Lessons from Experience:
A Comparative Look at Solid Waste Management Policies In Cambodia, India, The Philippines and Sri Lanka

The Waste-Econ Programme

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An evaluation of a country's methods of managing its wastes can be highly indicative of its social, economic, human, and environmental health. This report has been written as a compilation of such information on three Asian study countries of India, the Philippines, and Sri Lanka. These countries are different from the Kingdom of Cambodia in a number of ways. They have varying socio-culture backdrops and differences in industry, infrastructure, legal, and finally environmental factors. All human settlements however, generate solid waste. Waste source, type and composition may vary depending on region, geography and basic economics, but ultimately, the management of solid waste is something that all societies have to deal with.

While they are all at different stages, all three countries are developing and are either lower income or middle income countries. They all have large pockets of poverty and all face the same challenges in terms of resource scarcity and unequal distribution of goods. Moreover, to varying degrees, they all have active informal sectors of waste pickers, or scavengers, the work of whom accounts for the majority of the country's recycling, reuse and recovery. Ultimately, the social, health related and environmental problems associated with the generation of wastes in developing countries do not differ. Hence, this look at how other countries have formulated their solid waste management policies, and faced their own waste challenges, will be beneficial to the Cambodian Ministry of Environment in their own attempts to face the country's waste challenges and formulate a new and comprehensive national solid waste management policy.

The majority of the information given in this report pertains to the urban areas of the countries. There are several reasons for the urban focus. The first is that accurate information on the waste situation in rural areas is hard to find and largely unreliable. Furthermore, because an average urban resident in Asia produces three times more solid waste then average rural resident, new policy directives are best geared towards urban communities (Hoornweg 1999). Finally, it is estimated that as increasing numbers of rural dwellers seek out new opportunities in the urban centers, by 2025, 52% of the Asian population will be urban dwellers (Hoornweg 1999; 11). A country's style of urban governance has a significant affect on environmental and social problems, particularly as they relate to ill health and damage to a country's poorest people (Nunan & Satterthwaite 2001, 409). As populations continue to urbanize, the ability of central and provincial governments to provide adequate environmental services will become increasingly important.

Solid waste management, SWM, does not take place in isolation from other aspects of social management and governance. Adequate SWM should be seen as one component of a broader picture of good urban governance, the nature of which is going to influence the extent and quality of its basic service provision for urban needs such as drainage, water supply, sanitation, and garbage collection for households (Nunan & Satterthwaite 2001; 412). In order to address the relevance of good governance to SWM in Cambodia, I have included a discussion of it below. Following that is a look at the current status of both the Cambodian Ministry of Environment, MOE, itself, as well its existing SWM policies in order to set the comparative context for this report.

Good urban governance:

Urban Governance is an important concept in relation to SWM in that a country's style of governance plays out in its method of urban service provision. A breakdown in governance can be cause for inadequate service provision, in this case of solid waste services, and the concurrent environmental degradation that comes with it (Harpham & Boateng, 1997, 69). Governance is about the relationship between a government and its citizens. It is the space created between government and civil society wherein the public life of individuals and institutions lie outside the control of the state (Paproski, in Harpham & Boateng, 1997, 65). Governance is a process and hence it is dynamic, always changing and always able to be improved upon. Good governance is equitable, efficient and inclusive and does not take place behind closed and impenetrable government doors (UNESCAP 2004). Most importantly, good governance is participatory; inclusion of all affected stakeholders is absolutely necessary.

Good governance is a popular concept because it represents a shift in thought in terms of the idea that the solution to poverty and environmental degradation has to come in the form of increased funding (Harpham & Boateng 1997; 66). Realizing that a problem is not merely a technical issue means understanding the environmental impact, the social and cultural issues and the institutional, political and legal framework it takes place in (Zurbrugg 2002; 11). Governance is a context specific, iterative process. Meeting the challenges of SWM in Cambodia will require a move to this way of thinking and will involve the overcoming of political constraints as well as the creating of more space between the government and civil society, where issues of accountability and community participation can be taken seriously (Harpham & Boateng; 1997, 67). While financial resources might be limited, a system of good governance allows an urban society to progress towards multiple goals while making the best use of limited public resources and capacities (Nunan & Satterthwaite 2001; 411).

Governance can be understood as having three separate dimensions of the technical, the political and the institutional (Harpham & Boateng 1997; 77). Traditionally only the technical, or performance side of governance has tended to garner any attention. The technical aspect has been dominated by economic debates based on the idea that service provision could be improved through the restructuring of a country's economy. What this focus leaves out though is the question of whose well-being is sacrificed through economic restructuring and the limited improvement of services. A system of good governance does not allow the poor to go underserved for the benefit of the rich. The political dimension of governance has the

government providing for the exchange of ideas within civil society groups without fear of persecution or discrimination. This includes allowing the voices of the traditionally marginalized the same access to speech and inclusion as anyone else (Harpham & Boateng 1997; 71). A system of good governance makes for a country where the public has confidence in the government and its legitimacy, and civil society groups can appreciate open procedures and the disclosure of information on policies.

The third dimension of governance, the institutional, is similar to the political because it relates to whether or not citizens have the freedom to organize around their specific interests. The institutional dimension has governments recognizing civil society as a distinctive sector both capable of participating in decision making, and as a mechanism for diluting excessive central political power (Harpham & Boateng 1997; 72). Looking at how a government provides services to its citizens is not merely a question of technical performance or public sector management. There is also the question of the representative aspect of governance, embodied in the latter two political and institutional dimensions (Harpham & Boateng 1997; 74). Better representation, accountability and social justice bring a government closer to its citizens make for a more successfully run country.

The Cambodian Context

The space created for public involvement and government accountability by a system of good governance allows for a society's poorest members to exert a degree of influence on the public policies that are going to affect them. In the context of SWM in Cambodia, this influence is particularly important because the areas that suffer the most from inadequate solid waste management collection tend to be those inhabited by the lowest-income groups. The degree to which such people are involved in the devising of solid waste management plans will be reflected in how successful waste management services for them prove to be. Looking to Phnom Penh city as an example, while service to some areas has improved since the private company CINTRI took over the waste collection contract, service remains weak in the outlaying areas of the city; areas that are home to thousands of the city's poorest people (JICA report, "The Study on Solid Waste Management in the Municipality of Phnom Penh" March 2004). The reasons for the inadequacies as well as the inequalities in service provision are likely to reflect a problem in government structure as much as they reflect a lack of ability of the poor to pay. (Nunan & Satterthwaite 2001; 410). In the areas without collection residents either burn their garbage, or throw it into waterways and open dumps. Not only does this have deleterious effects on the environment, but it also serves to lower the standard of living for the city's poorest people, leaving them in very unsanitary and unhealthful conditions.

Cambodia is not unique with regards to the privatization and contracting out of environmental services. In the majority of countries looked at for this report, while the collection of solid waste is the responsibility of the local governments, many of the cities have contracted out service provision. In many cases, such contracting out has had adverse effects on the poorest members of society. Interestingly, the privatization of environmental services in developing countries has been hailed by international donor agencies as a good solution to the financial and capacity constraints faced by local governments when they attempt to offer such services (Ogu in Nunan & Satterthwaite 2001; 423).

Research however, has shown that privatized waste collection services in the developing world have not brought the improvements that were expected. Instead, it has been found that when placed in the context of local governments that do not adequately represent their poorest citizens, privatization works to weaken the position of the more marginalized groups in society (Ogu in Nunan & Satterthwaite 2001; 423). The push for public sector reform through the embracing of the private sector has placed too little emphasis on issues of equity and local community participation (Harpham & Boateng; 1997, 6). Of course, the situation in Cambodia is complex and these are merely general observations. Still in the spirit of learning from other countries' experiences, it is worthwhile to note the issues that arise generally when waste collection services are privatized.

CINTRI was hired by the Department of Public-Works and Transport, DPWT, in 2002 to be responsible for waste collection and transport, as well as for cleansing services for the city (JICA report, March 2004, 14). The company now has a monopoly on waste services and a contract of fifty years. Phnom Penh Waste Management, PPWM, which operates under the DPWT, only has the capacity to collect 2.1% of the waste from the city (JICA report, March 2004; 14). Hence, CINTRI definitely fills an important need in the city. However, CINTRI"s monopoly means that there is no open market for waste services and hence no bidding between competitors working to get the price down. Because of its advantageous position, CINTRI does not need to worry about being monitored, and hence doe not face any pressure to be accountable to the clientele (JICA report, March 2004, 13). Furthermore, if CINTRI were to decide to stop working in Phnom Penh, there would be no other suitable institution to take its place, leaving Phnom Penh in a vulnerable situation. Assuming that the MOE will be able to draft a new legislative framework for SWM in the next two or three years, decision-makers will wanr to ensure that the obligations of all parties to the private contract are drafted into the legislation.

The Cambodian Ministry of Environment: current status

The Solid Waste Management office operates under the Office for Pollution Control in the Ministry of Environment. There are about fifteen people working on the issue of solid waste management under the leadership of Mr. Sarun Sambo, Chief of Office, and Mr. Sreng Sophal,Vice- Chief Officer of Solid Waste Management. Having reached a political compromise between the CPP and the Funcipec Party, all ministries, including the Ministry of Environment, have been asked to prepare 5 year strategic plans. The plans of the Solid Waste Management Office are for four related projects including, the drafting of a sub-decree on recycling and composting, the taking of inventory on the solid waste situations of the 24 provinces and cities, the compiling of a guided map which will indicate the pollution sources throughout the country, and finally, the devising of a national policy on solid waste (personal communication with Mr. Sarun Sambo, Chief-Officer, Office of Solid Waste Management, August 2004). There are three technical staff from the office, in charge of waste water, solid waste, and air pollution. Factories found discharging waste water that does not meet the standards set out in the sub-decree on waste water pollution control are fined (personal communication with Mr. Sarun Sambo, Chief-Officer, Office of Solid Waste Management, August 2004).

Ministry officials are aware that they cannot begin the process of drafting new solid waste management legislation until they have accurate information on the source, amount, and type of wastes generated in the provinces. They expect it will take them at least a year to compile the inventory data for the country. Currently though they do not have the funds with which to start the project, and will have to wait to see if they can get the funds at the drafting of the national budget to take place early in the new year. In the interim, staff members from the ministry are currently undergoing training on how to draft policy for recycling and composting.

The German funded Cambodian Education and Waste Management Organization, COMPED, are giving the training. COMPED has brought in an expert from Germany and is planning on offering training to ministry staff members for up to two years. The participants include a representative from the Ministry of Health, the Municipality of Phnom Penh, the Ministry of Agriculture, Department of Environment staff from the Kandal province, and three staff members representing the Solid Waste Management Office, including one person from the ministry's Department of Education, one person from Planning and Legal Affairs, and finally, one person from the Department of Environmental Impact Assessment (personal communication with Mr. Sreng Sophal, Vice-Chief Officer, Solid Waste Management Office). The hope is that in two years, the participants will be able to come together, and while representing their various constituencies, be able to write a new SWM policy that includes provisions for recycling and composting (which the current SWM policy does not have).

Existing Policy

The most relevant document to SWM that the Ministry has is the *Law on Environmental Protection and Natural Resource Management*, written in 1996, submitted for the King's and the Prime Minister's signatures in 1997, and established as law in 1999. The Law has 27 articles based on: general provisions, national and regional environmental plans, environmental impact assessment, natural resource management, environmental protection, monitoring, record-keeping, and inspection, public participation and access to information, environmental endowment fund, interim provisions, and a section on penalties. In addition, the law contains three sub-decrees on water pollution control, solid waste management, and air and noise pollution control (unofficial translation of Law provided by the UNDP funded environmental Technical Advisory Programme).

The Solid Waste Management Sub-Decree:

The sub-decree sets the overall framework for SWM in Cambodia. The general purpose and provisions of the sub-decree, written out in chapter one, indicate that the decree will apply to all activities related to "the disposal, storage, collection, transport, recycling, (*and*) dumping of waste (sub-decree, unofficial translation, provided by the UNDP funded environmental Technical Advisory Programme, 2 of 8). Chapter one further specifies that solid waste shall be taken to refer to hard objects, substances, and products which are not useful and are intended to be discarded. The chapter does not elaborate on when and how products are determined to be useless and fit for discarding. Household waste is defined as every type of waste generated except that which is hazardous. Included in the household waste definition is that which is

discarded from residential dwellings, public buildings, factories, markets, hotels, businesses, restaurant, transport facilities and recreational sites (sub-decree, unofficial translation, provided by the UNDP funded environmental Technical Advisory Programme, 2 of 8). This definition of household waste is actually flawed in that it confuses household waste with municipal solid waste. Household waste should be understood to refer only to waste generated by domestic dwellings or homes. All other waste generated in a municipality, including commercial establishments, hotels, factories markets, businesses, restaurants, transport facilities and recreational sites, should be considered municipal solid waste.

