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Community Organization and Solid Waste Management in the Kathmandu Valley

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Preface

In 1993, **National Geographic Magazine** ran a story about the overwhelming sights and smells of pollution in Kathmandu, Nepal. National Geographic for years had been publishing sympathetic stories about the mystical, other worldly exuberance of Nepal's capital city. This story was a drastic departure, indicting the urban confines of Kathmandu for ruining the view-shed of its famous, snowy mountain range. "The Himalayas were a sight to behold a few decades ago" it lamented, finger clearly wagging at the demons of uncontrolled growth and environmental mismanagement. The article was photocopied and distributed at a national workshop on solid waste management in Kathmandu in November 1994 by Nepali nationals ashamed of their city in the eyes of the international press. The article served as an impetus at the conference to lecture on the need for reform in the way the region managed its waste (Cross 1993).

Another news feature appeared just after the conclusion of the conference, *Garbage Dump Spews Gas* in the **Kathmandu Post**. It was a story about a local Hindu temple that had burst into flames after a stray cigarette butt had ignited silent, spewing methane gas from decomposing garbage recently dumped nearby.

Local citizens, too, were exasperated by the extent of the problems. A week after the fire first erupted outside the Shoba Bhagawati Temple, a group of Newar women were graduating from a unique program in community-based waste management that offered more than hopeful words for extinguishing the heat from the byproducts of modern Nepali life (Kathmandu Post, December 1994).

Introduction

The proliferation of unmanaged municipal solid waste (MSW) is often cited as a visible and pungent proof of urban environmental decay. Over time various political-economic and social factors have contributed to MSW's changing quantity and composition in South Asian cities. In the Kathmandu Valley of Nepal, these same forces have changed the nature of MSW. Since

1990 political forces have changed the formal structure of government in Nepal so that smaller, community-based organizations (CBOs) can now contribute to a localized, more participatory and ultimately more effective approach toward waste management. "Waste management" in this paper refers to collection, cleaning, disposal, transfer and recycling of Municipal Solid Waste.

The work of the Center For Environment And Agriculture Policy, Research, Education and Development (CEAPRED), an indigenous non-governmental organization headquartered in Lalitpur (Patan), seeks to create social pressure groups of women who educate about and facilitate recycling and waste disposal in their communities. The approach stresses the prevention and the recycling of waste before it enters the municipal waste stream. CEAPRED's work in this area, which has already spun off one permanent women's recycling organization in its four-year history, empowers the local women to look beyond the shortcomings of the current centralized approach in order to create a model where the citizenry takes responsibility for their own waste and the government is seen as a partner in MSW management.

Forces Contributing To The Changing Composition And Content Of Municipal Solid Waste

There is no question that rapid urbanization in Kathmandu Valley along with changing composition of waste has given rise to a serious solid waste management problem. Researchers Lohani and Thanh determined that the average amount of waste generated in 1978 was .25 kg per person per day. During the 1980's, this number increased to about .40 kg per person per day. By 1990, Kathmandu produced an average of .57 kg per person per day: a doubling in just over 10 years (Spren 1992). Since 1990, the per capita rate of waste generation has increased another 40 percent: approximately 250 tons of municipal solid waste are created every day from the three major cities of the valley (Malla 1994).

Since the 1950s, when Nepal officially opened its borders to outside commerce and trade, the composition of its waste has shifted toward more inorganic, non-degradable waste. The major reason for the change in composition can be traced to rising standards of living and changes in public taste. Changes in food processing and packaging technology have increased the use of plastic, tin, metal and paper, while changes in domestic fuel and the composition of local roads has lessened the amount of other types of solid waste. Beyond the physical characteristics, the chemical composition of waste has changed toward greater inorganic and toxic content. Information on the chemical content of solid waste is important in terms of treatment, composting, and possible hazards created by its mishandling. Changes in organic content of waste has made it more difficult to assess the value for compost production (Ackermans 1991).

