

Asian Development Bank

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Smokey Mountain Remediation & Development Program (SMRDP)

Implementing Organization:
Sustainable Project Management



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PROGRAM OVERVIEW

Description

Located next to the infamous Smokey Mountain – a 2 million ton landfill in Metro Manila – the Smokey Mountain Remediation and Development Project (SMRDP) worked through community and public/private partnerships to help reduce poverty and improve the environmental situation mainly through a waste-recycling program.

Background

The Smokey Mountain community is a population of squatters who formerly lived on or directly by the Smokey Mountain landfill. In the 1990s, pictures of waste pickers on Smokey Mountain made the cover of *Time* magazine Asia and became a symbol for so many similar poor communities around the world. The government ultimately provided low-income housing for the squatters, but no means of livelihood. The waste pickers continued their work but in illegal, informal areas near the Manila Piers, a dangerous and unhealthy “no man’s land” with no access to clean water or electricity.

As the world market's appetite for recyclables increased, more and more facilities sprung up over the past few years to sort and re-sell waste -- but in terrible health and safety conditions. It is not uncommon to see a naked 6-year-old child sifting through a smoking pile of waste (see pictures in Appendix A for a visual overview). By 2005, it seemed that most of the world -- including Manila -- had forgotten all about the Smokey Mountain community. However, strong community organizations were taking root, such as the cooperatives that we partnered with for this project.

Objectives and Scope

The program included a livelihood component in the creation of a new Material Recovery Facility for recyclables, as well as an environmental remediation component that worked to raise awareness and provide solutions for the remaining landfill's toxicity.

These two key intertwined program elements were made possible through extensive stakeholder outreach and public/private partnerships. The stakeholder participation and ownership was very high at project completion. They were also supported by extensive capacity building and training in the community of Smokey Mountain, with immediate results on livelihood improvement and increased leadership skills.

Our goal was achieved: the program helped reduce the vulnerability of a poor population in Metro Manila, with opportunities for replication of the program in other similar urban communities.



I. OBJECTIVES

- **Improve work conditions:** the problem we faced was that the site of their existing work place (recycling) was not secure; the challenge was to find new land that could be leased for a Smokey Mountain cooperative's community waste management; in a first-ever deal with the national housing authority, a lease was signed and a new building created. The health and safety of the workers was a top priority.
- **Create new means of livelihood:** in this community, possibilities for livelihood creation are very limited; the challenge was to build on an existing area of expertise, waste management, but find ways to improve and expand operations; in addition, we used every opportunity possible to train and hire local people for auxiliary work opportunities (letter delivery, catering for training events, construction workers and masons for the new MRF -- all hired and trained locally).
- **Increase community waste segregation:** the problem was to understand how we could convince household members who, living under the poverty level, may have more immediate concerns other than waste management; the challenge was to work from the inside, creating a local environmental committee and making the process easy and comprehensible to all.
- **Remediate the remaining mountain of waste:** our original objective was to actually remediate and remove the mountain of remaining waste called Smokey Mountain; the problem was and remains that the public sector is in a legal battle with the developers of the Smokey Mountain buildings (who had the objective of removing the mountain to begin with); until this legal and political situation is resolved, nothing can be done about the mountain except for small scale remediation options that we are currently exploring.

II. SCOPE OF WORK

1. Planning and Development

- **Public private partnerships:** Much effort was placed, on an ongoing basis, to involve all the stakeholders in environmental remediation and poverty alleviation at Smokey Mountain to gain public support and leverage additional resources. From the National Solid Waste Management Commission to the local community leaders, SPM worked at the national, regional and local level to bring all stakeholders on board.

2. Development of the Material Recovery Facility

- **Establishment of a new Material Recovery Facility:** SPM worked with partners to create a new "green" facility in which the new waste management operations can be conducted; the new MRF will have the ability to employ more people, particularly women who were unable to work in the highly insecure environment of the old MRF facility. Significant press interest was gained at the inauguration of this first, green material recovery facility in Manila.



3. Environmental Remediation

- **Environmental Testing and Monitoring:** SPM helped place the problem of the Smokey Mountain remaining landfill back on the political agenda by conducting tests that resurfaced unresolved issues on the toxicity of the mountain; SPM contributed to the evaluation of possible remediation strategies, thus providing a non-governmental, academic and neutral perspective to Smokey Mountain.

4. Education and Communication

- **Training and capacity building in waste management:** our priority was to train our main partner cooperative, but also other local cooperatives already involved in waste management, in new waste segregation and classification procedures, as well as in managerial skills, i.e., administrative and financial skills needed to effectively run their respective cooperatives. This activity was completely aligned with a new National Solid Waste Management Law in the Philippines that places the ownership for waste segregation at the local level.
- **Community environmental awareness and waste segregation:** gaining full community participation in waste segregation at the household level was key to program success; our partner cooperatives in Smokey Mountain provided the community service of collecting organic waste from the households.