While different sources define municipal solid waste in various ways, all definitions should be along the same lines as that given above. With regards to the other countries looked at n this report, in the Philippines Ecological Solid Waste Management Act, 2001, MSW refers to "wastes produced from activities within local government units which include a combination of domestic, commercial, institutional and industrial wastes and street litters (ESWMA 2001; 5)." Furthermore, the Indian National Solid Waste Management Policy of 2000 defines MSW as that which includes "commercial and residential wastes generated in a municipal or notified area in either solid or semi-solid form ..(Municipal Solid Waste Management and Handling Rules 2000; 2)." Because the definition of terms in a policy is so important, the MOE should use a more accurate definition of MSW in the future.

The remainder of the sub-decree includes sections on household waste management, hazardous waste management, monitoring and inspection of hazardous waste management, penalties for violating the sub-decree, and an annex on types of hazardous waste. There is nothing specific written on industrial waste management as it is considered to be either household or hazardous, depending on its chemical make-up. This could be problematic in terms of the government being able to issue measures for producer responsibility in the new policy. Right now, municipalities are responsible for the management of all non-hazardous solid waste, and are supposed to develop master plans for submission to the central ministry. Currently though, the municipalities have yet to devise their own SWM plans, and although the sub-decree specifies that MOE will develop guidelines on disposal, collection, transport, storage, recycling, minimizing and dumping of waste, for the municipalities, these have yet to be developed (JICA report, March 2004, 12). Both the designation of roles and responsibility and the current classification of waste type, source, and composition require clearer clarification and more detail.

With further regards to hazardous waste management, chapter three of the sub-decree holds that the owner of the hazardous waste shall make quarterly reports on the status of the waste they are generating, including information on the type and amount of waste, how it is being temporarily stored and the treatment and elimination method being used (sub-decree, unofficial translation, provided by the UNDP funded environmental Technical Advisory Programme, 4 of 8). Currently, no hazardous waste generators submit such reports. It is further stipulated that no hazardous waste shall be disposed of in public areas, or with other, non-hazardous waste. Currently, most of the hazardous waste generated in Cambodia is from Phnom Penh or just outside of it. The majority of disposed of at the Sarom Trading Centre (see below). The local authorities are charged with collection, transporting, and disposing of hazardous waste in their

jurisdiction, according to guidelines that are supposed to be developed by the MOE. Such guidelines have not yet been developed. The sub-decree further specifies that the construction of a site for the dumping of hazardous waste shall be subject to a permit issued by the MOE. Once a dump is constructed, those responsible for it will have to submit quarterly reports to the MOE detailing information on the source, type and amount of waste being dumped, who it is that is bringing in the waste, and the process and management of the waste once it is dumped at the facility. All monitoring on the transport, packaging, treatment and disposal of the hazardous waste is the responsibility of the MOE. There is no particular method of monitoring specified.

Current management of hazardous waste in Cambodia

Hazardous wastes are generated through industrial activities and are becoming a major issue of concern in many developing countries as increased industrialization takes place. By-products of industrialization can include heavy metals such as arsenic, lead and mercury. Hazardous waste can also be created through processes which utilize different forms of oil, products such as PVC and plastics. Other dangerous by-products include dioxins and furans, substances recognized to be extremely dangerous to all forms of life (High Power Committee on Management of Hazardous Wastes, HPC, India, 2004). Separation of special wastes at the household level is not common in cities of developing countries. Hazardous wastes can be more or less toxic and dangerous, depending on their chemical make-up and quantities. The most hazardous waste of all is nuclear, radioactive waste, found in some developing countries including India. Fortunately Cambodia does not have to worry about this issue because it does not use nuclear energy.

The Solid Waste Management Sub-Decree refers to hazardous wastes as radioactive substances, inflammable substances, pathogenic substances, irritating substances, corrosive substances, oxidizing substances, and any other chemical which may cause damage to human and environmental health (sub-decree, unofficial translation, provided by the UNDP funded environmental Technical Advisory Programme, 2 of 8). The majority of the hazardous waste in Cambodia comes from the textile industry and is hence not as hazardous as other wastes in terms of the deleterious effects it can have on forms of life if improperly transported, disposed of, stored, or treated. Usually, where there are low levels of industry there will be low levels of hazardous wastes produced. Still it is important that it is cared for properly.

The management of hazardous waste in Cambodia is relatively centralized around Phnom Penh City. Sarom Trading is a privately owned enterprise that currently collects, transports and disposes of all of Cambodia's hazardous waste at its site, located around 20 km from Phnom Penh in Ang Snoul, Kandal Province. The contract between the industries and Sarom Trading center was a coordinated effort among GMAC—the industry association, the Ministry of Industry, the Ministry of Environment, and the company itself. The individual industries are completely responsible for paying a fee to Sarom Trading center. The dumpsite is reasonably controlled but not truly sanitary. The ministry did not develop guidelines for the construction of the site but did specify that it should be hold with dimensions of about 60 meters by 60

meters in length and width and about 5 meters deep. When a hole is full, it is covered up and a new one is built in the same area. There is no liner at the site.

Existing policy continued

A Joint Prakas, or directive,[1] on SWM- between the MOE and the Ministry of Interior, was approved and brought into law in 2002. MOE collaborated with the Ministry of Interior on the Prakas so as to lend it the official status it needed in order to be successfully implemented. The main purpose of the Joint Prakas is to authorize local authorities in all the provinces to collect waste, transport it, and dispose of it. The Joint Prakas gives provincial and city governors the responsibility over waste management, as well as legal ownership of the waste generated in their respective jurisdictions. The most important section of the act, article one, authorizes the authorities to carry out effectively, all the measures in managing the solid waste in the provinces of the Kingdom of Cambodia, in order to ensure the protection of public health, environmental quality and biodiversity (personal communication with Mr. Sreng Sophal, Vice-Chief Officer of Solid Waste Management Office, August 2004). In addition to giving the provinces full control over SWM, the central ministry has tried to provide the provincial authorities with some capacity building with regards to environmental management.

In 2002, MOE sent staff members from the central ministry out to the provinces to educate the local authorities on environmental management (each province has its own Department of Environment that operates under the central ministry). Because of low capacity though, the central ministry has only been able to afford to send central staff out to the provinces for minimal training and this has proven to be inadequate. The government does not have the capacity to transfer funds to the provinces for SWM or other environmental management concerns. Private companies are employed in the larger provincial towns to collect waste from the markets as well as from the residential areas surrounding the markets. Residential areas located farther away from the markets receive no service. Furthermore, in the rural areas outside of the provincial towns, people are responsible for their own waste management and tend to either burn their garbage, dump it in water, or in open, unsanitary dump sites (personal communication with Mr. Sreng Sophal, Chief Officer, Solid Waste Management Office).

Introduction to the study countries; general trends

Cambodia is not unique in terms of the urgency with which it has to face its waste challenges. Solid waste management has become an important concern for most developing countries in the world, and particularly for those in Asia. One of the most common problems these countries face is the overlap pf administrative and enforcement duties at the national, regional and local level. SWM in these countries also suffers from institutional deficiencies, inadequate legal provisions and general resource constraints (UNEP 2004). On a more technical level, SWM often suffers from poorly maintained or out of date equipment and

[1] The policy hierarchy of Cambodia has Royal Proclamations developed by the National Assembly, signed by both the President of the Assembly and the King, and then passed into Law. Sub-decrees are written by the concerned ministry and then submitted to the Ministerial meeting whereupon they are agreed upon by the Council of Ministers and then sent to the Prime Minister to sign. At the lower end of the policy hierarchy are the parkas which are developed by the ministry, and signed by the responsible minister.

unmotivated staff (Klundert, Anschutz 2001; 10). Countries have tried to face their waste challenges in different ways. Every country looked at in this report has some sort of law on solid waste management. In some cases, such as in the Philippines, certain laws go back as early as the 1930's (Commonwealth Act, No. 383—Anti-dumping Law), indicating that SWM is not really such a new problem. While many of the countries, including the Philippines, have updated their laws over the years, many of them remain outmoded, fragmented, and incapable of dealing with the enormity of SWM in growing urban centers (UNEP 2004, Zurbrugg 2002; 5).

The daily generation of solid waste from Asia's urban areas is now at 760,000 tons and is expected to increase by 2025 to 1.8 million tons per day. Although local Asian governments are spending a significant amount of money of waste collection, in general, very little money is spent on other aspects of the waste cycle, and even the collection rates are low at a mere average of 30-60% collected for about $25 billion per year (Hoornweg 1999;5). Urban low and middle-income Asian countries can be expected to triple their current rate of municipal solid waste generation over the next quarter century (Hoornweg 1999; 14). For example, both Vietnam and India can expect the amount of waste generated in their urban centers to increase by 4 to 6 % each times the current amount generated (Hoornweg 1999; 14). It is further estimated that by 2025, the lower income Asian countries will generate more that double the amount of municipal waste than the middle and higher income Asian countries generate together, reaching up to 480 million tones of waste per year (Hoornweg 1999; 14). The waste management systems of the lower income Asian countries that we are discussing in this report, including Cambodia's, are *already* under enormous financial stress.

An Integrated and Sustainable Approach to Solid Waste Management

In the past, developing countries have tended to adopt the SWM technologies and management strategies of industrialized countries with limited success. An integrated and sustainable approach to SWM represents a shift in thinking away from a typical technology-centered approach to one that looks at other aspects such as the environment, socio-cultural, institutional and political and legal aspects (Klundert, Anschutz 2001; 7). The concept of Integrated Sustainable Waste Management, ISWM, has been developed to address some of the very same SWM challenges faced by lower-income countries that are discussed in this report. ISWM is based on the four principles of equity, effectiveness, efficiency and sustainability. The last principle is so important because it reflects the value of the ISWM system that a waste management system should be appropriate to local conditions and be feasible from a "technical, environmental, social, economic, financial, institutional and political perspective (Klundert, Anschutz 2001;11)." Furthermore, an ISWM system should be sustainable in that it is able to maintain itself over time without exhausting available financial, human, material and natural resources.

ISWM has three basic dimensions. The first is the inclusion of all stakeholders in the waste management system. In the developing Asian countries this would mean including the large informal recycling network and the active NGO and CBO's working on SWM issues. The second dimension is the recognition of all elements of the waste system. This includes the high-profile elements such as collection, transfer, disposal and treatment, but also looks at other stages in the flow of materials through a city such as

waste minimization, reuse, and recycling and composting (Klundert, Anschutz 2001;13). The third ISWM dimension is made up of six aspects through which current SWM systems should be assessed and which must be taken into account should new planning be considered. These aspects of the local context are often ignored when policy makers in developing countries try to adapt inappropriate policies from industrialized countries. These aspects are environmental, political and legal, institutional, socio-cultural, financial and economic, and technical (Klundert, Anschutz 2001;14). ISWM takes account of everything going on in a society and plans accordingly, looking not only to technical and financial matters, but to all the aspects of a society that affect planning and development.

In many developing countries where population is high, natural resources are scarce and availability of suitable land for disposal is low, spontaneous ISWM activities such as reuse and recovery tend to emerge. An ISWM system would bring all such activities together. Cambodia's very active informal sector of waste workers is an example of such activity. In Phnom Penh, private recyclers manage to recycle about 46 tons of material per day (JICA report 2004; 13). The activities of the informal sector, if formalized, could improve the waste management situation in terms of reduction of waste material. The term 'waste' as understood in the context of the ISWM framework, really only refers to those materials that have absolutely no potential to be a source of income. Almost all wastes, except for those made up of hazardous or toxic materials, could be regarded as resources.

Another cornerstone of the ISWM approach is the concept of the waste hierarchy (Klundert, Anschutz 2001; 9). This is meant to be something that stakeholders can come to believe in and practice as if by second nature. While the most common of such hierarchies is the 4 R's, being reduce, reuse, recycle and recover, these would not necessarily work for Cambodia because the country's problems are specific. For example, as discussed above, the collection system in Phnom Penh is lacking in that some of the poorest areas of the city are not served. Therefore improving on collection would be a top priority for Cambodia. In fact, improving on collection and disposal of solid waste should be a priority for all six of the countries looked at in this report. In India for example, in most major cities, MSW accumulates in communal bins until waste collectors pick it up. It is common to see piles of garbage surrounding the community bins because of the lack of reliable pick-up times. Transfer stations are available in only a few metropolitan cities, and most waste handling is done manually. Waste workers face serious health hazards as wastes are usually not segregated, forcing workers to handle medical and hazardous waste while unprotected (Visvanathan et al 2004, 20).