An interior manure/pile pit known as *saaga* in Newar households used to produce fertilizer from families' organic waste. The rich fertilizer was drained out 3 to 4 times a year onto the families' adjacent agricultural plot. The increasing inorganic content of solid waste made the finished fertilizer from the *saagas* no longer suitable for agricultural use. Their use also fell out of favor as greater sensitivity developed towards sanitation, and household treatment of solid wastes was deemed inappropriate by municipal authorities. The advent of the Green Revolution in Nepal introduced a dependency on subsidized chemical fertilizers and pesticides which ultimately brought an end to the dominate practice of using local manure in the family fields of the Kathmandu Valley (Kathmandu Municipality 1994).

Yet, while migration into the valley and the composition and quantity of solid waste was rapidly changing, the cultural context and ingrained rural habits of throwing waste outside the house still persisted (Ackermans 1991). Attitudes towards solid waste, as it turns out, are deeply ingrained in the religious, social, and cultural institutions of the Kathmandu Valley.

Barriers to effective waste management

Another challenge to effective waste management is the sheer population density in the three Kathmandu Valley cities. In fact, Kathmandu has the distinction of being second only to Calcutta in population density. Kathmandu's density arises not from high rise buildings but rather from intense concentration of traditional three-story Newar houses. Efficient access to the refuse is difficult.

Local municipalities are responsible for solid waste collection and disposal, but they are undercapitalized for handling the whole scope of MSW management. Instead they have focused their attention on the core area of their respective municipalities at the expense of the peripheries. Despite the municipalities' wide-ranging functions and power, little can be done without the

involvement of the central government since the municipalities do not collect taxes (Ackermans 1991).

A 1990 United Nations Development Program survey found that many people perceive that their local environment is polluted but do not relate lack of proper waste disposal to health problems (Kathmandu Municipality 1994). As a result, people still throw away waste at random and sweepers appointed to clean up the cities sometimes throw accumulated waste in places where no collection takes place. Collection is often haphazard or incomplete, and waste is transported in uncovered containers to transfer or landfill sites.

Traditional methods of waste handling appeared to be inadequate, inappropriate, and ineffective to cope with the growing and diversified problems of solid waste management that results from rapid population growth, rapid and unplanned urbanization and increase in industrial and commercial activities including development (Spren 1992: 8). From an environmental perspective Kathmandu was ready for some changes in the way it handled its MSW.

Solid Waste Management and Resource Mobilization Center (SWMRMC)

In the absence of local political will and given the perceived lack of native capital necessary to address the problems of MSW management, primary aid and advice came to Kathmandu in the form of a bilateral agreement with the German government. The basis for German aid came from two seminal studies on the state of MSW. Studies of Flintoff (1971) and O'Tabasaran (1976), both from the University of Stuttgart, set up a framework that led to a 1979 bilateral agreement between the governments of Nepal and Germany that eventually formed The Solid Waste Management and Resource Mobilization Committee (SWMRMC). Through the oversight of Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), this became the main agency for solid waste management planning within the three main cities of the valley, Kathmandu, Patan, and Bhaktapur (Spren 1992).

This new era of cooperation between Germany and Nepal was optimistic in its rhetoric, which foresees a newly invigorated approach to motivating public participation in cost-effective disposal habits. In fact, GTZ published a booklet about their system of MSW management in 1992 proudly called *Solid Waste Management with People's Participation: an example in Nepal*.

GTZ's move toward consolidating a program was further sanctioned by mounting tourist pressure to clean up the "filthy" city. A tourism master plan was prepared for Kathmandu Valley in 1972 that recommended improved sanitary conditions (Ackermans 1991).

After some preparatory work, project implementation started in 1980. In the years since the

SWMRMC has, according to its records, established an independent institution for waste management separate from the central government, created a waste collection system using the skip/container approach (large, 20 cubic yard communal dumpsters that are emptied by mechanical, German-built dump trucks) to service the three cities of approximately 500,000 people, and built and operated a sanitary landfill site and a Compost Production/Resource Recovery facility.