EVALUATION OF INPUTS AND ACTIVITIES

Inputs

The original program envisioned the creation of an ecologically managed city-wide waste facility (an Eco- Park) with the complete remediation of the remaining Smokey Mountain landfill. The program was altered considerably in 2006, with ADB approval, once it became clear that political issues would prohibit any remediation of the landfill in the near future (as detailed below under Section 3, Environmental Remediation).

The program ultimately delivered a new Material Recovery Facility (MRF) directly next to the remaining landfill and conducted new testing of the air and soil quality at Smokey Mountain. While the creation of the MRF and the livelihood component in waste recycling commanded a significant part of our resources, we also continued to work on environmental remediation by placing the issue of Smokey Mountain back on the political agenda and raising awareness around environmental hazards at the community-level.

The following chart provides a breakdown of financial inputs related to the program. Please find below a detailed account of inputs by activity.



1. Planning and Development	59,481.89
Consultants (Local and International)	45,863.51
Travel	12,892.75
Office Supplies	150.45
Meetings and Seminars	179.88
Other: Communications, etc	395.30
2. Development of the Material Recovery Facility	94,776.55
MRF Construction Materials & Consultants' Fees	70,481.11
Travel	1,804.35
Office Supplies	56.21
Meetings and Seminars	5,534.21
Other: Communications, etc.	16,900.66
3. Environmental Remediation	24,977.09
Consultants	18,324.49
Travel	5,336.77
Office Supplies	11.77
Meetings and Seminars	1,304.05
Other: Communications, etc.	
4. Education and Communication	34,143.20
Consultants	26,349.87
Travel	816.67
Office Supplies	473.06
Meetings and Seminars	4,960.41
Other: Communications, etc.	1,543.19
TOTAL EXPENSES	213,378.72



Note on Consultants

At the onset, the program relied 80% on international consultants but moved swiftly on the first year to a more local focus, with 30% international consultants and 70% local. Building local capacity was a key achievement for the program. In addition to the ongoing involvement of the program director Ms. Anita Celdran, the expertise of Mr. Bert Guevara in solid waste management was invaluable. Mr. Guevara is a member of the National Solid Waste Management Commission and was among the first *barangay* captain's to implement a successful waste segregation and recycling program in his community. His experience helped to shape our work at Smokey Mountain. In addition, Ms. Joyet Castor was engaged first as an accountant to assist Smokey Mountain cooperatives with better financial management and planning. Within months, one of our cooperative partners was financially out of the red for the first time in its existence. Ms. Castor soon evolved to become the cooperative's general manager and has trained several cooperative members through her mentoring. All staff bio-datas have been provided throughout the course of our ADB reporting.

Note on Travel and Accommodation

International consultants were invaluable to the success of the project, particular Ms. Anita Celdran program director who was originally based in Washington DC but dedicated more than half her time to being in Manila in order to oversee the project. Where travel costs were typically covered by the program budget, international consultants provided very low daily rates and billed local costs only, for accommodation and other expenses. Per diems were rarely, if at all disbursed and, in the case of Ms. Celdran for example, no administrative or accommodation costs were charged to the program.

Activities

1. PLANNING AND DEVELOPMENT

Overall stakeholder outreach, building private and public partnerships, all project implementation.

Number and type of meetings (ballpark, general estimate only)

Innumerable meetings have taken place including:

- Estimated 2-3 meetings per week, minimum, over the course of the program
- Ongoing presence in the Smokey Mountain community (5 days per week)
- Meeting with cooperatives, community members, city officials, private companies, NGO partners, etc.
- 80% of our time was spent directly in the community; the balance of our time was spent building networks outside of the community that were necessary for the support of the overall program.



Number and type of stakeholders involved in project – PPP component

The stakeholder list was grown considerably throughout the course of this program and has been detailed in our previous ADB reports. Stakeholders include:

Smokey Mountain cooperatives:

- Most advanced work with: The Samahan ng Muling Pagkabuhay Multi-Purpose Cooperative (SMP-mpc).
- Most advanced with: a group of Smokey Mountain community environmental leaders (created with our support).
- Advisory role with: High-Tech Zero Waste cooperative.
- Advisory role with: Manila Eco-aide Cooperative & Livelihood Association.

