive population receives first hand information and training.

2. WASTE MANAGEMENT CHALLENGES IN THE PHILIPPINE CITIES

Solid waste management is a major cost for Philippine cities. The mayors who met with PNWER estimated that they spent between 10% and 20% of their budgets on waste management. This estimate is supported by sources such as the World Bank, which estimates that the urban areas of Asia now spend about US$ 25 billion on solid waste management per year; this figure will increase to about US$ 47 billion in 2025 [1].

Cities in developing countries typically produce about 0.5 kg to 1 kg. of solid waste per day per capita. A per capita generation rate of 0.4 kg to 0.7 kg per day is typical in urban centers of low-income cities, such as Karachi and Calcutta, whereas cities located in higher income countries, such as Seoul, produce almost six times as much on a per capita basis [2]. Waste management usually accounts for 30% to 50% of municipal operational budgets [3]. Management costs for collection, transfer and disposal range between US$ 20 and US$ 60 per ton, with collection being about 70% of the total costs [4]. Using the low-end estimates of these ranges (0.5 kg/day at US$ 20/ton), a city of 100,000 people might expect to spend about US$ 365,000 per year on solid waste management. However this is no doubt an underestimate since it multiplies two low-end values and also does not include the cost of acquiring land for disposal, which is both expensive and highly political due to local community resistance to new garbage dumps. It may be more realistic to estimate that solid waste management costs cities in developing countries about US$ 5 per capita per year. Thus a city of a million people would spend at least several million dollars per year on solid waste management, even allowing for some economies of scale. Collecting, transporting and disposing of MSW represent a large expenditure for Third World cities.

While some cities are able to recover some of the costs through waste fees, a large portion of the population in cities in developing countries are slum-dwellers who cannot be charged for waste collection. Even with some cost recovery, solid waste management costs cities a very large amount of money. And unlike municipal costs for education and infrastructure, costs for waste management do not have a tangible return on investment.

In the Philippines, PNWER found that the mayors who are the members of the LCP are extremely aware and concerned about these facts. The politics of waste management are also a major concern because many landfills are reaching capacity, and the mayors must negotiate, often at peril to their elected positions. Many cities need to reach out to their neighboring communities or towns for new landfill sites. Thus the LCP members were very interested in any solutions that could reduce the volume of waste being generated by their cities.

Fortunately, the Philippines has seen some notable successes with waste minimization. The US Agency for International Development, the World Bank, and other donors have sponsored large and small projects to demonstrate the concepts of Cleaner Production (CP) to industry and government. CP is the term used by the United Nations around the world for practices that prevent pollution at the source through increased efficiency, product changes and better management methods. In the Philippines

and elsewhere, thousands of companies have found that they can reduce water and energy use and waste generation, typically by 20% to 30%, with little or no capital investment, by applying CP methods [5].

PNWER and the LCP therefore organized a training program on CP for LCP member cities in 1999 at Manila. International and Philippine experts conducted the training that included concepts such as process analysis, cost of waste measurement and environmental accounting, the CP hierarchy of waste solutions (source reduction, waste reduction, recycling and finally disposal), and green teams. A dozen cities sent senior representatives to the two-day training event in Manila. This was the first time these representatives had learned of CP and its potential for reducing municipal waste management costs and the training was eagerly received.

3. THE CLEAN CITIES PROJECT

Following this training program, the city representatives and the LCP secretariat decided to initiate a program with PNWER to promote CP to member cities. The Clean Cities project was established to help a group of pilot cities learn about and implement CP practices with the objective of reducing waste management costs, improving efficiency and productivity, and creating social benefits from having cleaner and greener cities. Table 1 shows the twelve cities that participated in the pilot project.