Yet, the system set up by SWMRMC is not popular. The containers set out by the municipalities for the waste are considered to be too far from dwellings, obscure in their location, offensive to the nose and unattractive to the eye. Further criticism focuses on the size of the containers. The fading, rusting, yellow dumpsters with high walls make it difficult for women and children to hoist the waste into the bin. Thus, much of the waste is left at the base of the bin rather than put in it. Rarely is this waste collected from around the bin, so when the bin is loaded on the skip loader the scattered waste remains in place, prompting some to question the significance of the container in the first place.

In other areas the inconveniences of the bins have been corrected, only to have participation suffer from the lack of consistent pick-up times. Both problems have been identified as contributing to ill-will felt toward the SWMRMC (Kathmandu Municipality 1994).

To their credit, the SWMRMC has included in their charter the goal "to serve the unserved." To this end, the Center made a conscious decision to provide equitable service to all levels of society. No special treatment, such as door-to-door service, would be allowed in rich neighborhoods. All sectors in the program are consequently provided with communal containers located theoretically within a few blocks from one's residence. This has made participation at all levels of society generally lower than expected, but makes Kathmandu an exception in terms of equity in South Asian cities.

The Center has tried to counter the low participation rate and high rate of continued roadside dumping through mass media campaigns aimed at increasing public awareness and changing behavior. To date, the majority of efforts have focused on sloganeering such as the phrase emblazoned on the sides of the garbage trucks and on the official municipality letterhead, "Kathmandu: Clean, Green and Healthy." An ironic billboard campaign claimed "There is no garbage in Kathmandu" in bold letters on a solid green backdrop. (At the bottom of the billboard promotion the corporate logo of Toyota Motor Company is inscribed. Toyota sponsored the billboards and a fleet of new compactor garbage trucks at the personal request of Kathmandu Mayor P.L. Singh.)

The local state-controlled radio and television station both play prerecorded jingles about the virtues of cleaning up after oneself in order to retain civic order. In addition, the SWMRMC created the "Flying Squad," a fleet of three-wheeled tempos with public address systems mounted onto the roofs that broadcast the importance of proper public waste disposal habits to pedestrians and households within earshot (Spreen 1992).

Despite their best intentions, SWMRMC's media campaigns have led to little measurable change in disposal habits (Upadhyaya 1994). Perhaps this failure explains the current strategy of directing efforts away from informal adult education and towards formal children's education:

Of course, the Center cooperates with women. . . But--this is to be added here--the Center puts much more emphasis on children. To achieve long run sustainability children must be seen as the focal point for developing consciousness. They are flexible enough to accept behavioral changes and they do form the majority of the society! (Spreen 1992: 22).

The Center seems content to wait for the next generation of children who actually attend school to come of age with their heightened sanitation awareness through their Center-sponsored Nepalese garbage coloring books and environmental board games.

Other groups not included in the regional dialogue on waste are adult and child waste pickers. Although sweepers are incorporated into the model of management by collecting waste from specific public spaces, the waste pickers are not formally recognized for their role in waste reduction, reuse, and recycling. Professor Christine Furedy of York University writes about the growing movement in Asian urban areas to "look beyond the ecological implications of resource recognition and consider their programs as social action for the poor" (Furedy 1993: 18). These broader goals link waste management to social betterment and changes in attitude at the local level. These programs seek to use the informal waste economy to achieve greater waste diversion from public heaps and landfills while providing employment opportunities for the disadvantaged and untouchable castes.

To some, the SWMRMC's greatest technical achievement has been its development of the Gorkana Sanitary Landfill and the Teku Compost facility. In terms of the informal waste economy, the Gorkana landfill site was a barrier to greater utilization of waste. The site's distance from urban centers, its mechanized tractors and daily cover of fill have made it too difficult for waste pickers to extract recoverables economically.