Government agencies:

- Department of Environment and natural Resources (DENR)
- National Solid Waste Management Commission
- National Housing Authority (NHA)
- Home Guarantee Corporation (HGC)
- Department of Sanitation, City of Manila
- Smokey Mountain *barangays* 128 and 129
- Twenty one *barangays* around Smokey Mountain

Private sector:

- Philippine wood product association
- Unilever
- HOLCIM

NGOs/Institutions/Academia:

- Mother Earth Philippines.
- ECLOF Philippines – Micro finance institution
- Sagip-Pasig Movement
- University of the Philippines
- EPFL – University of Lausanne, Switzerland
- Polytechnic University of the Philippines

Memorandum's of Understanding (MOU) with community organizations – working agreements

MOUs and working agreements were signed directly between SPM and:

- The Samahan ng Muling Pagkabuhay Multi-Purpose Cooperative (SMP-mpc).
- High-Tech Zero Waste cooperative
- The University of the Philippines

SPM facilitated MOUs between:

- The Samahan ng Muling Pagkabuhay Multi-Purpose Cooperative (SMP-mpc) and ECLOF Philippines – Micro finance institution
- The Samahan ng Muling Pagkabuhay Multi-Purpose Cooperative (SMP-mpc) and Home Guarantee Corporation (HGC) - first-ever agreement for a public land lease to a community cooperative, for the building of the new MRF



ADB visits

Members of the ADB visited the project on multiple occasions:

- January 11, 2006: Japanese Environmental Ministers
- October 17, 2006: ADB Board Members
- November 25, 2006: Japanese delegation
- January 18, 2007: ADB Philippines
- February 7, 2007: German Chancellor
- February 14, 2007: Chinese Delegation
- February 26, 2007: European Ambassadors
- March 22, 2007: German Media group
- April 26, 2007: Japanese Group (Knowledge Management and Sustainable Development)
- May 11, 2007: MRF inauguration with speech by T. Crouch, Country Director, ADB Philippines
- August 22, 28, 29 & September 1, 2007: Site visits of ADB Officials from Georgia, Japan, ADB, U.S., Australia and ADB staff outreach program)
- October 11, 2007: Bantay Kalikasan NGO Students

Donated time or in-kind contributions (across all projects below)

- Time donated by all consultants/staff
- Minimum daily rate charged by international consultants
- Meeting space donated by the community
- Administrative costs and local office costs donated by SPM
- Materials and training donated by private partners
- Time and materials donated by NGO partners

2. DEVELOPMENT OF THE MRF

Improve MRF operations, including improved operations, safety and health, capacity building and access to financial services

Operational and business plans for MRF development

The following planning documents were created for the SMP cooperative:

- Overall presentation and business plan for expanding operations and moving the MRF site to a new location
- Operational plans for new sorting procedures
- New organizational structure
- Financial planning and projections around plastic waste sorting
- Request for micro-finance loan application (approved, for an amount of 5,000 USD)
- Construction and architecture plans for the new MRF

Recommendations to cooperatives – in-kind contributions given

- Provision of safety hats, boots and masks given to SMP-mpc.
- Provision of weighing scale given to High Tech cooperative.
- Provision of a tricycle for collecting and transporting waste, given to SMP-mpc.
- Provision of waste collection bins placed outside of all 21 buildings in Smokey Mountain (for wet and dry waste, or organic and other waste).
- Provisions for construction materials of the MRF



Number and types of MRF development meetings

Innumerable meetings have taken place on MRF specifically, including:

- On average, one meeting per week over the course of the program
- Meetings included: strategy and planning meetings, meetings with community members, city officials, private companies, NGO partners, etc. (training and capacity building is captured below under Section 4).

Health and safety measures taken

- In each memorandum of understanding, the health and safety of MRF operations was given top priority.
- Waste workers are required to wear protective gloves and boots, as well as masks whenever possible.
- Tents were also provided to help create shade during waste sorting operations.

Access to micro-finance loan

- Through our work, the SMP cooperative was able to gain a 5,000 USD loan at a highly favourable rate and over a three-year period.
- The loan, granted by ECLOF Philippines, is currently being used to help the cooperative source better raw materials (plastic waste) for sorting and segregation and to set up the composting facility at the new site.
- ECLOF is showcasing the Smokey Mountain loan as a best practice; loan payments are being made regularly.
- The cooperative is in the process of accessing micro-finance loans for other new livelihood projects that complement their on-going activities.