The situation in Sri Lanka is similar and the urban areas are often littered with garbage as a consequence of poor and unorganized collection services (UNEP, 2001). Concurrent with the inadequacy of collection in these countries is the environmentally harmful methods of final disposal. Because the processing of waste prior to disposal is inadequate, the end result is that landfills are overburdened, even though only a small percentage of waste generated actually end up at landfills (see chart for processing percentages of composting and incineration). In Cambodia, the landfill in Phnom Penh is overburdened and unhygienic, and not even all of the city's garbage is dumped there. Most developing countries face

financial and institutional constraints when it comes to SW disposal and open dumping of solid waste remains the most common form of disposal in the developing countries of the Asia and Pacific Region (Zurbrugg 2002, 9.).

A hierarchy for a country like Cambodia or India would have to reflect the country's specific challenges such as improving on collection and environmentally sustainable disposal. Both Cambodia and India have very active informal recycling communities and hence almost all materials that can be are recycled for profit. Hence the reuse and recovery parts of the traditional waste hierarchy are not appropriate. Ideally a country specific waste hierarchy would come to represent the priorities of all stakeholders involved in SWM in the country. A shared understanding of SWM priorities in the country could also help Cambodia overcome the conflicting goals between the environment, the economy, and the general well being of society (Brown 2004).

Adopting ISWM principles would reduce the amount of waste going to the already overburdened landfill, reduce air and water pollution, and conserve natural resources. Integrated waste management would also service the economy by reducing collection and landfill costs (Brown, 2004). ISWM is a useful tool for monitoring existing waste management systems and for planning new ones. The ISWM system can be used to collect the relevant data needed before a government can begin planning a new policy. The system can also be used to improve on various aspects of the waste elements. Looking at something like recycling from an ISWM approach would necessitate looking at all stakeholders and aspects of it including the social, institutional, political (recognition of informal sector and inclusion of them in waste management planning) the technical, and the economical (Klundert, Anschutz 2001; 22). If an initiative to improve on recycling were to succeed, decision-makers would have to include all stakeholders and considers all related aspects.

Good governance and ISWM

These two concepts are closely related in that they are based on similar principles of equality, inclusion and participation. Work by the OECD (Organization on Economic Cooperation and Development) has suggested that for a system of good governance to function effectively there needs to be sound national policies in place and effective frameworks for environmental management (Jones 2000; 390). The adoption of the principles of ISWM can help a society move towards both of these things. Moreover, the public space created by a system of good governance allows for those most negatively affected by inadequate SWM to come forth and participate in the decision making process. While the current project does not allow for an in depth evaluation of whether or not the study countries practice good governance, we will be able to gage it somewhat by seeing what their methods of service provision are. Moreover, we will be able to evaluate whether the principles shared by good governance and ISWM of equality, inclusion, accountability and participation have influenced the planning and policy process.

Country policies

The solid waste management policies of the three study countries vary considerably. I have included some extra information in the chart on China and Thailand and as one can see below, there are policy differences in that some in some countries such as the Philippines, there is one single, overarching

policy for SWM, whereas in Thailand, SWM is legislated in several different pieces of policy that can be seen to overlap. For the purposes of this report we are mainly concerned with the policy character embodied in the national legislation. There are certain key things we are looking for in the policies. We are looking for whether or not the planning approach is centralized or decentralized, and whether the provision of services is handled publicly, privately, or a mix between public and private. Finally, and most importantly, we are looking for whether or not the concept of ISWM has been used in the policy planning process. The is difficult to do in that the policies do not always give us very much to work with, but we will look for certain things such as the involvement of stakeholders, the taking into account of the different aspects of SWM, and the inclusion of all elements of the waste stream such as waste minimization, reuse, and recycling and composting.

This is not a critical review of the policies because their outcomes are for the most part unknown. However an effort will be made to point out the positive and negative aspects of the policies wherever possible. It should be noted that in the same way that the topic of hazardous waste was handled separately in the discussion on Cambodia, here too, the hazardous waste situations and policy specifications of the three study countries will be discussed towards the end of the report.

	Population, country size & GDP 2003 Amount of waste generated	**Amount of waste generated (per capita, per day, % per year where available)**	**Collection rates**	**1997 % disposal methods**	**1997 % Processing methods**	**Relevant policies**
India	1.1 billion, 9.6 million sq km, & $14.trillion	Per capita 0.3---0.6 kg/day 1999: 30,000 tons per day from 23 metro cities	50-90% from community bins in most major cities	15% landfilled & 60% openly dumped	5% incinerated & 10% composted	-Municipal Solid Waste Handling Rules 2000 -National Environment Policy 2004
Philippines	87 million, 300 thousand sq km, & $80 billion	Per capita 0.3-0.7 kg/day 10 million tons per year	Urban: 70% Rural: 40%	10% landfilled & 75% openly dumped	0% incinerated & 10% composted	Ecological Solid Waste Management Act 2000
Thailand	62 million, 513 thousand sq km, & $143.2 billion	0.5—1.0 kg per capita 2000: 14 million tons	Close to 100% in metropolitan cities	65% openly dumped	1% incinerated 10% composted &	-National Environment Act 1992 -Factory Act -Pubic Health Act 1992
China	1.3 billion, 9.6 million sq km, & $1,4 trillion	0.3kg per capita per day 1999: 143 millions tons	Close to 100% in urban areas 32 metro cities: 90,000 tons per day	30% landfilled & 50% openly dumped	2% incinerated(# to increase in the future, 36 operating plants in the country)& 10% composted,	Law of PCR on the Prevention and Control of Environmental Pollution by Solid Waste
Sri Lanka	19.2 million, 65,610 thousand sq km, & $18.5billion	0.85 kg per capita/day 6,400 tons per day total	Of total MSW 10-40% is collected-rest piles up on streets	0%landfilled & 85% openly dumped	0% incinerated & 5% composted	National Strategy for Solid Waste Management 2000

Chart Sources

Percentages excluding Thailand: *Ministry of Environment, Singapore, Annual Report, 1997*
Thailand percentages for waste composting, incineration and recycling from Visvanathan et al 2004, 23-26, & Thailand Environment Monitor
Population, country size & GDP: *World Bank Data by Country, World Development Indicators Database, 2004, India, The Philippines, Sri Lanka, Thailand, China*
Amount of waste generated and % collected:
India: Visvanathan et al, 2004, 10, 19
Thailand: Viasvanathan et al, 2004, 11
Sri Lanka: *State of the Environment, Sri Lanka 2001*, United Nations Environment Programme

The amount of waste recycled in the study countries is not indicated in the chart because of the informal nature of recycling in most of the study countries, and hence the lack of recorded information. Although recycling is now being mandated in some of the countries policies in solid waste management (Philippines, China), in general, the waste recycling of the informal sector is unacknowledged in policy documents. An ISWM approach to policy planning would actually help to upgrade the status of the informal sector whose existence and contribution to SWM is too often ignored. The recycling rate in the Asia-Pacific region increased between 1990 from 10% to 22% in 1998 (Visvanathan 2004; 28). One can only assume that this number has continued to grow.

India:

Next to China, India is the most populous country in the world. As can be expected with such a massive population and rapid urbanization, the country is currently facing some serious environmental challenges (Visvanathan et al 2004; 3). The Indian government has made certain important efforts over the last few years to improve the SWM situation in the country, but as can be seen in the chart above, the majority of waste is still disposed of in open and unsanitary open dumps, making for serious environmental degradation and an unhygienic and often dangerous situation for waste pickers and workers. Another major impediment to the SWM situation in India is the lack of civic awareness and the disparity of various NGO and other community driven efforts (Visvanathan et al 2004; 50). There is a real need in the country for a coordination of efforts and for an increase in public participation in SWM.

Policy Status

India amended its constitution in 1975 to include provisions for improvements on the environment. The country's national commitment to protecting the environment is legislated in articles 48 A and 51 A of the National Constitution, in which it is held that for sustainable development to occur there needs to be a balance and harmony between the country's economic, social, and environmental needs (National Environment Policy, 2004; 2). Protecting the environment is considered to be the civic duty of every Indian citizen. Every state has its own Department of Environment and Pollution Control Boards who perform the functions of planning, promoting, and coordinating the entire state's environmental programs. Under state authority are the municipalities, comprised of both small and large cities and rural areas. It is these municipal bodies that are responsible for the SWM in their jurisdictions (Visvanathan et al 2004; 61).

The central government legislated a national policy for SWM in 2000 at which time the civic bodies were alerted to an implementation schedule, but most of the municipalities have yet to implement the new legislation (Visvanathan et al 2004; 62). The policy is called the Municipal Solid Wastes Management and Handling Rules (Notification 2000). The Ministry of Environment and Forests (MOEF)

has identified the Central Pollution Control Board (CPCB), located in every state, as the chief monitoring agencies. As of 2000, the CPCB had completed an assessment survey of MSWM in most of the Class I cities (the majority of the urban population resides in these cities of more than 100,000 people) of the country (Visvanathan et al 2004; 6).

Recently, the MOEF enacted a National Environment Policy NEP, reinforcing the government's commitment to environmental protection (Ministry of Environment and Forests 2004). The NEP was written as a call to action for all agencies and civic bodies responsible for environmental management. The policy is meant to review all regulatory reforms and legislations of the Central, State, and Local governments and to infuse a sense of commonality into the various environmental sectors such as pollution control, waste management and water resource management. The NEP speaks to the links between environmental degradation and the perpetual poverty that afflicts much of the country. The NEP is meant to address environmental degradation in terms of its effects on the rural poor in regard to their reliance on natural resources. It further addresses the pervasive urban environmental degradation of the cities where a lack of adequate waste treatment and sanitation has had deleterious effects on the health and well being of the urban poor (NEP 2004, 4).

In all likelihood, the Indian government's attention to the environment has come from the increased realization of environmental factors being show to be responsible for as much as 20% of the incidence of disease in India (NEP 2004; 5). The Ministry of Environment and Forests appears to have done a great deal of research on these health and environment issues and have established that interventions such as sanitation measures have worked to reduce the number of critical health problems (NEP 2004; 6). The government has plans to continue with some intervention measures, and one of the ways in which they will do this is by evaluating their policy situation. Two of the key objectives of India's current environmental agenda, as articulated in the NEP, include the integration of environment concerns into development and economic policies, and the application of the principles of good governance discussed above -- transparency, accountability, efficiency, and participation-- to their system of environmental management (NEP 2004; 6).

The government's plans for achieving the objectives in the NEP include various strategic interventions by difference levels of authority, as well as through new partnerships with public agencies, local communities, and various economic actors. Moreover, the government plans on using legislation and legal doctrines for the realization of the objectives (NEP 2004; 7). Any policy amendments to come from the NEP will be geared towards promoting the internalization of environmental costs. New social or economic developments for the country will proceed only with due regard and accounting for the effects on the environment (NEP 2004; 8).

The objectives of the NEP are to be further realized through the embodiment of certain principles, some of which apply more directly to SWM than others. The principle of equity for example, in this context refers to equality in entitlements as well as in participation in decision-making over environmental concerns. In the SWM context, this would imply that the relevant publics would be involved in the

decision-making process over how the wastes generated in their jurisdiction should be managed (NEP 2004; 9). Another relevant principle embodied here is that of decentralization. The NEP states clearly that local authorities should be empowered to deal with salient issues within their jurisdictions. This idea is further present in the actual policy on National Solid Waste Management.

SWM comes up in the NEP in relation to soil pollution. There is an action plan for dealing with the polluting effects on soil from the run-off coming from unregulated landfills containing hazardous, toxic materials. The action plan includes the development of viable models of public/private partnerships for the setting up of secure and regulated landfills. These landfills would contain incinerators for toxic and hazardous waste of both the industrial and medical variety. The new landfills would be built after the existing toxic and hazardous waste dumps were cleaned up (NEP 2004; 28). The action plan further advocates user payments for the landfills to be collected by local authorities. With regards to municipal solid waste, the NEP advocates the strengthening of local bodies in terms of segregation, recycling, and reuse of solid wastes. The creation of sanitary landfills for solid wastes is also suggested, as well as improved collection and street cleaning services, all to be outsourced competitively to solid waste management service providers. Finally, the NEP suggests giving legal recognition to the informal collecting and recycling sector in order to strengthen and formalize their productive role in society (NEP 2004, 29).

It is difficult to evaluate the NEP in terms of the effects on SWM because the document does not include any real steps for implementation of these suggestions, nor does it task specific bodies to make sure anything gets done. Furthermore, the section of the NEP on SWM does not make any mention of the already existing policy on SWM (the way it does to other existing environmental policies such as the ones on water pollution and forest and land conservation, (NEP 2004, 14-16). This makes it unclear as to what guidelines municipalities would have to follow should the NEP be implemented in December of 2004. For example, the National Policy on SWM already provides a definition on what a landfill should look like and mandates their construction accordingly, but the NEP makes no real mention of existing landfills, only to say that sanitary ones should be built for municipal solid waste, and that toxic sites should be cleaned and new ones built.