In contrast, the Teku compost facility provided jobs for waste pickers who remove and sort recoverables from the stream of organic waste before and after the windrowing of the compost. Up to 150 waste pickers officially worked at the Teku facility during its five-year

life span. A free health clinic to prevent a myriad of infections, as well as employee housing, were provided for the workers (Spreen 1992).

Both of these state-of-the-art facilities, first the compost facility and later the landfill, were closed because of opposition from neighborhood groups who exercised their newly found political voices against air and water pollution associated with each site. The large scale centralized compost facility at Teku was one of many such facilities to cease operation in Asian cities during the late 1980's and early 1990's. (Today the facility remains idle in the community like many of its Asian cohorts, an expensive, rusting "urban sculpture".) In retrospect the technical flaws inherent in both of these Kathmandu Valley facilities seemed minor in comparison to the political shortcomings of the SWMRMC's policies in handling their respective operations (Upadhyaya 1994).

One of the major complaints voiced at the 1994 National Workshop on Kathmandu Valley's Municipal Solid Waste was the arrogance and overarching authority that the SWMRMC exercised at the expense of the municipalities. This developed in spite of SWMRMC's initial goal of redirecting authority away from the central government and toward the responsible municipalities. A position paper written by the Kathmandu municipality explained: "Basically, the SWMRMC deviated from its objectives of strengthening the capacity of the Municipality with regard to solid waste management and a parallel institution was developed ignoring the role of the Municipalities" (Kathmandu Municipality 1994: 7). Further, the role of the SWMRMC was obscured in the public's and municipalities' eyes by the complicated set of agreements delineating what areas fell under whose jurisdiction.

The theme presented at the workshop by the SWMRMC and echoed by the municipalities, NGO's, CBO's and other agencies in attendance was that greater efforts were needed to decentralize the responsibilities of managing solid waste, to move it from the municipalities and the SWMRMC, to the local residents. Education and guidance were highlighted as key in motivating local communities to help themselves, to solve their own problems and not to depend entirely on the municipalities or the SWMRMC.

These criticisms of centralized authority were nothing new--the merits of decentralized, community-based initiatives had been discussed in seminars, workshops and in print for most of the past decade, but the political barriers to real participation were not removed until Nepal's authoritarian monarchy and elitist Panchayat system of representation were reformed in 1990.

CEAPRED

The Center for Environmental and Agricultural Policy Research, Extension and Development (CEAPRED) was established as a non-profit and non-governmental organization in urban Lalitpur and rural Dhankuta in April of 1990. CEAPRED was developed to create a "holistic and participatory approach to environmental management and sustainable development" in the fields of agriculture and urban planning (Upadhyaya 1992). In both sectors, environmental management involves working with local people to enhance community knowledge, ability and participation.

Kupondole Project

CEAPRED began addressing solid waste issues in early 1991. In order to determine local responses to problems associated with the current waste management system they distributed surveys in an informal series of household visits conducted near their office in Lalitpur. The survey was coordinated by a woman member of the Executive Board and conducted by women volunteers of CEAPRED. It was loosely controlled for socio-economic status. Their findings revealed that the disposal of waste was perceived as a serious problem and they concluded from their research that disorganized waste management was a result of "inappropriate physical environment and negative socio-cultural practices." They cited five barriers to an effective system of waste management: 1) Lack of adequate centralized waste containers, 2) Lack of regular and timely container pickup, 3) Lack of adequate knowledge about the negative health effects of mismanaged wastes, 4) Lack of clean surroundings and 5) Lack of an understanding of the direct costs associated with improper waste disposal (Upadhyaya 1992).

These barriers were clearly an important component in CEAPRED's overall design of their program. Yet, their experience in previous community development projects and their inherent belief in the community participatory model led them to believe that the most significant underlying barrier to a better system in their target area was the lack of community commitment to improved solid waste management.