New MRF construction plans

- Under the guidance of lead architect Clifford Espinoza, a construction plan was drawn for the new MRF. It is unique in that it represents a typical Filipino style housing, but even more importantly it was built using the principles of “green architecture” – or with mostly recuperated materials and construction blocks made from waste (see below for more details on the materials donated).
- Within the 1,000 square meter property leased to the coop by the HGC-NHA, stands the MRF which includes an office area with a small kitchen, the main sorting and storage area for the recyclable waste and a composting facility.
- The MRF is naturally cooler than the outside environment: using green building principles, it is built with large openings for ventilation and natural products that don't stock in heat. The MRF is also aesthetically beautiful, with the planting of small trees that will ultimately bring shade to the building.

Donated time or in-kind contributions

- HOLCIM Cement donated the training on “Galing-Mason” for 36 men from the Smokey Mountain community; taking place over several days, the training gave these men certification as masons. These masons then worked with our architect, Clifford Espinoza to help construct the new MRF. Eventually a handful of the masons got jobs with large construction firms because of their certifications, two of which have taken jobs overseas.
- UNILEVER donated construction materials, including hollow-blocks or construction blocks made from their residual waste (such as paper and plastic). These building blocks were used to make the walls and the main flooring in the new MRF.



- PHILIPPINE WOOD PRODUCT ASSOCIATION donated used wood for the construction of a banister, among other things.

3. ENVIRONMENTAL REMEDIATION

Testing of air and water, testing of leachate runoff, recommendation for remediation, outreach to key stakeholders

Number and type of stakeholder meetings

Meetings took place both at the community level and also at the institutional/political level:

- Several meetings took place with the City of Manila, the DENR and the HGC to better understand the opportunities for completion Smokey Mountain remediation and development program and potential involvement of these agencies in the implementation of this program.
- A stakeholder meeting took place at the University of the Philippines in October 2006, with key governmental sector support, to evaluate remediation options.
- Meetings took place to evaluate the air quality tests and leachate runoff tests, taking around and on the mountain.
- Meetings also included community-level campaigns to raise awareness around the hazards associated with toxic waste still present in the mountain.

Remediation plans and recommendations

- A remediation strategy was developed in January 2005 and presented to the DENR.
- A similar remediation strategy was developed in October 2006.
- A recommendation for moving forward was also delivered to the DENR in October 2006.
- All plans for the remediation of the Smokey Mountain landfill were economically viable but politically stunted: the DENR finally advised SPM of a lawsuit underway between RII Builders and the HGC, which would prohibit any remediation done to the mountain until the situation is resolved.
- SPM therefore moved forward with small-scale, community-level programs to raise awareness around the dangers of playing near the mountain (for children) and growing vegetables on the garden.
- SPM continues to advise DENR on Smokey Mountain remediation; baseline studies on the environmental situation at Smokey Mountain were delivered in 2006 and 2007.

Air quality report

- A report on the air quality at Smokey Mountain was conducted in September 2006.
- The results showed that the air quality was not alarming, but led to the need for a test of soil quality.

Leachate runoff report and recommendations

- A final report on leachate runoff at Smokey Mountain was delivered in February 2007 and was commented on internally at the ADB.
- This report included a technical report on leachate and soil analysis, drawing from 1993 and 2006 date, as well as a historical report of research conducted to date.
- Heavy metals and other toxins were identified, in significant quantities.
- The full report was provided in an earlier communication; a main recommendation is to create a rainwater capturing and urban garden system, around the mountain (thus removing the risk of vegetable gardens on the landfill and contaminated water runoff).



- A wastewater treatment engineer was contracted, Mr. Roland Juan (at below market rate price) to provide concrete short-term solutions to the MRF's on-site sewage and waste water. Mr. Juan has worked out a temporary low cost solution to address the odor and sanitation issues brought by the sewage.
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Community awareness-building campaign

Ongoing communications served to raise community awareness around environmental issues:

- A survey was conducted at the start of the project to understand community member expectations.
 - Ongoing meetings and communications took place to engage the community in waste segregation at the household level.
 - Informative campaigns were also launched in 2007 to inform the community of leachate and soil test results, and high levels of toxicity in the mountain
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- **Donated time or in-kind contributions**
 - Both the University of the Philippines and the University of Lausanne EPFL in Switzerland provided leachate and soil testing at discounted costs.
 - A Master's student at the EPFL provided time for gathering samples and analysing test results, at a highly discounted rate.

4. EDUCATION AND COMMUNICATION

Includes outreach to the community, skills training, sharing lessons learned, evaluating opportunities for replication and all communications

Number and types of meetings held

A great number of meetings took place over the course of the program including:

- On average, 1-2 meetings per week over the course of the program.
- Meeting included skills training on waste segregation, community environmental awareness meetings, both on-site and off-site.

Skills training workshops held

MRF cluster leader training at Paranaque:

- January 12, 2006.
- 40 members of the Smokey Mountain community and cooperative cluster leaders.
- Time, space and food donated.