Municipal Solid Wastes Handling Rules 1999

Copies of the National Policy, Municipal Solid Wastes Handling Rules**,** were made public for comments on the 5th of October 1999. The Central Government officially legislated the rules, presumably after duly considering objections and suggestions from the public, in September of 2000. The rules apply to every municipal authority in the country responsible for waste collection, segregation, storage, transportation, processing and disposal of MSW (Municipal Solid Waste Handling Rules; 2000). The document begins by setting out definitions of relevant terms such as anaerobic digestion and biodegradable substance. It then proceeds to lay out the allocation of responsibility for SWM. It is stated that every municipal authority shall be responsible for the implementation of the rules embodied within the document (Municipal Solid Waste Handling Rules; 2000). It is further specified that the municipal authority shall

make an application to the central authority of the state for grant of authorization before setting up waste processing and disposal facilities (Municipal Solid Waste Handling Rules 2000;3)

The application process is laid out in great detail, indicating that the process is not to be taken lightly. The applicant (Municipal Authority) has to provide a proposal outlining the type of technology to be used at the site, the location, site clearance and details of the agreement reached between the municipal authority and the agency to be operating the site. In addition, the application has to include information on the pollution control and safety protection measures taken at the site, as well as how the processed waste is to be utilized in the end (Municipal Solid Waste Handling Rules 2000;21). The application also has to include information on the layout of the site (s), the quantity of waste to be disposed of per day, the content of the waste, and finally, the methodology and operational details of landfilling (Municipal Solid Waste Handling Rules 2000;22).

Once the municipal authority's application is accepted they can build their facilities. The policy includes compliance criteria for the setting up of landfills including specific dates that certain acts are supposed to have been accomplished by. To begin with, all existing landfills not up to the standards set out in the policy (9), were meant to be updated before the 31st of January 2001. Waste processing and disposal facilities meeting the standards were to be set up at least by the 31st of January 2003. Finally, the identification of future sights was to begin no later than the 31st of January, 2002 (Municipal Solid Waste Handling Rules 2000;29). Knowledge on compliance with such dates is not available for this report, but a 2004 publication cites open dumping of municipal waste to be at 90% (Visvanathan et al 2004; 34), indicating that the existence of sanitary and operational landfills is uncertain.

The fact that every level of responsibility is clearly laid out is an impressive aspect of this policy. The roles of related bodies such as the Central Pollution Control Boards and Pollution Committees of the various states are also laid out clearly in the policy. Should a problem with role definition come up in a state over who has the authority to decide certain matters relating to SWM, the affected parties could easily turn to this policy for clarification. The document also includes compliance criteria for collection, segregation, storage, transportation, processing, and finally, disposal of municipal solid wastes.

Collection of municipal wastes

The policy states that while municipal authorities can choose their method of collection, house-to-house collection should be undertaken. Collection should be on a regular basis, and should include the collection of waste from squatter areas and slums. Furthermore, all biodegradable waste collected from slaughterhouses and markets shall be made use of (details not specified). There should be separation of medical, industrial and construction wastes, and absolutely no waste shall be burnt. All waste collected should be transferred to community bins (primary collection waste) and eventually picked up and transferred to landfill. Finally, stray animals shall not be permitted to move freely around waste storage facilities (Municipal Solid Waste Handling Rules 2000;7).

Storage of Municipal Solid Wastes

This section is very specific in that storage facilities are mandated as to color with green bins for

biodegradable wastes, white bins for recyclables, and black for everything else. It is also specified that manual handling of waste shall not be prohibited unless it is utterly unavoidable. Moreover, in the transportation section of the policy it is held that the bins should never be overflowing and that transportation of the waste should be efficient so as to minimize multiple handling of the waste (Municipal Solid Waste Handling Rules 2000; 8).

Landfill specifications

This section specifies that the site shall be fenced and provided with a gate so as to monitor the vehicles coming in as well as to protect against the entry of unauthorized persons and animals. The sites shall also have a wastes inspection facility so as to ensure proper segregation and to monitor and weigh the wastes coming into the facility. Also, the sites shall be equipped with proper safety measures and health inspections for workers. The sites shall also have bathing facilities and clean drinking water on site for workers (Municipal Solid Waste Handling Rules 2000; 11).

In order to increase efficiency and maximize hygiene, the wastes should be covered at the end of every day with at least 10 cm of soil or other similar material during the dry season and at least 40-65 cm of cover during the monsoon season. It is also specified that proper drainage beams be constructed so as to divert run-off from the site. In addition, storm water drains will be built so as to minimize leachate generation. All sites shall have a non-permeable lining fitted to the base and walls of the landfill, with specific requirements outlined for a site receiving hazardous wastes (see section below on hazardous waste in the policies (Municipal Solid Waste Handling Rules 2000; 11). Finally, there are specifications given for closing a landfill with a protective cover in order to minimize infiltration and erosion (Municipal Solid Waste Handling Rules 2000; 11).

Key aspects of the policy

One impressive aspect of the policy is that not only does it advocate waste processing prior to landfilling, but also it includes standards for composting and incineration (as well as specifications for compost material which could be useful to the Cambodian MOE). In reality though the amount of waste processing taking place in India is minimal. It is further specified that all planning and operation of the landfill sites should be done in the strictest accordance with environmental concerns. Wastes dumped at the landfills should only be those that are non-recyclable and non-biodegradable, therefore indicating that recycling and composting will have already taken place. In the section of the policy under segregation of municipal waste, it is written that the municipal authority shall be responsible for holding awareness programs and for promoting recycling and reuse of segregated materials. Interestingly, no other mention of segregation and/or recycling is made; only their encouragement is legislated.

Questions for analysis:

Like many developing countries like it, authority for SWM in India is decentralized. The policy clearly lays out levels of authority and also specified methods of accountability in that the municipal authority is supposed to stay accountable to the state authority by submitting an annual report every June to either the secretary in charge at the State level of the Department of Urban Development, or to the District

Magistrate, depending on size and location of the town or city concerned (Municipal Solid Waste Handling Rules 2000; 1). The various roles of authority are also clearly laid out. The main problem here is that although the municipal authorities are tasked with certain compliance criteria and even dates for completion, there is no mention of how these tasks are going to be financed. There is only a brief mention of private sector involvement under the landfill requirements section in which it is specified that in cases where a municipal authority should engage with a private company, they should ensure that they have a specific agreement over relevant terms and conditions ((Municipal Solid Waste Handling Rules 2000; 16). There is no other mention of private sector involvement. As for our question of whether or not SWM is a public, private, or public and private enterprise, this is really not clear in the policy and hence cannot be satisfactorily answered. Moving on to our next level of analysis, in order to evaluate this policy with regards to ISWM, a brief reminder of its main tenets is required.

ISWM is based on the principles of equity, effectiveness, efficiency, and sustainability. It has three main dimensions, which are the inclusion and participation of stakeholders, acknowledgement of all elements of the waste cycle, and the taking into account of six aspects of local context when analyzing and planning a SWM system (Klundert, Anschutz 2001;12). In all likelihood no policy is going to meet all of the principles and dimensions of ISWM, but some will certainly do better than others. The Indian policy falls somewhere in the middle, whereas the country's newest environmental policy, the NEP, falls quite a bit higher. This will be elaborated on shortly.

There are certain aspects of the national policy that are representative of ISWM. For one thing, policy makers seem cognizant of the importance of addressing the political situation in that they clearly lay out roles and responsibilities for different levels of authority. The policy also mentions most aspects of the waste cycle, albeit briefly. However, other aspects of the reality in India are left out of the policy. There is no mention of the huge population of waste pickers prominent in every major city throughout the country. The policy even specifies in the section under landfill requirements that the site shall be protected from the unauthorized entry of persons or stray animals (Municipal Solid Waste Handling Rules 2000; 10). This specification ignores the existence of waste pickers, their lifestyles, and contributions to waste management. In India recycling is carried out entirely by the informal sector and much of the materials they sell are found in open dumpsites and landfills (Visvanathan et al 2004; 42). Furthermore, because there is no mention of the informal sector and no real focus on recycling, the policy does not take the financial and economic reality, or the socio-cultural aspect of the country into account either. It leaves many questions unanswered. How are the policy measures going to be paid for, and why is there no focus on the resource potential of a formalized recycling system?

With regards to the technical aspects of how the policy measures are to be carried out, the policy specifies that municipal authorities will be responsible for the setting up of all waste processing and disposal facilities. There is no mention of transport vehicles or transfer stations for waste handling. Again, this is not taking context into account considering the costs associated with the setting up of appropriate processing and disposal facilities, and the fact that waste collection in India is known to be seriously

inefficient due to the wide variations and limited abilities of transport vehicles ranging from bullock carts to lorries (Visvanathan et 2004; 20).

Interestingly, the only contextual aspect of ISWM that is seriously taken into account is environmental. This however assumes that the Indian public is willing to comply with the environmental regulations and restrictions laid out in the policy. The policy is very clear on the fact that the landfill selection process and construction should take environmental concerns into account at every stage. The policy also specifies guidelines for pollution prevention such as diversion of storm water and the construction of a non-permeable lining system at the base and walls of the landfill. It further specifies parameters for water quality monitoring and ambient air quality monitoring (Municipal Solid Waste Handling Rules 2000; 12, 13). Despite its attention to environmental factors though, the policy is still lacking in this respect because it leaves out the human dimension of environmental degradation in that people's health suffers from poor environmental quality. The issue of environmental protection appears to be completely separate from any social and health related issues.

Further to ignoring much of the reality of the Indian SW situation, the policy does not mention the inclusion of any stakeholders in SWM. There is no mention of the NGO's and CBO's working on waste management issues in the country, and only a very brief mention of the private sector. Hence another element of reality, the institutional aspect, is ignored in that the civil sector is quire active in India and should be considered an important stakeholder in the process. On a more positive note, the policy does specify that the municipal authority should organize programs so as to ensure community participation in waste segregation. It is also specified that local welfare associations and NGO's shall be included in this particular process.

Finally, with regards to ISWM, the policy does not truly embody any of the four principles of equity, effectiveness, efficiency, and sustainability. Equity is not considered because the policy makes no mention of how services are going to be paid for or what role the waste picker community is going to play in SWM. Furthermore, not taking the reality of the technical and financial aspects into consideration indicates that the policy makers were not thinking of effectiveness and efficiency too much when drafting the policy. Finally, there is nothing particularly unsustainable about the policy per se, but a policy that does not properly take account of current realities, does not emphasize the inclusion and participation of all stakeholders, and makes no mention of financing plans, is unlikely to be successful and/or sustainable in the long-term.

None of this is to say that the SWM system in India is never going to get any better, only that this policy does not meet the requirements of ISWM set out that would make it likely to succeed. The NEP 2004 though is a different matter. The general theme of the NEP, its emphasis on the importance of decentralization, as well as increased public and community-based participation in environmental decision-making, are all highly positive. The NEP details specific actions to be taken to ensure local government accountability to the concerned higher levels of government. It is furthermore very focused on ensuring the well being of the poor and on formally recognizing the informal waste recyclers (NEP 2004; 11). The NEP

also pushes for substantive and process based environmental reforms and for the development of a *feasible and equitable* model of public/private partnership. The really impressive part of this particular section emphasizes that any public/private partnerships would have to have "ironclad safeguards against possible conflict of interest (NEP 2004; 14)." The importance of such safeguards cannot be overstated if governments want to create partnerships that benefit from the financial, technical and managerial resources of the private sector without being vulnerable to their control.

The NEP also speaks to the importance of greater government representation and transparency; two very important elements of a system of good governance. One of the most central tenets of good governance is the government's encouragement of inclusion and participation. Because this cannot truly happen with an uninterested and uniformed public, the fact that the NEP also focuses on the importance of education is very impressive. In the NEP it is argued that the enhancement of environmental awareness is essential for harmonizing individual behavior with the requirements of environmental protection and conservation (NEP 2004; 34). An educated and informed public also means less need for stringent monitoring and enforcement of environmental regulations and compliance criteria for SWM; something that would be to the great benefit of a developing country with limited resources to spend on enforcement and regulation.

If we assume the NEP to be the future of environmental management in India, then its relevance to SWM is further pronounced. At this point the effect that the NEP will have on SWM remains to be seen and the fact remains that the 2000 National Policy on Waste Management has yet to be fully implemented by the municipal and civic bodies. There are certain aspects of it that the Cambodian MOE might find useful in devising their own policy. These include the standards provided for composting, ambient air quality and water quality. Also useful might be the landfill requirements and specifications and the clear lay out of division of authority.