The crux of the problems was a conflict among individual's attitude, behavior and community integrated efforts. A feeling of nonbelongingness of roads and streets on individual levels also contributed to these problems. . . . The common feeling that 'the roads are government property and that it is the duty of the municipality or SWMRMC or other government agencies to maintain and clean them has given rise to a distinct dependency syndrome...It was thus essential to bring about a change in attitude and behavior and develop a unified approach that can facilitate the community members to unite in community waste management (Upadhyaya 1992: 6-7).

CEAPRED believed that years of foreign intervention and substantial municipal and regional

resources ultimately had little success because they failed to adopt such an approach. Thus, CEAPRED used the notions of non-connectedness and dependency on government, along with the more pragmatic factors inhibiting a cleaner environment, to develop an action program for the community that could bridge the lack of containers on the street and lack of confidence in themselves.

CEAPRED developed their intervention strategy in order to foster such an approach. Although CEAPRED formally described the development of their strategy as a product of collaboration with CEAPRED staff and a committee of eight women volunteers drawn from the Kupondole neighborhood, the overall approach was clearly a product of CEAPRED's experience in community development. The wide ranging objectives of the program were as follows:

1) To create awareness, especially among women at the household level, of the effects of MSW mismanagement, 2) To elicit behavioral change from bad disposal habits to "systematic and healthy disposal of solid wastes," 3) To encourage reduction of MSW at the household level by reuse/recycling, 4) To promote and replicate community based MSW management in other areas, 5) To develop community leadership roles for women (Upadhyaya 1992).

It was this last objective that acted as the overall focus for the program. In a speech at the National Workshop on Solid Waste Management in Kathmandu in November of 1994, the chairman of CEAPRED, Dr. Hari Upadhyaya made it clear that the main objective of their approach to MSW management was "to develop leadership and organizational capability of local women to undertake and sustain the management of solid wastes in the community" (Upadhyaya 1994).

Role of women

The role of women as decision-makers in the household was an important component in CEAPRED's model. The majority of household waste is generated from domestic chores performed by women. They are responsible for either taking out the waste to the communal bin or seeing that it is accomplished. By targeting the women, they had isolated the party responsible for most decisions in the household about waste disposal. This approach views the household as a single unit of consumption and ultimately targets females in the household as the single most important agent of waste production and candidate for behavior modification (Douglass 1992).

On a larger scale, the role of women in environmental management is embedded in CEAPRED's philosophy. Citing numerous studies about the role of women in development, they claimed that working with women in waste management would not only be easier than working with men, it would also be more effective overall.

It has been understood that if an appropriate environment is generated for women to contribute in community work, they can contribute more than men. Efficiency and impact of women-oriented programs are much higher than those carried through participation of men. (Upadhyaya 1992). A wide body of research about women and development has supported these conclusions particularly in environmental management.

Understanding the "women in development" premise, that women in Nepal are often constrained in their environmental behavior by their lack of access to capital, labor, knowledge and time, CEAPRED tailored their program in waste management to specifically meet these needs. This approach leveraged CEAPRED's institutional capabilities to bridge the barriers to access and thereby raised the level of control that the women trainees could exert over their community's wasting behaviors and local decision-making processes (Ghai 1994).

CEAPRED's work with women deviates from the standard "women in development" model. Whereas typical schemes often involve poor, uneducated, rural women who are victims of a dwindling resource base, CEAPRED involves relatively affluent, educated, urban women who are affected by expanding pollution, byproducts from a shrinking resource base. In the short term, issues of time and income are relatively easy to overcome for the "housewives" of Lalitpur as they do not have to seek employment to meet their family's needs. But, ultimately, CEAPRED's approach converges with rural environmental models by linking conservation with empowerment and livelihood strategies through the development of self-perpetuating, paid positions for women in urban environmental management (Douglass 1992).

Site Selection

CEAPRED listed several criteria for the selection of a target site that emphasized the notions of access and community. Chief among their criteria was prior experience in the target area with members of the community, to have an understanding of the unique dynamics of a particular area. Previous contact with an area was also considered essential in order to create the necessary trust for active community participation and to insure that CEAPRED was not viewed as an outside agency.