Table 1 Philippine cities involved in the clean cities project

City Name	Population
1. Angeles	300,000
2. Antipolo	1,300,000
3. Bais	68,000
4. Dagupan	130,000
5. Iloilo	363,000
6. La Carlota	56,000
7. Mandaue	300,000
8. Naga	130,000
9. Island Garden City of Samal	83,000
10. San Fernando	102,000
11. Tagaytay	32,000
12. Toledo	130,000

The importance of Cleaner Production to the cities can be estimated using the World Bank parameters [1]. For 3 million people in the twelve cities, the cost of solid waste management to the cities can be *conservatively* estimated as follows:

3,000,000 people x 0.5 kg solid waste/day/per capita
= 1500 tons per day, or 547,500 tons per year
= US$ 10,950,000 per year at US$ 20/ton

Following the experience of Cleaner Production worldwide, it is quite reasonable to expect that solid waste volumes could be reduced by at least 10% by promoting and implementing CP methods, not including new investment. Such a reduction could well save the twelve participating cities over a million dollars per year in total, counting only the avoided waste management costs. Since CP is based on improving efficiency and productivity, there would also be revenue gains from increased profitability and tax collection in the cities, and political benefits from this positive and non-regulatory approach.

3.1 Clean Cities Project Structure

PNWER provided additional training to the city representatives in group workshops. However it was apparent to all that they would need to have additional training in their own cities. To meet this need, PNWER and LCP developed a novel approach that has proved to be very cost-effective. With funding from USAID via PNWER, the LCP hired two experienced city managers from two of the participating cities. They were hired on six-month contracts and paid the equivalent of their city salaries. Effectively, the cities loaned their staff to the project at cost. The sponsoring mayors supported this largely because they realized that, at the end of the project, their returning staff would be experts in CP for cities and would become assets in their own communities. This enabled the project to be staffed at a very low cost compared to other development projects staffed by professional consultants hired at market rates.

To assist the cities, the two trainers were assigned to northern and southern regions of the country. They each traveled to six cities on a circuit, returning every few months to conduct another workshop and help the city progress. This "circuit rider" concept has been very effective at maintaining the momentum of the project and for helping the cities learn from each other. The cost of in-country travel was covered by the PNWER funds and in fact amounted to about half of the funding. The trainers quickly became familiar with the challenges and opportunities faced by the cities and were able to identify and share common solutions.

An important development was the decision of the participating cities to practice Cleaner Production concepts on themselves, before promoting CP to local companies and communities. They agreed to initiate CP projects at their City Halls, focusing on water and energy conservation, paper minimization, waste segregation, composting of food waste and other topics. They also recognized the importance of the city as a purchaser of goods and services. In many of the cities, the local government is the largest individual buyer of goods and services. As such it has potential to create market demand for improved environmental performance, which will thereby stimulate an entrepreneurial response from companies eager to do business with the city.

To further encourage the city representatives, PNWER organized an international Workshop on Pollution Prevention for Sustainable Cities, held in Seattle, Washington in May 2001. This workshop was attended by a dozen Philippine project representatives and also by another 30 participants from seven other countries. They heard from local experts and program staff about successful methods for recycling and conservation and had many opportunities to see effective projects in action. The participants reported that it was very helpful for them to see the kinds of results that they could eventually expect and they were highly motivated to emulate the successes in their own cities.

3.2 Project Results to Date

Tables 2 to 4 contain the fact sheets showing summary results from each city. In all of them the CP projects at City Hall resulted in measurable savings in water, energy, paper use and waste generation.

The following are some selected outcomes of the participating cities:

- Tagaytay City Hall reduced its daily solid waste volume by 25% by relatively simple methods of waste separation.
- In Iloilo City, the number of daily bags of garbage from City Hall was reduced from eleven to two.
- In Bais City, with a strong initial endorsement from the mayor, city hall save its resources in 10% on water, 15% on electricity, while solid waste reduction counts 20%.
- In Dagupan City the procurement of office supplies was reduced by 30% over a four-month period, thus saving on purchasing costs. Their water and electric bills were reduced from 10% to 15%.
- La Carlota City showed a drop in actual energy consumption of streetlights and in the city hall of about 33% from Php 114,000 (approx. US$ 2,111) to Php 77,000 (approx. US$ 1,426) (US$ 1 = Php 54);