MRF strategic planning session

- March 8, 2006.
- Approximately 40 people from the full waste sorting chain: scavengers, junk shops, cooperatives, etc.
- Time and space donated.

MRF waste segregation workshop

- March 28 and April 10, 2006.
- Cooperative members involved in MRF operations.
- Time and space donated.



Community organizer training by Meth Jimenez (to help train community organizers)

- March 28 and April 10, 2006.
- Building leaders and environmental leaders, as well as the SMP cooperative board (approximately 30 people).

Strategic planning session on MRF operations:

- June 24, 2006.
- Space donated.

Cooperative management planning:

- July 1, 2006.
- Space donated.

Composting workshop:

- July 22, 2006.
- 18 participants, from SMP and High Tech cooperatives.
- Time, space and food donated.

Nationwide tree planting event

- August 25, 2006.
- Environmental leaders (approximately 10 people)
- DENR provided transportation.

Strategic planning session

- September 8 2006
- Cooperative board members

MRF Training, through SPM consultant Bert Guevara and Mandi Chu:

- September 16, 23, 30 2006; October 7, 14 2006.
- Space donated.

Polytechnic University of the Philippines:

- Over three months in 2007: March 3 (how to handle meetings), March 10 (rules and regulations of a cooperative), January 21 (how to prepare a cooperative general assembly), May (every weekend, basic accounting).
- Time, space and food donated.
- For the High Tech and SMP cooperatives.

HOLCIM/Galing Mason training:

- March 12-19, 2007: mason training for 36 men from the Smokey Mountain community.
- Time, space and food donated.
- Tools donated to the masons.
- Certificates granted to the masons.
- Smokey Mountain masons are now competing for a regional masonry award.
- The masonry training also led to the creation of a new community business in catering: the ladies of the SMP cooperative provided meals to the trainers.



AIM (Asian Institute of Finance) training in basic finance and strategic planning:

- Over two months in 2007: April 17-18-19, and May 12-13, 2007.
- Time, space, transportation and food all donated.
- For the High Tech and SMP cooperatives.

Lakbay Aral (Study Tour) and Dialogue with other Successful Multi-purpose Cooperatives (Batangas, Cavite, Laguna and Quezon City)

- September 27 & 28, 2007
- Time, Space & Food donated by cooperative

Environmental community workers engaged

- The program resulted in the creation of group of community environmental leaders.
- These 10 individuals represented environmental perspectives when engaging with the community on various issues. They also work closely with the cooperatives and the 21 building leaders.

Community communications and awareness building

- Communication campaigns in the community have been quite effective, particularly for waste segregation: the 21 buildings all have special bins for sorting waste.

Community survey completed

- A short survey was conducted in 2006 to assess the needs of the community (delivered in an earlier report).

Donated time or in-kind contributions

- Meeting space, food and transportation was often provided at no cost (as detailed above).
- Certain trainers donated time for their sessions.

EVALUATION OF OUTPUTS

The program was both efficient in its production of outputs, and effective compared to actual results. The overall budget, originally slated for a 1.5-year period, was extended to cover an additional six months of project activity. Through in kind contributions and donations, various aspects of the program were supplemented through external support. The program was also highly effective: not against its original goal of creating an Eco Park, but against its revised objective of creating a new Material Recovery Facility. This new MRF has become a beacon of hope in the Smokey Mountain community.

1. NEW COMMUNITY MRF WITH FULL COMMUNITY SUPPORT

New MRF

The waste sorters of Smokey Mountain, including the SMP and High Tech cooperatives, have been operating for several years in a highly dangerous "no man's land" area near the piers of Metro Manila. Without access to electricity or water, in areas that are not secure and not legal,



waste sorting operations are still taking place with high risks to health and personal security. In November 2006, the program began to plan for the construction of a "green facility" that would respect local and historic architectural designs and be built with strong environmental principles. The new facility, or MRF, is now located right near the housing complex of Smokey Mountain, thus in a much safer area and within close proximity to the community's waste. It is the first time the local government provided the lease of public land for a cooperative and its community MRF.

Furthermore, the construction of the MRF was made through donations from the private sector: old wood was provided, as well as construction blocks made from limited cement and Unilever residual waste. The "hallow blocks" represent an innovative technology for creating construction materials from what is essentially paper and plastic waste from Unilever products, mixed with cement. All the other materials were recuperated materials and/or local indigenous materials. The flooring made of bamboo allows for the air to pass through the second floor and out the large roof windows; along with the large bay windows and sloping roof, this serves to create a natural cooling system in the building. The cement company Holcim donated training for 36 men that are now certified masons and have helped construct the MRF. Quite literally, the MRF feels like an air-conditioned space but uses only natural and innovative building technology to allow for the full circulation of air and evacuation of heat. It is a unique structure that is based on green principles.