Proximity and accessibility, for both the program facilitators and the community members, to each other was another key component. It promoted proper supervision of the project and facilitated genuine communication at all times between the two groups.

These criteria, coupled with growing waste mounds from new businesses, multi-family dwellings and increased traffic congestion due to "disorganized waste disposal everywhere along the road," along with "a general lack of community belongingness and

collectiveness among the community members," led CEAPRED to select approximately 500 households in the Kupondole area in the municipality of Lalitpur as the site for its first intervention (Upadhyaya 1992: 9). The term "household" referred primarily to single family dwellings but also included some commercial and multi-family establishments. All households were contiguous to each other and bound by similar patterns of disposal.

Given the criteria for site selection of "proximity and access" it should not be surprising that CEAPRED's main office was located in the Kupondole area. Perhaps more telling was another reason CEAPRED listed for selecting the Kupondole site, "Despite generally high literacy rates and residence of mostly affluent families, the problem of waste disposal is common and serious in this area" (Upadhyaya 1994: ?). In fact, this was a central premise in their early research on the subject. Why, they asked, if environmental quality and prosperity are generally positively correlated, are the affluent areas of Lalitpur equally dirty as other less affluent areas? With their theory of dependency on government and untapped community self-reliance in mind, CEAPRED picked a site to test their assumptions that would be the most likely to respond to their model of community participation.

Implementation

A two-pronged approach involving household visits in the target area was designed to implement the program. On one level, the visits were designed to educate the households about the negative effects of the current waste management system. Fifty-six households were targeted to measure what they thought outsiders might think of the proliferation of solid waste in their community and what that might imply to the outsider in terms of the community's culture, traditions and behavior.

A second motivation for household visits was to recruit interested women for a two-part certificate training program in "community-based solid waste management." The women were asked about their potential to organize and lead a campaign for a cleaner community. They were then told that they could learn these skills by utilizing their free time as housewives in a "meaningful, prestigious and productive manner" by enlisting in the program (Upadhyaya 1992: 5).

CEAPRED's visits were met with some resistance by households who questioned the non-political nature of the program and the motivations of the women volunteers. Others felt that MSW management was the exclusive domain of the municipality and CEAPRED, and that "housewives" had no business tampering with the system. Yet, CEAPRED successfully recruited 35 women to implement post-training activities in their community after the formal training sessions.

First-Phase Training

Training sessions were designed to be more practical than theoretical, with a lot of sharing of common experience among the presenters and trainees. The sessions were held in Nepali. Chairman Upadhyaya stressed in personal communication that the women enjoyed the formal setting of the training and looked forward to the free tea and pokaharas served during the breaks. "This is our form of payment," he said, "If you pay cash it introduces the wrong motivations to the trainings" (Becker 1994). The trainings were inaugurated with much fanfare. Local dignitaries attended the opening festivities and made speeches about the importance of a cleaner environment and the benefits of community involvement.

After the first training session trainees were expected to act as community motivators within their social groups, to help change their neighbor's attitudes and behavior in waste disposal. The trainees organized into seven groups of 5-6 members including CEAPRED members, and began visiting targeted households regularly.

CEAPRED Linkages to Line Agencies

It seems doubtful that increased awareness about the problems of solid waste and peer pressure to change negative behaviors alone, could in the long term change the situation in Kupondole. Yet, at the onset of the program CEAPRED initiated a crucial aspect of the program. They invited the SWMRMC and the Lalitpur Municipality to actively participate in their program. After some discussion the SWMRMC provided two more coveted yellow communal containers at strategic points along the main road in Kupondole. In addition, two tricycles and cart-wheels were loaned to the program.

Two male sweepers from the traditional sweeper caste were hired to pick up household waste for the first time directly from the houses in the target area. They were also instructed to clean up the debris strewn around the centralized dumpsters on a daily basis. The women promoted to their peers a way of handling waste in a healthy and convenient manner. With repeated visits to households and frequent contact with the SWMRMC and the Municipality over a period of two months, the road and street corners began shedding their ubiquitous and endemic layers of waste. The freshly cleaned areas helped community members develop a positive attitude towards the new program.