Table 2 Lead champions and partners of the cities

Lead champions and partners	Name of the cities											
	AG	AP	BS	DG	IL	LC	MD	NG	IS	SF	TY	TO
Mayor/Vice mayor	●	●	●	●	●	●	●	●	●	●	●	●
City councils	●	●		●		●		●			●	●
Department heads	●	●		●		●			●			
Multi-sectoral					●			●		●	●	●
Industry	●	●	●	●								
NGOs	●		●		●					●		
Environmental council					●				●	●		●
Youth council						●						
Residents										●		
Schools (high school)									●			●
Media			●									
Tourism council									●			

Table 3 Priorities of the cities

Priorities of the cities	Name of the cities											
	AG	AP	BS	DG	IL	LC	MD	NG	IS	SF	TY	TO
Waste management (MSW)	●		●	●	●				●		●	●
Air and water pollution			●	●		●				●		
Sewerage/drainage				●	●				●			
Energy	●									●		
Recycling	●		●						●			
Traffic				●						●		
Cleanliness									●		●	●
Advocacy	●								●			
Anti-drug								●				
Dumpsites								●	●			

Table 4 Current programs of the cities

Programs of the cities	Name of the cities											
	AG	AP	BS	DG	IL	LC	MD	NG	IS	SF	TY	TO
Waste management / ESWM	●	●	●	●	●	●	●	●	●	●	●	●
Energy/water conservation	●			●				●			●	●
Sanitary landfill / dumpsites			●							●		●
Environment program							●		●		●	
Waste minimization						●		●	●			
Cleanliness				●					●			
Pollution		●				●						
Cost-sharing scheme	●											
Site visits	●											
Information campaign	●								●			
Setting up of ecology center		●							●			
Industry										●		

Legend:

AG	Angeles City	IL	Iloilo City	IS	Island Garden City of Samal
AP	Antipolo City	LC	La Carlota City	SF	San Fernando City
BS	Bais City	MD	Mandaue City	TY	Tagaytay City
DG	Dagupan City	NG	Naga City	TO	Toledo City

- Naga City reduced office supply purchases by 10% and saved millions of pesos per year by reducing air conditioning by two hours every day throughout all government offices by simply turning it on later in the morning, turning it off at lunch, and turning off earlier in the evening.
- Antipolo City recorded 10% savings on electricity of the city hall, and as well recovered 27 kilos of paper for reuse in a quarter.

These quick and obvious results have helped the mayors to embrace CP practices and endorse the project. In fact, this may be the most important project result so far. In all the cities, the mayors joined in the initial workshops to learn about the potential for CP and to endorse its importance to the community. This is a critically important outcome because, especially in the smaller cities, the mayor has great influence and authority.

In the Philippines, businesses must have an annually renewed Mayor's Operating Permit for their business. This is primarily to aid in tax collection, but in fact the mayors have the discretion to withdraw the permit to operate if they feel it is necessary. Of course they hardly ever do so, but business owners are quite aware of this power and therefore are very responsive to the mayors' requests that they join in CP training and try applying the concepts to their own operations. Multi-sectoral support and commitment have been recorded in many cities:

- 100% of all cities participating in the program have their mayor or vice mayor as the lead champion. More than half of the cities receive strong involvement from their city councils and city hall departmental heads.
- Industry has long known as city's partner. This public-private partnership (PPP) is exemplified in Antipolo City where pledge was signed by 16 industries and the set up of ecological centers.
- The environmental council, women group, and the youth group are also constituents of the leaders in promoting Cleaner Production.

Other leading city officials also joined in the workshops. As a result the cities have very strong top-level support for CP, and they are convinced that it works because they have made it happen in their own operations at City Hall. Invitations to the workshops came from the City Hall, and the participants are the leading business owners and managers, the sub-local government units called barangays, and other community leaders. In all cases they resulted in a great deal of brainstorming and problem solving. As CP experience around the world has demonstrated, many solutions for CP can be found when the attention of managers is directly focused on the problems. Also, the sharing of information about common problems and solutions inspired many participants to recognize their own opportunities for the first time.