The new MRF will employ 50 people and will implement the two areas of waste management expertise: plastics and compost. It is also designed to host community meetings and is a model for wastewater treatment as well as natural lighting and natural ventilation.

MRF operations in place

Over the course of the program, the cooperatives were trained in better waste management operations and procedures. The demand for used plastic (petroleum-based) products has been growing (particularly from China), as has been the diversity and complexity of new plastics produced. A strategic decision was made to focus on plastic wastes, as well as organic waste collected directly from the community.

The National Solid Waste Management Act of the Philippines, RA9003, creates a legal framework for more waste segregation at the community level. SPM engaged one of the most experienced *barangay* captain's to head up the training and planning at Smokey Mountain. Plastics were differentiated by type, as well as by colour. Procedures were put into place for best sorting and classifying this waste, thus creating more added value for the cooperative.

Composting was a natural next step, as the community of Smokey Mountain is composed of 30,000 households. Although composting is not as of yet a lucrative market, the SMP cooperative collects and composts all the community's wet or organic waste, using the latest techniques in small scale composting acquired through training and exposure to other case studies.

The extended MRF operations were also made possible through access to a microfinance loan. Ultimately, these MRF procedures are now becoming a model for other communities – the twenty one *barangays* around Smokey Mountain would like to share lessons learned and better coordinate their waste streams, with the SMP cooperative.



Community involvement in new MRF

There has been no resistance whatsoever in the construction of the new MRF. In fact, the community has been very much engaged in its successful creation. The 36 masons trained came from the community. The waste segregation takes place among community members. The community came out to celebrate the inauguration of the new MRF in March 2007.

Number of training workshops on ecological waste management held

Over a dozen training workshops were given on ecological waste management alone, not including numerous internal meetings and related meetings (see list of training sessions above).

Improved work conditions

Waste management activities at Smokey Mountain are now taking place in a beautiful, healthy and safe environment. The construction of the new MRF is more than a building -- it is truly the proof that the community can take its future into its own hands. People are continuously coming to visit the facility, which makes the community very proud. Instilling a sense of hope and showing what can be achieved is an aim we did not expect to achieve, but it is the ultimate success factor of the project.

2. EFFICIENT WASTE MANAGEMENT AND AWARENESS IN COMMUNITY

The Smokey Mountain community has therefore reached the main objective of RA9003: 25% diversion of solid waste from the nation's landfills.

Type and quantity of garbage managed

As mentioned above, the SMP MRF handles plastic and compost waste. The High Tech cooperative specializes in paper, among other things.

It is estimated that 25% of the community's waste is now being diverted to the MRF. This is measured by the volume of waste in municipal trucks that service the community: the trucks headed to city landfills are now only 2/4 full, where in the past they were completely full.

Number of households involved

In October 2006, only three buildings were participating in household segregation. By March 2007, all twenty-one buildings were participating.

3. EMPLOYMENT CREATION WITH INCREASED SKILLS

The program led to the creation of new employment opportunities in the community, as well as new skills development. Furthermore, additional opportunities come up to help support program implementation and will continue to be offered by the community.



Number of waste and supporting businesses established

- One new MRF and composting facility established
- Masonry business established
- Catering service established to support program
- Delivery service established to support program
- Car chauffeur business established to support program
- Handicraft business (utilizing recycled materials) expanded

Number of people employed by the these businesses (141 persons)

- New MRF: 25 men and women
- Bakery: 15 men and women
- Garments and Crafts: 10 women (fulltime)
- Water station: 10 men and women
- MRF construction workers: 10 men
- Environment Community Brigade: 27 men and women
- Mason business: 36 men
- Catering service; 4 women
- Delivery service: 2 workers
- Car chauffeur: 2 workers

Income derived from these businesses

- Minimum wage, 6 USD per person per day
- The new MRF, water station, the bakery and masonry business represent full time jobs
- The other jobs such as Garments and Crafts and catering are seasonal, based on contractual orders. However, the job orders have become more steady allowing the women to generate income beyond the minimum wage.
- Other positions such as the environmental brigade are not full time jobs but provide allowances that contribute to the income of the families involved.

4. POLITICAL AWARENESS RAISED AROUND POVERTY ALLEVIATION AND ENVIRONMENTAL REMEDIATION

Although we were not able to see the end of Smokey Mountain through a complete remediation program (because of political and legal issues listed above), SPM gained the trust of the National Solid Waste Management Commission and we are now included as advisors on the issue. Through press interest in our activities, there is also more general awareness of Smokey Mountain.