Fee For Service

In order to insure that the program continued past the pilot project stage, CEAPRED felt it was important that the community help bear some of the cost of operation now that they had seen the benefits of its approach. Membership cards were created, similar to ones already used for purchasing drinking water and telephone access. The card was used to record the payment of charges for each member establishment.

After consulting with the community through more household visits, the trainees were able to set a scale of acceptable rates for their service. The fee ranged from 5-10 rupees per month for a resident of a single room, to 20-25 rupees per month for a family, to 150 rupees per month for a hotel or nursing home.

This was an entirely new concept for most of the community. Traditionally fees for centralized garbage service were hidden in general taxes. The community had never had to pay directly for the disposal of its own waste.

Communal systems of solid waste collection are considered a public good, and direct charges are difficult to implement unless a strong community organization exists to enable recovery. . . . Whether refuse collection from private establishments or individual households can be *treated like a private good* (even though it is a public good) depends on the education and culture of the residents. In communities wherein residents have been sensitized to the need for public cleanliness and the problem of limited resources (or efficiencies) of government, the door-to-door collection service to households, institutions and to industrial and commercial establishments can be treated as a private good for which those being serviced would be willing to pay (Cointreau-Levine 1994: 6).

Hence, later household visits often focused on the merits of paying the recommended tariff in exchange for the convenience of waste collection at their doorstep and for the overall good of the community. These themes were constantly promoted by CEAPRED volunteers. Despite the financial commitment, 350 out of the 500 households signed up and consistently paid their membership.

Second-Phase Training

The second-phase of training was conducted two months after the first-phase of training was completed. The sessions reemphasized some of the earlier points about general environmental problems and basic notions of consumer habits, e.g., "you paid for the whole avocado, why then do you throw away the skin and pit? You could compost it in your backyard into excellent fertilizer" (Becker 1994). The primary focus of this training was to build on the women's experience in the field by focusing on issues of community organization, fiscal and administrative management of community based organizations (CBOs) and the role of CBOs and line agencies. The sessions also served as a forum for the women to exchange their ideas and experiences with invited facilitators and one another. At the end of the training program a panel discussion was organized to discuss the possibility of developing a new community based organization that the trainees would operate to sustain the current waste program.

WEPCO

Out of the final collaborative meeting the Women Environmental Preservation Committee (WEPCO) was founded. WEPCO was established to maintain community spirit and ensure sustainability of the CEAPRED program. Their overall goal was "to enable the people of Lalitpur Municipality to have a clean and healthy environment through the initiatives of local women" (WEPCO ??). The group was initially planned as an independent arm of CEAPRED until they could develop their institutional capability and secure funding for salaries for their coordinators. In May of 1992, with funding from the Canadian Cooperation Office (CCO), WEPCO became an independent CBO and began an aggressive income generation scheme.

WEPCO identified areas where they could generate income for their program at a low initial investment. Many of the women with WEPCO had experience with sewing and knitting, so they decided to produce and directly market wall-hangings, purses and reusable shopping tote bags for profit. As WEPCO gained credibility in the community they were able to secure funding from the Lalitpur Municipality to provide their waste service to the community. This funding was based loosely on the concept of cost-avoidance since WEPCO's program clearly reduced the municipality's street cleaning requirements. These two funding sources and continued grants from the CCO have allowed WEPCO to expand their program.

Within their first year of independent status, WEPCO increased their monthly revenue from 6,000 rupees to 17,800 rupees. By 1993, WEPCO's monthly expenditures were 17,500 rupees. This included three helpers (men who picked up waste door to door with tricycle and handcart), one "road sweeping lady," one "peon," two supervisors, office rent, equipment maintenance and storage. Revenue included fees collected from member establishments for garbage service (12,000 rupees) and "assistance" from Lalitpur Municipality (5,800 rupees). CCO funds were intended to help WEPCO's income generation projects pay staff salaries. Regardless of household membership and payment, WEPCO made a decision to pick up waste from all households in their target community so that public rubbish would not detract from the overall community cleanliness and pride.