Moving onto our next country of the Philippines, we will see that there is a lot more to the policy that the MOE might consider adapting for their own purposes. However, because we are unaware for the most part of how these policies have been implemented and whether or not they have been successful, all we can really evaluate here is what makes for a good policy on paper. This is an important step in its own right, but the limitations of not knowing the end result of the policies should be kept in mind.

The Philippines

The Philippines is a fitting country to be looking at for this report both because it shares many of the same waste challenges as Cambodia in terms of social, environmental and health related factors, as well as because environmental management is currently a government priority. The Philippines government has repeatedly stressed its commitment to good governance and a healthy environment over the last several years through its emphasis on the decentralization of power for environmental management to local authorities. Government policies have also stressed the empowerment and participation of local communities in environmental decision-making (see President's website at http://www.op.gov.ph/). The government has diverted funds towards environmental management and the Department of Environment and Natural Resources (DENR) has recently partnered with Development Alternatives (under USAID, US Agency for International Development) in a project called Environmental Governance, or Eco-Gov (The Philippines Environmental Governance Program, 2004). Eco-Gov is meant to strengthen the capacity of local governing bodies in their abilities to reduce illegal fishing and logging, and to improve the management of solid waste. The program has stressed that one of the first priorities of local governments should be the collection and disposal of growing piles of garbage.

The DENR has been working with local governments to ensure that the companies hired for garbage collection and disposal are promoting segregation, recycling and composting. Eco-Gov further advocates the use of economic incentives for citizens and private companies in the form of bonuses, should the volume of materials being recycled and composted increase significantly (The Philippines Environmental Governance Program, 2004). Involvement with the Eco-Gov Program is not the only environmental initiative the government has taken on. The environmental policies of the country have undergone dramatic alterations over the last few years and the government has repeatedly stated its commitment to environmental protection.

Still, not much seems to have improved with regards to SWM. As of 2001[2], piles of garbage continue to litter the streets and the majority of re-usable and compostable materials remain unsegregated and tossed into open dumps with the remainder of the waste (The Philippine Environment Monitor 2001, 2). Many open dumps remain unregulated and continue to pose significant health risks to neighboring (mostly poor) communities. Such open dumps also tend to be near bodies of water into which leachate seeps in and contaminates them (Philippine Environment Monitor 2001). The dumps are overburdened and although there does exist a decent market for compost and recycled products made from plastic, glass and scrap metal, only a very small portion of materials in the Philippines in recycled or composted (see chart). With the government's focus on the environment, the public level of awareness of the importance of proper SWM has risen, but there remains a sense of the Not In My Backyard Syndrome, NYMBY, towards the siting and construction of new, sanitary landfills that is called for in the most recent policy on SWM.

[2] This is a general picture of the SWM status in the Philippines. It does not take account of some recent improvements that have occurred post the new policy, discussed below in 'SWM Accomplishments-January-May 2004'

Chart B: Current status of SWM

Household waste generated per year	Percentage of municipal waste collected per year	hazardous waste generated per year by industrial/ commercial sector	Recyclable and compostable materials generated	Bio-medical waste generated per year	Disposal sites in the country	
10 million tons—Metro Manila produces approximately 2.5 million tons/year (quarter of the total waste produced in the country	Urban: 70% Rural: 40% --an urban dweller produces between 0.5-0.7 kg per day/rural dweller: 0.3kg per person/day	2.4 million tons—5% is recycled or treated annually.	Nearly 49% of Metro Manila's municipal waste is biodegradable and 42% is composed of recyclables such as paper, plastic, and metal—but only 12% of total waste generated is recycled. Around 10% of waste in the entire country is composted through private initiatives	6,750 tons—43 hospital waste incinerators in the country—Clean Air Act 2000 prohibits incineration after 2003	1 sanitary landfill 2 closed landiflls 17 controlled dumps	

Source: World Bank Group figures, Philippines Environment Monitor, 2001

Similar to some of the other countries looked at in this report, the Philippines' generation of hazardous wastes, while currently a low percentage of total waste generated, is rising rapidly and already overwhelming current methods of management. The human health costs generated from improper handling and disposal of household, medical and industrial hazardous wastes are rising rapidly. The solid waste related problems are most pronounced in the big cities and particularly in the capital cities, in this case Metro Manila. While 70% of waste is collected in Metro Manila, transporting vehicles are inadequate and can often not access harder to reach areas. Like most of the other countries looked at, including Cambodia, it is the poorest neighborhoods in the cities that suffer from the most from inadequate collection (Philippines Environment Monitor, 2001; 5).

Between 1998 and 2000 the two main landfills used for disposing Metro Manila's waste, the Carmona and San Mateo, were closed down for health and safety reasons. These two sites used to receive between 40-50% respectively of Manila's daily garbage output. Together the sites now contain 23 million cubic meters if degrading waste because they were never closed properly (Philippines Environment Monitor, 2001; 10). The one remaining sanitary landfill in the country, located in Cebu, receives 400 tons of waste daily, but is experiencing operational problems (as of 2001 at the time of Environment Monitor Publication). One reason for the current state of both collection and disposal in the country comes from the lack of funds allocated to them in the national budget.

For most of the Local Government Units, LGU's, responsible for SWM, their entire SWM budgets represents less than 10% of their city budgets. Even where a substantial amount of city money goes toward collection, very little is provided for the management of the disposal site (Philippines Environment Monitor, 2001; 22). The LGU's performance with regards to collection, transport and disposal has been poor. In the past, relations between LGU's and the National government have suffered for lack of a clear

cost-sharing formula for SWM (Philippines Environment Monitor, 2001, 2). The absence of clear role definition and responsibility for costs between the various levels of government is one of the reasons for the poor state of SWM in the country. The ESWM Act sets out very clear role definition for management of solid waste in the country. It also deals with the challenges of collection, transport and disposal. All of this will be looked at below.

The garbage situation in the Philippines became notorious after the tragedy at the Payatas landfill when a part of the mountain of garbage broke off in a land slide killing hundreds of scavengers in 2000 (Office of the President, ceremonial signing of the Solid Waste Management Bil, 2001). The Payatas tragedy played a role in encouraging the government to take the issue of SWM seriously. The government was also under pressure from civil society and community organizations dissatisfied with improper landfill and open dump management, the siting of facilities and the incineration of solid waste (Philippine Environment Monitor 2001, 2). In January of 2001 the country's president, Gloria Macapagal Arroyo, ratified a new National Solid Waste Management Bill, the Ecological Solid Waste Management Act, 2000 (ESWMA 2000).

The new policy sets some high standards for the country to reach in light of how dire the situation really is. The dimensions of Integrated Sustainable Waste Management emphasize the importance of policy makers staying aware of contextual factors in devising a new environmental policy. We will evaluate the policy according to the ISWM dimensions and principles and see how it does. Often though, an overambitious and/or unrealistic policy, coupled with a lack of adequate funds will do more harm than good.

Solid Waste Management Legislation in the Philippines prior to 2000

The Act was written in order to replace the piecemeal legislation that has previously covered SWM in the country. The litany of legislation on SWM shows the issue came up as early as 1939. Every piece of legislation has emphasized proper collection and safe disposal of household, municipal, industrial and hospital wastes. Evidently, every piece of legislation has failed in some way, hence the need for the ESWMA 2000.

Between 1939 and 1999, 14 different pieces of legislation related to SWM and environmental protection were passed. The 1939 Anti-Dumping Law prohibited the dumping of refuse, waste matter or other substances into bodies of water. As of 2000 though, the majority of waste disposal was either through open dumping, burning, or disposal into available bodies of water (Philippines Environment Monitor, 2001,18). The remaining Acts provide general orders for garbage disposal, including toxic hazardous, medical, and nuclear wastes. Included in these general guidelines are specifications for landfill site identification, as well as screening processes for municipal solid waste disposal facilities. The 1999 Republic Act—The Clean Air Act, was the first piece of legislation to outlaw incineration, including that of medical waste. Various aspects of ESWMA 2000 can in fact be found in the other pieces of legislation. The ESWMA is different though in that it advocates for the first time, an integrated national framework for SWM.

The Ecological Solid Waste Management Act 2000

The ESWMA takes an integrated approach to SWM. Its main goals generally pertain to the status of generation, segregation and collection of solid waste, recycling and composting, disposal, and hazardous waste treatment and management. The Act also emphasizes the importance of collecting information on solid waste situations throughout the country before planning and decision-making. The policy is impressive in that it really considers the lifecycle of solid waste and seeks to address all parts of it. Its key prescriptive features emphasize re-use, recycling, the construction of sanitary landfills and controlled dumps, and user fees and incentives. The Act is made up of seven chapters which are: I General Provisions and Basic Policies, II Institutional Mechanisms, III Comprehensive Solid Waste Management, IV Incentives, V Financing SWM, VI Penal Provisions, and finally chapter VII on Miscellaneous (ESWMA 2000). Because the Act is so long, analysis has been included throughout.

Chapter I of the Act sets out main goals and an extensive definition of terms, totaling eight pages. The terms defined range from simple concepts like agricultural waste to the definition of buy-back centers where citizens can come and purchase other citizens' unwanted recyclables. There is even a definition of what environmentally acceptable means in the Filipino context. At sixty pages this policy is by far the longest of the four (including Cambodia's) looked at in this paper. Length of course does not necessarily equate with quality, but in the case of the definitions provided, the setting out of so many terms is impressive in that such a comprehensive list of terms reflects the importance and breadth of the issue of SWM. It also demonstrates the amount of research and work that went into drafting this policy. One of the most important terms listed is that of Ecological Solid Waste Management itself, which refers to:

> The systematic administration of activities which provide for segregation at source, segregated transportation, storage, transfer, processing, treatment and disposal of solid waste and all other waste management activities which do not harm the environment
> (ESWMA 2000; 4).

Chapter II: Institutional Mechanisms

This chapter very clearly lays out the institutional mechanisms and various roles agencies are to take on for the furtherance of the Act 's objectives.

The National Solid Waste Management Commission

The Philippines is divided into units called Local Government Units, LGU's of which the Province is the primary political unit. There are 79 provinces in the country that are further divided into cities and municipalities. The cities and municipalities are made up of at least two thousand Barangays each, which are the smallest government units in the country (Philippines Encyclopedia of Political Information, 2004). The National Solid Waste Management Commission, NSWMC, created by the ESWMA under the Office of the President, is to oversee the improvement of SWM throughout all levels of political authority.

The Commission is to be chaired by a representative of the Department of Environment and Natural Resources. The Commission is to be multi-sectored and composed of representatives from the Department of Science and Technology, Department of Health, Department of Agriculture, The Technical

Education and Skill Development Authority, Department of Interior and Local Government, Department of Public Works and Highways, Department of Trade and Industry, the Metro Manila Development Authority, Philippine Information Agency, League of Provincial Governors, League of City Mayors, and the Association of Barangay Councils (ESWMA 2000; 10). The Act specifies that the Secretaries of the different agencies will be responsible for formulating action plans on how their respective agencies can work to complement the national framework for the new Act (ESWMA 2000; 11). The NSWMC will also contain representatives from relevant NGO's, recycling, packaging or manufacturing industries. The Act mandates the Commission to meet at least once a month with the appropriate representatives.

The Act goes into great detail on the powers and functions of the NSWMC. Some of the Commission's tasks are very specific, while others are vague and seem to be mentioned in more the one section of the policy, indicating a sharing of responsibility. The Commission has regulatory responsibilities and a role in preparing national policy plans, approving local initiatives, and coordinating the operation of the local SWM boards at the provincial and city/municipality levels (ESWMA 2000; 13). The Commission is also to provide technical support and capacity building assistance to the provinces and LGU's in the form of different programs.

The list of responsibilities for the NSWMC continues with it having to develop and prescribe procedures for the issuance of permits and clearances to private companies and municipal bodies engaging in SWM. In issuing such permits, the NSWMC will furthermore have to ensure that SWM companies are not using any of the materials that the Commission has, with the help from expert consultants, deemed to be environmentally harmful (ESWMA 2000; 13). The NSWMC will also be in charge of encouraging all local government agencies---affiliated with the environmental sector or not—to only patronize products made from recyclable materials. Finally, the Act mandates the Commission to study and review the standards, criteria and guidelines for the implementation of the ESWMA (ESWMA 2000; 14).