The program and particularly the construction of the new MRF engaged political representatives from the community, local and national level. The MRF was inaugurated with a speech by NSWM head, Attny. Andin, with a few words said on behalf of Sec. Reyes.

Type of public officials involved in project

- Head of the National Solid Waste Management Commission, Atty. Boyet Andin
- National Housing Authority (NHA), Engineer Johnny Coronel
- Home Guarantee Corporation (HGC), Mr. Gonzalo Bongolan, President



- Department of Sanitation, City of Manila, Ms. Annie Farrales
- Department of Environment & Natural Resources, Mr. Albert Magalang & Emi Aguinaldo

Institutional partners involved

- Mother Earth Philippines.
- ECLOF Philippines – Micro finance institution
- Sagip-Pasig Movement
- University of the Philippines
- EPFL – University of Lausanne, Switzerland
- Polytechnic University of the Philippines
- Asian Institute of Management

Number of Barangays participating in the project

- Two *barangays* directly participating (Smokey Mountain *barangays* 128 and 129)
- Twenty-one neighbouring *barangays* in Tondo, Manila interested in sharing lessons learned

5. INCREASED SCIENTIFIC KNOWLEDGE ON SMOKEY MOUNTAIN ENVIRONMENTAL REMEDIATION

The program delivered new scientific studies on the remaining Smokey Mountain landfill.

Air quality report submitted to ADB

An air quality test was conducted on the mountain in order to respond to the community's concern for fires that occasionally burst forth from the mountain in summer months. The test results indicated that the air quality was not any more hazardous than Metro Manila general air quality.

Leachate runoff report submitted to ADB

Conducted in partnership between SPM, the University of the Philippines and the University of Lausanne – EPFL, the leachate report is particularly significant because it provides the latest information on rainwater runoff and soil quality on the mountain: the results are not surprising, the mountain still contains heavy metals and is therefore toxic to its environment and the people living in its environment.

EVALUATION OF OUTCOMES

1. LIVING AND ENVIRONMENTAL CONDITIONS IN SMOKEY MOUNTAIN IMPROVED

Reduced levels of mis-managed waste streams

An estimated 25% of the community's waste is now being diverted to the MRF, in complete compliance with the new National Solid Waste Management Act. The Smokey Mountain



community is now one of the model communities in the Philippines for proper waste management. The new MRF also creates a new community centre for better managing waste.

Anticipated reduced incidences of illnesses related to direct contact with waste streams

Proper household segregation removes organic material from other recyclables, such as plastic or paper, this reducing the incidences of illness related to sorting mixed waste. Furthermore, community communication campaigns have helped raise awareness around the toxicity of the remaining landfill, cautioning people against planting vegetables or allowing children to play directly on the waste. The new MRF also allows for waste segregation in better safety and health conditions.

2. EMPLOYMENT AND LIVELIHOOD FOR THE POOR COMMUNITIES INCREASED

Number of jobs created by the project: 86 new jobs

Full time work created through our program:

- The Samahan ng Muling Pagkabuhay Multi-Purpose Cooperative (SMP-mpc):
50 waste workers total, with 25 new jobs created
- The Smokey Mountain Community Masons:
36 new mason jobs created
- Bakery: 15 workers
- MRF construction workers: 10 men

Part time work created through our program:

- The Smokey Mountain Catering service: 4 workers
- The Smokey Mountain Delivery service: 2 workers
- The Smokey Mountain Car chauffeur service: 2 workers
- The Smokey Mountain Garments and Handicraft Industry: 50 women workers
- Environment Brigade: 27 persons

Number of families reached (average family size of five): 9,065 people

Reached directly through our program:

- The Samahan ng Muling Pagkabuhay Multi-Purpose Cooperative (SMP-mpc):
50 waste workers and their families (250)
- The SMP-mpc Handicraft workers
50 women workers (250)
- The Smokey Mountain Community Masons:
36 masons and their families (180)
- Environment Brigade:
27 persons and families (135)

Reached indirectly through our program:

- The Samahan ng Muling Pagkabuhay Multi-Purpose Cooperative (SMP-mpc):
150 members and their families (estimated 750 people)
- High-Tech Zero Waste cooperative: 1,500 members and their families (7,500)



The community of Smokey Mountain at large: 30,000 people.

3. CAPACITY OF WASTE PICKERS TO MANAGE MRFS AND ASSOCIATED BUSINESSES IMPROVED

Income derived from MRF activities

As of October 2007, the MRF's total sales is 965,000 pesos. The coop is targeting to reach 1.2 million pesos by close of the year. This is will be the first year that the members will be receiving dividends from the cooperative. In prior years, the cooperative was running on negative profit.