The workshops prove to be a very good multiplier agent:

- Bais City workshops reached out to five barangays and public markets, including 300 vendors and 4000 crowds;
- Technical Working Group in Dagupan City has representatives from 28 barangays out of the total 31 of the city;
- Iloilo City reached out to 160 of 180 barangays covering the city land area of 42 km^2

While data is still being collected on the reductions of wastes from communities and business as a result of the project, it is clear that it has inspired the private sector and communities to begin reducing and conserving resources. In some of the cities, the top polluting companies were identified and invited into the program, and they signed agreements with the city to initiate CP programs in their companies. In other cities the focus has been on local communities or barangays and on household separation of wastes. In all cases, the identification of priorities and opportunities was done voluntarily and cooperatively, which has produced strong support for the project throughout the communities.

Table 5 Future plans of the cities

Future plans of the cities	Name of the cities											
	AG	AP	BS	DG	IL	LC	MD	NG	IS	SF	TY	TO
Waste water management system			●	●					●	●		
Pollution prevention, waste minimization and management						●		●		●	●	
Eco-tourism									●	●	●	
Energy	●											
Living standard	●											
Cleanliness	●								●			
Reduction of soil erosion			●						●			
Sewerage				●								
Preserving city's structure					●							
Preserving of natural resources				●					●			
Traffic congestion				●								
Landfills						●						
Equipment and technology									●			●
Garbage collection and disposal									●			●
Recycling									●			●

Legend:

AG	Angeles City	IL	Iloilo City	IS	Island Garden City of Samal
AP	Antipolo City	LC	La Carlota City	SF	San Fernando City
BS	Bais City	MD	Mandaue City	TY	Tagaytay City
DG	Dagupan City	NG	Naga City	TO	Toledo City

3.3 Next Steps

The participating cities have initiated a wide range of projects, as outlined in Table 5. More data on results is being collected, since measurement is a vital part of CP and has been continually emphasized throughout the project. With the experience of applying CP successfully to their own operations, the local governments now have the confidence and expertise to promote it further to businesses and the community.

The LCP has decided to establish a permanent office of environmental management to continue supporting the Clean Cities project. The next major challenge will be expanding the number of participating cities. The circuit-rider concept for staffing has proved to be very successful and cost-effective so far, but adding more cities requires adding more staff for the training circuit. The LCP is considering a range of options for funding these additional staff, including subscription fees from participating cities, corporate sponsorship and foreign donor support. The US-Asia Environmental Partnership regards the project as a success and is planning to provide further financial support. Most importantly, a number of other cities have observed the results to date and have asked to join in the program.

4. CONCLUSIONS

The Clean Cities Project has revealed several lessons that are very important for organizations seeking to promote environmentally sustainable businesses and communities:

Local governments are the best paying customer for Cleaner Production concepts. Experience has shown that industry itself is not interested in CP because waste is not a major concern of most managers, and they are unconcerned about environmental agencies or donor programs trying to promote CP. But local governments are intensely interested in reducing waste volumes because it is a major budget and political issue for them. They can apply CP to their own operations, and most importantly, become effective promoters of it. While a local company might ignore a national environmental agency's efforts, it is much more likely to pay attention when the mayor invites them to learn about CP, because the mayor and the local government have real power to affect the business.

Cleaner Production creates many different benefits for local governments at very low costs. These include reduced costs for solid waste disposal, and also reduced costs for water and energy supplies. Because it is based on principles of better operations management, CP also improves efficiency and productivity and can improve the local economy, thus increasing local revenues. Finally, it is a highly participatory and partnership-based concept and is politically positive. A number of participating mayors in the project have said they see this as a "legacy" project that will leave their positive mark on their cities. To obtain these benefits does not take capital investment; rather it takes commitment and coordination and voluntary action. Thus it is unusually cost-effective.

Many communities can participate at very low cost. The project has a budget of about US$ 60,000 to support 12 participating cities for a full year, with an expectation of eventually saving them over a million dollars per year in avoided waste management costs alone. Compared to many other efforts to reduce waste and pollution, this is extraordinarily cost-effective. The secret has been the use of city staff on loan to the project, which keeps labor costs very low. Working through a municipal association allows many cities to participate and share experiences. In the future, the cities might rotate the circuit-rider assignments among their staff, thus greatly increasing their own staff capacities while building the overall capacity of the project.

5. REFERENCES

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