In Kupondole WEPCO was viewed as successfully producing a cleaner community and for drawing on the talents and initiative of local women (Vaidya 1992).

Kumaripati Project

Inspired by the success of the initial Kupondole project and in response to continued demand from other communities for similar programs, CEAPRED designed a second project in the Kumaripati Region in Lalitpur, adjacent to the Kupondole site. Funding for this project was obtained under the NGO Environmental Management Programme (NEMP) as part of Nepal's National Conservation Strategy Implementation

Program. Specifically, funds were provided through these channels by the World Conservation Union (IUCN) and the United States Agency for International Development (US AID), both first time funders to CEAPRED.

On July 2, 1994, the Minister for Housing and Physical Planning of HMG Nepal and the Mayor of Lalitpur, inaugurated the program with fanfare and extended their agencies' support to insure the project's success. The Kumaripati project used essentially the same model as the Kupondole project, with only minor changes in training focus and personnel. Links with concerned line agencies were strengthened by formalizing a steering committee for the Kumaripati project made up of representatives from the Lalitpur Municipality, SWMRMC, Ward committees, local citizens and CEAPRED designates. As part of CEAPRED's strategy, Kumaripati was located on the periphery of their most recently intervened site. The target area was similar to Kupondole; a predominately affluent, Newar neighborhood. Forty trainees were recruited for the sessions, 38 women and two men.

The Kumaripati group had experiences similar to those of the Kupondole group, and after their formal training they too formed an independent NGO. Like WEPCO, they have continued to serve as a local force to motivate individual household responsibility for wasting behaviors, as well as serving as an effective, independent source of waste hauling, recycling and disposal. Both groups are currently working on projects to generate stable revenue sources and are working on plans to introduce community-based organic composting on public property in their respective communities.

Conclusion

Onerous changes in the volume and make-up of solid waste have impacted the community of Lalitpur, but political changes in the character of government and inclusion of local women through the institution of CEAPRED have enabled women involved in the waste program to make a positive contribution in their local community. The women in CEAPRED are becoming their own experts in the field of solid waste management. They are not forced to solely rely on the "experts" in solid waste or the "bosses" in the government for tangible solutions to their garbage problems.

CEAPRED's examples of community empowerment and citizen activism in Lalitpur are small in scale. It remains to be seen if the ideas incorporated in their approach will have any effect regionally on the way solid waste is managed and communities perceived. Yet, the fact that they have developed a workable model for community-based waste management suitable for the Kathmandu Valley and successfully implemented it is encouraging.

The very engagement of people in cooperative efforts and interaction with government can promote the type of awareness needed for consensus-building for further action. These experiences also bring a heightened awareness of possibilities for participation that can endure beyond the successes or failure of a single event (Douglass 1992: 25). In Lalitpur there is enduring awareness of the possibilities for a cleaner, more vibrant community.

At the closing of the National Workshop on Waste Management, Kathmandu Mayor P.L. Singh repeated the infamous lines that he had opened the conference with three days earlier. Looking directly into the television cameras he stated clearly in English, "I hope that from what we have learned from this important workshop, we will be able to transform Kathmandu Shitty, back again into Kathmandu City" (Becker 1994). Unfortunately, for the inhabitants of the Valley, the region's endemic waste problems cannot be as easily solved as the Mayor's clever sound bite suggests. Only with genuine commitment to the types of reform and the true engagement CEAPRED has demonstrated, will the Kathmandu Valley stand a chance to attain their civic motto, "Clean, Green and Healthy" and realistically be able to handle the challenges of the valley's increasing population densities and inevitable environmental degradation.

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Gateway in Chitlang (Photograph by Daya Shakya)