The remainder of Chapter II details the institutional arrangements and lists of responsibilities and functions for the National Ecology Center, the LGU's, and both the Provincial and City/Municipal level Solid Waste Management Boards. Instead of going through the extensive list of duties and responsibilities that each level of authority has, we will have a general discussion on the decentralization of power, and we will analyze the entire institutional section of the policy to see if it fits into an Integrated Sustainable Waste Management framework. To remind us what we are looking for, ISWM is based on the principles of equity, effectiveness, efficiency, and sustainability. It has three main dimensions, which are the inclusion and participation of stakeholders, acknowledgement of all elements of the waste cycle, and the taking into account of six aspects of local context when analyzing and planning a SWM system (Klundert, Anschutz 2001;12). Because in this section we are only looking at the institutional make-up mandated by the Act, not all dimensions of ISWM will be relevant. Here we can evaluate sustainability and equality in terms of how inclusive and participatory membership in government bodies is, under the assumption that the more stakeholders involved in the process, the more equitable, as well as long-lasting it will be. The inclusion of affected stakeholders will also ensure a greater depth of information on SWM needs and situations

throughout the country.

Decentralization of authority:

While the LGU's have official authority over all matters related to their jurisdictions, the next level of authority for SWM planning purposes under the NSWMC is held by the Provincial Solid Waste Management Boards. These boards are to be modeled after the NSWMC and are to be chaired by provincial governors. The Provincial Boards are to develop province wide SWM plans from the reports submitted to them from every city/municipality in their jurisdictions. The plans are to be approved ultimately by the NSWMC. The Provincial Boards are to further develop schemes of incentives for the cities and municipalities for the furtherance of the Act's successful implementation (ESWMA 2000; 19). Finally, and perhaps most importantly from the perspective of good governance, the Provincial Boards are to represent their component cities/municipalities to their LGU's and to the National Government with regards to the coordination of resources and operational requirements (ESWMA 2000; 18).

The City/Municipal Boards are to be modeled after the Provincial Boards. As the fourth official level of authority for SWM in the country, under the guidance of their respective Provincial Boards, every City/Municipality Board is charged in the Act with preparing and submitting ten year SWM plans, with reviews and updates every two years. The City/Municipal Boards are also in charge of adopting revenue-generating measures for financing of SWM in their jurisdictions and for managing the collection and disposal of special and hazardous wastes (the assumption here is that this includes medical waste). This level of government is also responsible for managing the Barangays under their jurisdiction and making sure efforts among them are coordinated. The Barangay level handles what could be seen the most important parts to an ISWM approach being the collection and segregation of all reusable and biodegradable wastes, and the conducting of solid waste education campaigns designed to inform and encourage the participation of the local communities (ESWMA 2000; 20).

The LGU for the city/municipality is to help the Barangays secure financing for their activities. The LGU's are also responsible for brining neighboring Barangay leaders together for brainstorming and collective problem solving sessions. Should any of the three levels of government wish to gain technical or other capability building support in their efforts to comply with the Act, they can turn to the body created for that purpose, under the NSWMC, the **National Ecology Center.** This Center has a very interesting role to play in that it is responsible for setting up reclamation programs and buy-back centers for recyclables and toxic wastes within the LGU's.

Despite the clear definition of roles and levels of responsibility for SWM throughout the country, it is clear that the NSWMC is really the chief operating force behind SWM in the Philippines. In addition to what has already been enumerated, the Commission has a role to play in incentives, penalties, financing and relations with the private sector. The Commission's powers seem to seep into every level of governance to the point that the secretary or another duly authorized representative of the

Commission shall:

> have the right to enter the premises of any generator, recycler or manufacturer, or other facilities any time to question any employee or investigate any fact, condition or matter which may be necessary to determine any violation, or which may aid in the effective enforcement of this Act and its implementing rules and regulations
>
> (ESWMA 2000; 16).

The degree of control and authority that the Commission has over SWM is important to keep in mind when considering the roles of all the other bodies responsible for SWM in the country. This is just another reminder that while things might look good in a policy, one can never know how they are acted upon in real life.

Keeping the ISWM framework in mind, we will now look at how inclusive the SWM bodies have been mandated to be.

Inclusivity of the SWM bodies

The Act indicates clearly that every level of authority involved in SWM in the Philippines, from the Barangay level to the NSWMC (membership requirements discussed above), is to be as inclusive in their decision-making as possible. The Provincial Boards are to include in their membership, the local Mayor, General Services Officer, and a Congressional representative from every city or municipality under its jurisdiction. The Boards are further to include a representative from the NGO sector concerned with recycling and protection of air and water quality, a representative from the recycling industry, and finally, a representative from every government agency at the city/municipal level deemed to have the relevant technical and marketing expertise for SWM (ESWMA 2000; 17). Similarly, the City/Municipal Boards are to be made up of the local President of the Association of Barangay Councils, a representative from the NGO sector, representatives from the recycling and manufacturing and packaging industries, and representatives from concerned government agencies (ESWMA 2000; 20).

The fact that the Act mandates the inclusion of various representatives on these boards is important because it represents an attempt to access as much information and input as possible, and to have uniformity across the country in terms of decision-making.

The Act further encourages the active participation of those involved included on the boards. The Provincial Boards are responsible for convening joint meetings with their city/municipal counterparts as often as four times a year in order to integrate plans and monitor the development of the province wide SWM plan. Even the technical support body, the National Ecology Center, for the provinces and LGU's is to be inclusive and representative of the greater Filipino community. The Center is to be made up of a multi-sectoral and multi-disciplinary pool of experts on SWM including academics, youth, women, inventors, practicing professionals, and generally anyone who can demonstrate to the Center's board that they have an expert opinion and a stake in the country's SWM (ESWMA 2000; 15).

The coordination of responsibilities at both the Provincial and City/Municipal level is an important step towards integrating all of the different SWM activities going on throughout the country. The

uniformity in management that such coordination prescribes would help make the country's SWM plans a success. The high degree of inclusivity and information sharing are equally impressive aspects of the policy in that they are both key to a sustainable future. This section also demonstrates an awareness of all the different aspects of SWM by referring to what level of government is to be responsible for segregation, collection, transport, recycling etc. At this early point in the Act, there does seem to be some appreciation for the concept of integrated sustainable waste management. There are however, forty more pages to go.

Chapter III

Comprehensive Solid Waste Management

This chapter gets into the real substance of what the above listed institutional arrangements are going to be organizing, developing, implementing and enforcing. Its first order of business, the drafting of the **National Solid Waste Management Report**, shows the Act's commitment to taking contextual factors into account. The report is to be written by the DENR with input from all the concerned agencies and bodies within six months of the Act's implementation. The information gathered in the report is to be used as a basis in formulating the **National Solid Waste Management Framework** (already featured in the next section of the Act—assumption being it would be updated with information from the Status Report). The report is to be updated every two years taking account of pertinent qualitative and quantitative problems that have arise throughout the country for both generators and regulators of solid waste (ESWMA 2000; 22). The report is to contain the following:

A) An inventory of all existing waste facilities in the country
B) Population figures on density, distribution and projected growth rates
C) Information on general waste characterization including type, quantity generated and an estimation of volume and type of waste that could be diverted from the disposal sites through reduction, reuse, recycling and composting.
D) Estimation of costs for SWM including collection, storage, transportation, disposal, and recycling as well as identification of available markets for recyclable materials
E) List of all current political, economic, organizational, financial and management problems affecting successful solid waste management problems
F) List of regional environmental factors affecting the safe implementation of SWM

(ESWMA 2000; 23)

As the list of information to be gathered indicates, the drafters of the ESWMA are keen to take a large degree of contextual information into account in planning the SWM framework. Of the six contextual factors of an ISWM framework the above list takes account of at least five. By mandating an inventory of all existing waste facilities in the country, planners can have a realistic idea of the **technical** capacities they have to work with. Furthermore, having information on population figures, waste characterization and type, planners will be aware of the **environmental** constraints that they might come up against. For example, planning a SWM framework for a region with a small population that does not produce a great degree of waste is obviously a different venture from one seeking to accommodate a huge and growing population known for its vast quantities of waste generation. The list also includes a requirement for gathering information on varying regional, geologic and climatic factors that are vital in the implementation of an environmentally safe SWM plan that is going to ensure the protection of the air and water quality

(ESWMA 2000; 23). These two sections of the list (B, F) indicate a strong awareness of the importance of taking environmental factors into consideration in planning a SWM framework

The list further includes a section on the estimation of the costs involved in SWM, taking account of various steps of the process including collection, storage, transportation, disposal and recycling costs. This shows an awareness of the absolute necessity of taking account of **financial and economic factors.** Finally, the list accounts for **political** (and legal—we can assume here) and **institutional** factors, by requiring a list of al current political, economic, organizational, financial and management problems affecting successful solid waste management (ESWMA 2000; 23). The list does not make mention of the **socio-cultural factors** related to SWM. It could have included this factor by requiring the report to include a list of all relevant community and NGO SWM-related activities. In fact, one of the major flaws of the Act thus far is that it seems to leave out the socio-cultural factor altogether. The institutional mechanisms section mandates an impressive list of stakeholders to be included in the decision process but it makes no mention of the large waste picking community of informal recyclers and their community leaders and representatives living and working throughout the country. The fact that this community of people is left out of decision- making is cause for consistent criticism throughout the different sections of policy. On the whole though, in terms of taking contextual factors into account, this Act does pretty well in mandating such a comprehensive report be compiled.

The remainder of Chapter III is written on the assumption that a National Solid Waste Management Framework, NSWMF, will be written within six months after the completion of the status report. The most recent mention of the status report on the NSWMC website (http://www.emb.gov.ph/nswmc/) is from May 2004. The section on the status report refers to it not as something being written according to the above requirements, but as a list of accomplishments for the NSWMC in general. Such accomplishments include the drafting of resolutions and guidelines on the provision of technical assistance for LGU's on suitable landfill site identification, and the revision of guidelines for treatment and disposal of medical waste (NSWMC website, November 2004). It is difficult to properly evaluate the Act without knowing whether or not the status report was ever written. We will go through the following list of what the framework is meant to consider and include with the assumption that this list is similar, if not the same as the list that was to be finalized after the status report was submitted.[3]

The National Solid Waste Management Framework, general concepts

Some of what the framework is to consider and include is similar to what is meant to be included in the status report. For example, the framework is to analyze the current state, trends and projections of solid waste management at the national, provincial and city/municipal level. The framework is to further consider the location of all existing waste facilities as well as the nature and types of waste generated and characteristics of collection, storage and disposal (ESWMA 2000; 24). Aside from this information though, much of what the framework has to consider is unique to it and makes for quite an extensive list. To begin

[3] According to the DENR site, implementation rules and regulations for the ESWMA were created in 2002 based on the status report. I have emailed the department as well as the NSWMC but have not been able to track down a copy of this document.

with, the framework is to include information on the profile of all sources of waste generation including industrial, commercial and domestic. It is to include methods for the closure and upgrading of open dumps, and it is to describe practical applications of environmentally safe techniques for waste minimization so as to decrease the burden on the newly upgraded sights. The framework is to also legislate the phase-out and eventual closure within 18 months of all open dumps and landfills that are located in the vicinity of an aquifer, groundwater reservoir or watershed area (ESWMA 2000; 25). The framework is to provide a description of what appropriate solid waste facilities and conservation systems should look like, as well as technical and economic descriptions of what can be expected from various SWM practices such as waste to energy generation and composting (ESWMA 2000; 24).

The remainder of the framework requirements actually fit nicely into the Integrated Sustainable Waste Management Approach in that many different aspects of the waste cycle are identified and the processes described are participatory and geared towards educating and involving the public. The requirements for the framework refer specifically to source segregation, waste collection, transportation and disposal, resource recovery including waste-to-energy generation, and re-use and composting. The framework is meant to describe the most environmentally friendly and feasible technical means for the practical application of these factors (ESWMA 2000; 24). The framework is to furthermore identify venues for public participation in all stages of the waste management program and to provide guidance on the organization of education campaign strategies (ESWMA 2000; 24).

The LGU Plan in the National Solid Waste Framework

Despite the clear role delineation and division of authority for SWM explained above in the section on Chapter II, it seems as if the framework is to largely be made up of the LGU wide SWM plans and hence implemented by the LGU's themselves. It is to the LGU's that the Provincial and City/Municipal Boards are to submit their ten-year SWM plans for approval by the Commission. From the information submitted to them from their component parts, the LGU's prepare their own plans that should emphasize primarily the implementation of feasible re-use, recycling and composting arrangements. They are to also identify the amount of transformed landfill space that might be needed for those wastes that cannot be re-used, recycled or composted. The LGU plan should contain a city/municipal profile complete with background information on the component Barangays such as population, solid waste generation, and inventory of existing SWM methods and facilities.