Success of micro-finance loan

ECLOF Philippines, the Microfinance Institute that approved the 5,000 USD loan to the SMP cooperative's MRF business enterprise, is now using this loan as a best practice case study in their communications. To date, the loan payments have been made regularly and the loan has served to improve the cooperative's cash flow.

Increased sources for recyclables, as well as increased channels of distribution

Through our efforts, the SMP cooperative has strengthened its institutional relationships so as to gain waste directly from enterprises (such as UNILIVER) or other parishes. Furthermore, the collaboration with twenty-one neighbouring *barangays* will help assure more sources of waste. In terms of channels of distribution, our unique relationships allowed us to secure a market for their sorted plastics in the Philippines. These types of institutional partnerships and channels of distribution are very important in what continues to be a very competitive market for plastic waste.

MAJOR LESSONS LEARNED

Success Factors

- Early on, SPM hired an accountant Ms. Joyet Castor to work full time with the cooperative. This accountant evolved into a true community leader whose managerial capabilities were honed through the duration of the project; a leader exhibiting a purpose and commitment to the service of the community. Not only did she get the cooperative back into financial shape, she mentored many of the new leaders of the cooperative is now overseeing the local waste management operations, as well as the micro finance loan.
- Working with one of the recognized experts in local solid waste management, Mr. Bert Guevara, brought expertise and credibility to the program and created new opportunities for the Smokey Mountain cooperatives. Our waste expert is also an elected official in a small community south of Manila, and had already implemented a successful waste



management program in his hometown. It was thus easier to draw on his expertise for Smokey.

- Being physically in the community on an ongoing basis, not just dropping in from time to time, but showing our ongoing commitment. It is critical to be firmly implanted in the community.
- Bridging the gap between the local community and national stakeholders. We had solid relationships both with the poor communities of Smokey Mountain (through the endorsement of the Church that is deeply rooted in the community) and with national personalities in the NGO community, local government and national agencies. This was critical element that helped move the project forward.
- Bringing true professionalism to the project; seeing our mission as being based on business development and proper financial practices, not "aid" or "handouts"; the program was not about telling a community what to do, but guiding them to make the right decisions.
- Keeping people and the environment as our main priority.

Major Lessons Learned

- We are true believers in partnerships and working at all levels with all stakeholders. We believe in the path of least resistance and for that, you need buy-in and collaboration.
- Sealing relationships and commitments through the "memorandum of understanding" with all partners we engaged with. This helps make clear, from the onset, the objectives of the partnership and what is expected from both partners. We always worked towards transparency and collaboration in our partnerships.
- We began with a team of 100% international consultants and ended with a team of 70% local consultants; we feel that it is critical to work with local people who understand the context, all the while brining any relevant international expertise.
- People make the difference. Attracting the right people to the project -- those who share a mission for poverty alleviation and environmental work -- was critical. With the right people working together, almost everything seemed possible.
- True results come from being encroached in the community and continuously bridging the gap between community and institutional levels. By taking a strategic approach to development work that includes a firm belief in involving public as well as private entities in community partnerships, our project was able to reach its objectives.
- Work to grow capacity through example; be consistent in what you say and what you do; bring a high level of professionalism with you, even to the most impoverished communities; make the values explicit; empower local leaders; never take decisions, allow the community to make their own decisions.



RECOMMENDATIONS FOR REPLICATION AND DISSEMINATION

The MRF inauguration resulted in a great deal of press interest, supported by ADB's press outreach department. Furthermore, the project will be applying for various awards. Finally, the best indication of success is that other *barangays* are requesting to learn from this Smokey Mountain program: the cooperatives of Smokey Mountain will be disseminating information about their project to twenty-one neighbouring *barangays*.

Smokey Mountain is already setting a standard for waste management in the area: neighbouring "barangays" (the smallest local political unit governing Filipino society) are turning to Smokey Mountain and our project for replication.

We feel that the Smokey model can be replicated in other, similar areas in Manila and indeed in other similar urban communities in so-called developing countries. The approach to community work can be replicated in even rural development projects, although the conditions and context would be different.

On a weekly basis, our organization meets with other, similar organizations in Manila to share lessons learned. We have also already identified another community near Smokey Mountain where we can immediately begin replication, after a second round of fundraising and financing. The latest initiative already begun is right across the highway from Smokey Mountain involving the waste pickers in Pier 18 who are hoping to see in their lifetime the progress and fortune made by their brothers and sisters in Smokey Mountain.

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