The LGU plan shall also contain information on the volume, material type and source of the solid waste generated within the LGU's jurisdiction so that the initial source reduction and recycling element of the plan can be designed accordingly. In addition to the factors already enumerated, the Act goes into great detail on how the LGU's should incorporate the issues of collection and transfer, processing, source reduction, recycling, composting, solid waste facility capacity and final disposal. The LGU's are also to consider education and public awareness, the issue of special waste, resource requirements and funding, privatization of solid waste management projects, and incentives programs (ESWMA 2000; 26-34). The majority of these factors are expanded on below.

a) **Method of collection and Transfer**-- plan shall define and specify the methods of collection and transfer to be used

Barangays to be responsible for 100% collection and for:

- provision of properly designed receptacles for solid waste awaiting collection
- segregation of wastes for recycling, re-use & composting
- transfer of wastes from collection points to processing sites to final disposal

LGU's will advise Barangays and help them train workers to handle wastes properly. Article 3 of the Act sets out specific requirements for the collection and transport of solid wastes that the different levels of authority will have to follow (Article 3, sec. 23, ESWMA 2000; 36). The Act also sets out guidelines for transfer stations mandating that no waste shall ever remain in a station longer than 24 hours.

Solid waste diversion will be mandatory and each LGU will have to come up with an implementation schedule which include plans for processing, recycling and composting

b) **Processing—**plan shall identify methods and facilities required for waste processing including composting, recycling & conversion.

c) **Source Reduction**—plan shall identify methods and an implementation schedule to enable LGU's to reach diversion requirements of the Act (within five year's of Act's implementation LGU's should be diverting at least 25% of wastes from final disposal through re-use, recycling, composting and other resource recovery activities---ESWMA, sec. 20, 35).

d) **Recycling—**plan shall include a program, implementation schedule, list of types of materials to be recycled, and a list of new facilities needed to implement the recycling program.

e) **Composting**—plan shall include a program, implementation schedule, list of materials to be composted, and description of new facilities needed for successful composting. The LGU plan shall furthermore identify potential markets for compost materials.

d) **Solid Waste Facility Capacity and Final Disposal---**the plan needs to identify how much disposal capacity will be needed to accommodate expected waste generation after source reduction measures are in place. The plan has to also identify existing and proposed disposal sites and compile lists of all open dumps that are to be either closed or transformed. The LGU plan shall make provisions for the phase-out or closure of dumps that cannot be upgraded and should plan for the development of sanitary landfills (guidelines set out for sanitary landfills in sections 40 and 41, ESWMA 2000; 44).

e) **Education and Public Information**: the plan shall describe how the LGU will inform and educate the public on matters related to SWM through the print and broadcast media. The public will be educated on source reduction, recycling and composting programs, and on the environmental, health and social aspects of SWM.

f) **Special Wastes:** the plan shall describe current methods for handling industrial and household special wastes and will include details on proposed programs for the proper handling, re-use and final disposal of such wastes. The LGU's will coordinate with the DENR to characterize special wastes to see whether or not they can be disposed locally or be managed as hazardous wastes under the Act entitled **R. A. 6969, the Toxic Substances and Hazardous and Nuclear Wastes Control Act (**see section below on hazardous

waste management in the study countries).

g) **Resource Requirements and Funding**-the plan should identify and describe all of the costs involved in SWM projects and what revenues can be expected from processing practices. The Plan also has to identify areas where outsider funding may be necessary to secure.

h**) Privatization of Solid Waste Management**: plan should indicate how the LGU plans on attracting private sector contributions and involvement in SWM. Incentives programs of both cash or otherwise will be developed for both private sector and other sectors potentially involved in SWM.

The LGU plan is an impressive form of decentralization because it takes the input and plans of the LGU's component parts and combines them in one overarching plan. The way that this process works it seems as though it would be almost impossible for something to get left out. There is input from almost everyone involved in SWM. The LGU plans furthermore do not just mandate the cities, municipalities and Barangays to reduce wastes going to landfill by 25% and leave it up to them to do so. The LGU plan is mandated to provide specific strategies for reducing the volume of solid waste generated at source, as well as details of measures that can be used to implement such strategies. Moreover, the plan is supposed to indicate specific measures to be undertaken to meet recycling, composting and re-use goals (ESWMA 2000; 28-31).

LGU role continued

As discussed previously in this report, one of the most difficult challenges facing many developing countries in their SWM practices is the safe and environmentally sustainable disposal of waste. Open dumping, burning and disposal into water sources is common and can lead to a wide range of deleterious effects on human and environmental health. Accordingly, the ESWMA lays out guidelines for waste management facilities and their practices. The following **Chart C on Solid Waste Disposal** lists the steps LGU's need to take in ensuring proper final disposal of solid waste.

Chart C: Solid Waste Disposal

Open Dumps	**Controlled Dumps**	**Sanitary Landfill**	**Common Waste Treatment and Disposal Facilities**
--No new open dumps shall be established following the implementation of this Act --3 years after the Act's implementation, every LGU shall convert its open dumps into controlled dumps -5 years after the Act, every LGU shall convert its controlled dumps into sanitary landfills	--Controlled dumps shall be constructed according to Act guidelines including provision of inert cover, water drainage control, fence system, controlled waste picking and trading, and post-closure cover and vegetation --No construction of any SWM facility can commence without a permit, **Environment Compliance Certificate**, obtained from the DENR	--Landfill construction should be consistent with Act's criteria for siting, Sec. 40, Article 6, including: --site selection should be sensitive to the opinions and needs of the community's residents --chosen site should meet requirements for budgetary constraints for site development, operation, closure, post-closure and potential remediation costs	--Provinces, cities, municipalities and barangays are *mandated* to coordinate their efforts and resources in order to address common SWM problems and to potentially establish common waste disposal facilities

Chart information taken from Article 6, Chapter III, ESWMA, *Waste Management Facilities,* 41-48

In addition to sanitary landfill siting requirements, the Act includes a section of criteria for establishment of sanitary landfills. The sites have to have proper liners, leachate collection and treatment systems, gas control and recovery systems, groundwater monitoring system, and special covers for daily and long-term use (ESWMA 2000; 43). Several interesting aspects of the criteria include the keeping of log books detailing records of weights or volumes accepted per day at the landfills, records of any fires, landslides, earthquake damage, accidents, explosions and receipt and/or rejection of non permitted waste (ESWMA 2000; 44). Also, the sites shall be designed to discourage unauthorized access through security measures designed by the DENR. Finally, the sites should be equipped with adequate sanitary facilities and safe drinking water for workers, and all personnel shall be equipped with appropriate attire and

safety equipment (ESWMA 2000; 47—for more complete list of landfill requirements see Article 6, sec. 42, *Operating Criteria for Sanitary Landfills,* 44-47).

Almost every section of this policy makes it clear that policy planners were trying to take local context into account when drafting the Act. Allowing for the gradual phase-out of open dumps to controlled dumps to sanitary landfills is an example of this. Mandating the recording of possible fires, landslides or other accidents is another telling example of this when one considers the tragedy at Payatas that occurred only one year before the drafting of this policy. Not only has an effort been made to keep track of such incidents through a recording system, but the ESWMA mandates certain criteria that will work to avoid such incidents. To begin with the sites are to be designed to prohibit entry of unauthorized persons through use of fences or topographic constraints. We can assume from this that the DENR is looking to discourage waste pickers from working at the new sites. Waste pickers are not mentioned directly in the section on landfills, but they are mentioned under controlled dumps where it says that all waste picking and trading shall be controlled by the authorities. There is not other mention in the policy about how this might work.

With further regards to keeping the sites safe, the Act mandates that solid waste shall be spread out and compacted in layers with repeated passage of landfill trucks and other equipment to maximize compaction. The loose layer of waste at the top of the site is not to exceed a depth of two feet before compaction. Landfill criteria further include safety drainage measures and the unloading of wastes confined to as small an area as possible so as to avoid safety hazards (ESWMA 2000; 46-48).

Prior to looking at the final chapters of the Act, incentives, financing and penal provisions, we will quickly look at the status of the Act's implementation thus far.

SWM Accomplishments-January-May 2004 (only time frame available)

According to the NSWMC website, 929 out of the 2384 Barangays (41.47%) are currently (as of May 2004) practicing segregation at source and 618 Materials Recovery Facilities, MRF's servicing 629 Barangays have already been set up. Furthermore, every LGU has set up composting activities or facilities of some sort at the household, market, school, or centralized municipal or Barangay level. Finally, an

impressive 21 out of 48 LGU's have converted their open dumpsites to controlled landfills (NSWMC website, November 2004, Summary of Accomplishments). Since the Act's implementation the Commission has continued to send out memos to all City and Municipal Mayors reminding them of what they need to do to comply with the ESWM components.

The Commission has also spear headed the monitoring of water quality at several disposal sites, as well as the monitoring of closure of the open dump at Cavite and the transformation to controlled dump at Payatas. The Commission has investigated 17 allegations of prohibited acts including acts of open burning, illegal dumping, open dumpsites, disposal of garbage into bodies of water, and the emitting of black smoke from a laundry facility (NSWMC website 2004, Summary of Accomplishments). Assessments of SWM facilities have also been conducted at five locations, and 39 training sessions have been offered to different sectors including several LGU's, Academics, and members of the private sector. SWM materials are also consistently being offered to trainees, researchers, LGU's and other sectors (NSWMC website 2004, Summary of Accomplishments).

The Commission has compiled a list of information on model programs throughout the country on solid waste management, under the assumption that some of the models are perfect for replication and adoption. One of the examples listed is of the Malacanang Palace Complex-Material Recovery Facility (MRF). This site used to be an open garbage dump until it was cleared in October 2001 and turned into an MRF with funding from the NSWMC in January of 2002. The Malacanang MRF receives mostly garden and kitchen wastes that are processed and used as compost at the Malacanang Park. The site also receives plastics, old newspapers, tin cans and bottles that it re-uses and sells (Environmental Management Bureau, NSWMC, 2004). Much of the SWM accomplishments seem to be taking place in a very piecemeal fashion and with a lot of help from the NGO and private sectors. What is remarkably different about some of the new SWM initiatives taking place throughout the country is that a lot of them are unified by the common goals and requirements laid out in the ESWMA,

For example, one group of 35 Barangays of Bais City responded to the ESWMA's mandate to prohibit the use of open dumps because city authorities suspected that pollution from the dump- sites was killing fish along Bais Bay. The matter was especially important because fishing is the main source of livelihood for the surrounding communities. Bais was one of the first LGU's to open a modern waste management centre that consists of a sanitary landfill, a water treatment plant and a recycling centre (German Development Service DED website 2004). The LGU allotted six million pesos for the construction of the waste management centre but still faced the problem of not having technical know-how and expert advice. Bais City was able to ascertain the help of the German Development Service, partner to the Philippines National Volunteer Service Coordinating Agency. According to the German Development Services' website, in most cases LGU's looking to upgrade their waste management facilities to meet the standards set out in the ESWMA, have to hire a consulting firm to help them secure a license and the **Environmental Compliance Certificate** referred to in the above chart C.

Having the German Development Service provide Bais City with a volunteer consultant

apparently saved them a million pesos. The consultants trained the LGU, City and Barangay staff, and also helped run information campaigns for members of the affected communities. With the consultant's assistance the city was able to design a solid waste management program, conduct an environmental impact assessment, and obtain the necessary permits for the construction of the sanitary landfill (German Development Service DED website 2004). In designing the landfill, the consultants also discovered a rich deposit of white clay in the city which was used as an alternative to a plastic liner at the site for sealing off leachate. The ESWMA actually mandates the use of clay and/or geosynthetic membrane lines to be used (Article 6, sec. 41, ESWMA 2000; 43). The Bais City LGU is the first one in the country to have built a sanitary landfill with a clay liner, saving them thousands of dollars in the cost of plastic.

The Bais City success is a great accomplishment for SWM in the Philippines. There are other success stories enumerated on the NSWMC website that are just as noteworthy. What cannot be ascertained from these stories though is how well the Act's implementation is going and whether or not the policy's prescriptions are sustainable. One must wonder why the Bais City LGU had to hire outside consultants for technical advice and expertise (in this case they didn't have to pay the consultants, but the assumption here is that other LGU's needing the same services would), if both the NSWMC and the National Ecology Centre are supposed to providing the LGU's and their component parts with technical advice and support? Finding information on the current status of the Act is difficult, and all that can really be said is that it seems as though more SWM action is indeed taking place in the country, and that the Act has had some influence. Turning to the issue of how all of the Act's mandates are supposed to be paid for, we will now look at the remaining chapters on incentives and funding.

Chapter IV
Incentives

This section of the Act describes the incentive scheme that is to be developed to encourage LGU's, private companies, NGO's and even private individuals to undertake or actively manage activities that promote the ESWMA. These incentives include tax and duty exemptions within ten year's of the Act's implementation on imported capital equipment and vehicles used for SWM. Within the same ten year span, should LGU's or private enterprises purchase similar goods domestically, they will receive up to 50% of the value of the taxes and customs duties they would have been exempt from paying had they imported the machinery (chapter IV,sec. 45, ESWMA 2000; 49). The government's financial institutions will assist in providing incentives by according high priority in extending financial aid to individuals, enterprises or private businesses engaged in SWM. Finally, those LGU's whose SWM plans have been approved by the Commission and whose plans are innovative will be entitled to grants from the Commission for the purpose of developing their capacities (chapter IV,sec. 45, 49).

Private Sector Involvement

The ESWMA refers to the private sector in more than one section. There is the assumption embedded throughout that private enterprises will be very involved in the country's new methods for handling waste. Since the effectivity of the Act, the NSWMC has evaluated twelve SWM proposals from the private sector (NSWMC website, 2004). There is no indication of whether or not these proposals have

been accepted, only that they have been evaluated. Some of the proposals include one for Rice Hull Incineration By Oliver Enterprises (even though incineration was banned in the 1999 Clean Air Act—and its prohibition reiterated in the ESWMA), a proposal for integrated SWM recycling by Maddela, Quirino, the burning of agricultural waste by the Philippine Banana GEA, and Mazzi Trading for total recycling technology, conversion of wastes into construction material (NSWMC website, 2004). Private companies, whether they are involved in SWM or not, are required to use eco-labeling and are further prohibited from using non-environmentally acceptable packaging, as mandated in the Act, Article 4, sec. 29.

The LGU's are mandated to find and develop markets for recycling and composting. With the help of the Commission and the Department of Industry and Trade, the LGU's are to further come up with incentives schemes to get the private sector involved. The Commission will also provide assistance in the form of loans and grants to those looking to establish businesses in the SWM field (ESWMA 2004; 39). Both the incentives scheme and the market identification and encouragement work that the LGU's are mandated to carry out show an acknowledgment that the Philippines government needs the involvement of the private sector to make this Act work. Including members of the private sector on the Commission's board is a good step towards encouraging this community to get involved as real stakeholders in the SWM process.

Chapter V
Financing Solid Waste Management

This part of the policy is very impressive and actually quite unique among the other policies looked at for this report. The Act mandates the establishment of a special Solid Waste Management Fund, to be administered by the NSWMC. The fund is to be made up of fines, permit and license costs, donations, grants and other contributions from both domestic and foreign sources (Sec 46, ESWMA 2000; 51). The Act specifies in no uncertain terms that the money allocated to the Fund shall never be used for the creation of positions or for the payment of salaries and wages. The Fund is to be used for funding awards and incentives, research programs, technical assistance, information and monitoring activities, and finally, capability building activities.

LGU's and the Solid Waste Management Fund

The institutional set-up inherent in the ESWMA means that LGU's are to be given technical advice and support, but should be able to cover the costs of SWM for their jurisdictions on their own through private sector involvement, and identification and operation of markets for re-usable and processed materials. At the same time though, the LGU's are allowed to avail themselves of the Fund under certain circumstance, namely the approval of their jurisdiction wide SWM plans (monetary amount not specified). LGU's are further entitled to a portion of the fines collected from their jurisdictions, so long as the money goes towards financing SWM. Additionally, the finance section of the Act gives authority to the LGU's to collect SWM fees from citizens of their jurisdictions for use in preparing, adopting and implementing their plans. The Act does not stipulate fee criteria so much except to note that fees should be based on the types and amounts of solid waste collected and the distance from the transfer station to the waste management facility (Sec 47, ESWMA 2000; 51).

This section of the policy indicates that policy makers are attempting to make the Act sustainable. Setting out goals without a realistic way of achieving them would be cause for criticism but in this case, they seem to have thought of everything. The only problem with the Fund is that for a large portion of its financing, it is reliant on the fact that people are going to make mistakes and be penalized. For one thing, this cannot be guaranteed, and for another, this assumes that the monitoring and enforcement are going to be good enough to identify and collect on such mistakes. We will now briefly look at the penal provisions set out in the Act for more insight into how the collection of penalties will work.

Chapter VI
Penal Provisions

Most of the policies looked at for this report include a section on penal provisions. The real question is how the countries plan on enforcing these provisions and making them work so that the principles they are based on become ingrained in the citizenry. Some of the prohibited acts seem more realistic than others. The act prohibits the squatting in open dumps and landfills. As discussed earlier in this report, the Act basically ignores the existence of waste pickers in the country and the fact that they are responsible for a large amount of the country's recycling and re-use initiatives. The only times the scavenger communities are referred to is with regard to their prohibition from entering the sights where they make their livelihoods. Another prohibited act, fine worthy, is the unauthorized removal of recyclable materials by unauthorized people. This would indicate that waste pickers working in urban centers could no longer collect recyclables for re-sale. The Philippines is actually quite well-known for its waste picking population in light of the notorious Smokey Mountain and Payatas dumpsite incidents. The country has tried to improve on the situation since then, but as of 2003, between 4000 and 8000 families still depended on the garbage rerouted from the currently closed Payatas site, for their livelihoods (Gonzales 2003; 1).

Waste pickers reside in all urban areas of the Philippines, particularly in Metro Manila. According to Filipino author Eugenio Gonzales, waste pickers in the Philippines have shown that recovery and recycling of waste can both reduce poverty and help the environment. Gonzales refers to several changes in Filipino society, including the introduction of the ESWMA, that have recently come to threaten the poverty-reduction schemes of this large population of Filipino people. Gonzales writes that although the scavenger communities in and around Manila were not involved in the development of the ESWMA, their leaders were told that they would benefit from the passing of the Act. Approximately 6000 scavengers continue to make their living combing through the remaining section of the Payatas dump that was reopened. Many families live either on or near the site (Gonzales 2003; 12). The Act mandates that any individual caught squatting in open dumps and landfills can be fined no less than one thousand Philippine Pesos, and no more than three thousand pesos, or be imprisoned for no less than fifteen days and no more than six months. Persons charged may also have to both pay the fine and serve the time (Sec. 49, ESWMA 2000; 52).

The fact that the ESWMA does not confront the existence and challenges inherent in having such a large and active informal recycling sector is an even bigger problem considering the Act has made life more difficult for scavengers in more than one way. By mandating segregation at source the Act has

reduced the amount of potentially valuable waste arriving at landfill and dump sites and has been catalyst for the opening up new junkshops in the metropolitan areas to absorb the recyclables. This of course entails increased competition for the scavengers. While this may not be a positive thing for them, what it actually means is that the Act is working in some ways, and the fact that more waste is being segregated at source, recycled and sold is really a good thing. Gonzales writes that while no systematic studies on recycling have been conducted since the Act's implementation, the increase in the number of junk shops, as well their success, has led some environmental NGO's to estimate that the recycling rate in Metro Manila may have risen as high as 15% of total waste generated, as opposed to a mere 6% that was being recycled in the late 1990's (2003; 9). The problem here is therefore not that more material is being recycled, but that the affects of the Act on the scavenging communities does not seem to have been taken into account in the decision making process.

Penal Provisions Continued

The majority of the rest of the prohibited acts are geared towards enforcing the Act's environmental goals of recycling, re-use and composing. Examples include the causing or permitting of unsegregated or unsorted waste to be collected, the manufacture, distribution or use of prohibited packaging materials, and the construction or operation of landfill facilities located in the vicinity of any aquifer, groundwater reservoir, or watershed area. Further prohibited acts include the operation of open dumps and the site preparation or management of a landfill without an Environmental Compliance Certificate (Sec. 48, ESWMA 2000; 52, 53). The Penalties listed are for both monetary fines and community service terms. Depending on the offence committed, the dollar amounts and community service hours vary. Persons convicted for littering or throwing waste in public places are liable to be fined no less than three hundred Philippines Pesos (about 5 US dollars-international currency converter), and no more than one thousand Philippine Pesos (about 17 US dollars-international currency converter). Alternatively, the offending person or persons, will have to render some community service to the LGU wherein the prohibited acts were committed for no less than one day and no more than fifteen days (Sec. 49, ESWMA 2000; 53). The community service aspect of the penalty is impressive in that it turns the commitment of a prohibited act into a benefit for the community.

For the more serious offense of importing toxic wastes misrepresented as recyclable or with recyclable content, the offending person or corporation shall be hit with a fine of no less than ten thousand Philippine Pesos (about $177 US-international currency converter), and no more than two hundred thousand Philippine Pesos ($3, 550 US-international currency converter). The offending party could also serve no less than thirty days of jail time, but no more than three years, or in the worst case, be liable for both the fine and the jail time (Sec. 49, ESWMA 2000; 54). The LGU's, as one of the monitoring bodies for the Act's implementation, who fail to carry out the penalty provisions of the Act, are likely to be charged administratively for their non-compliance.

The remaining five pages of the Act refer to miscellaneous provisions. Some of these provisions are actually quite interesting and could be labeled "citizen rights" or "modes of participation," or something

of the sort instead of miscellaneous. Sec 51 of the chapter is for mandatory public hearings to be undertaken by the Commission, Provincial, and City/Municipal Boards in order for members of the affected publics to be able to contribute and participate in the planning process. Regular citizen involvement is further mandated by Sec 52, which authorizes citizens' criminal, civil and administrative suits that any citizen may file for the purposes of enforcing the provisions of the ESWMA. Citizens are entitled to file suit against other private citizens, corporations and even members of institutional bodies such as the DENR who neglect their duties set out in the Act. Section 53 of the Act sets out the details of such suits and specifies forms of legal resource that both sides in a suit can take (ESWMA 2000; 56). This section is so interesting in that it basically mandates public involvement and participation, while at the same time addressing the issue of accountability and ensuring that everyone is held equally responsible for the enforcement of this very important Act. The remaining sections of this chapter call for continuous research on SWM issues, public information and education campaigns, including environmental education in the school system (ESWMA 2000; 57).

Conclusion

This Act is almost perfect on paper, decision-makers appear to have put a lot of thought into its drafting. The main issue here is that it is very hard to tell what aspects of the Act have been implemented and what aspects have remained on paper. We will briefly summarize how the Act is supposed to work. The Act mandates the creation of the National Solid Waste Management Commission under the Office of the President. The Commission has some specific roles and generally oversees all of SWM throughout the country. The Commission is joined by the National Ecology Center, which is to provide technical advice and expertise to the LGU's and their component parts. Under the Commission we have the creation of Provincial and Municipal/City Solid Waste Management Boards that are responsible for compiling information and making SWM plans for their jurisdictions. Monitoring the provinces, cities/municipalities and barangays are the LGU's who are ultimately responsible for coming up with almost every aspect of SWM in their plans (16-19). Certain impressive aspects of this decentralization include the fact that roles and cost-sharing formulae are clearly defined, and no level of authority is charged with doing something without the support of their immediate supervisory body. Furthermore, all levels are basically accountable to one another, and even regular citizens are able to exert influence on different levels of government through the use of citizens' suits.

The main issue with the decentralization of authority is the degree of overlap between the different levels. The NSWMC, the LGU's and the Provincial and City/Municipal Boards are all charged with gathering pertinent information on SWM, identifying possible markets for recycled and composted materials, managing information and education campaigns, and finally devising a SWM general plan. This is not to say that the all four levels of authority will come up with the same information; obviously Barangay leaders will have different perspectives and access to information not available to members of the NSWMC. Still the problem here is that often, when so many parties are charged with the same thing, tasks

tend not to get done.

The policy is almost overambitious in expecting every level of authority to fulfill all the tasks mandated, especially since other levels of authority have the same tasks. The consistent repetition throughout the policy also makes it confusing and burdensome to sift through; definitely not a positive thing if the government is hoping to encourage citizens to read the policy and get involved. Still a lot of good can be found within this policy. We will now go through the ISWM framework to see how the policy fits in.

Integrated Solid Waste Management and the ESWMA 2000

It is clear that the intentions of the policy-makers were to design an Act that was both comprehensive and environmentally sustainable. Although we cannot truly judge this policy because we know so little about its current status, we can look to some of the other characteristics of an ISWM framework used in our evaluation. This policy entails almost every aspect of the ISWM framework. Chapter II, the institutional mechanisms was evaluated in terms of decentralization as well as how sustainable the mechanisms were. We also looked at how inclusive membership in the various boards is, and what level of participation is expected from members. This chapter demonstrates that an effort was made to make the governing SWM bodies as inclusive and participatory as possible. Under the assumption that the more people involved in SWM, the more information can be garnered and hence the more successful a plan can be, this section of the policy meets the ISWM criteria for effectiveness, efficiency, and finally for sustainability. It was noticed in this section though that while some NGO participation is mandated, the large waste picking communities and their representatives are not included as potential stakeholders in this process. For reasons already discussed, this represents cause for serious criticism of the policy and we can therefore not truly say that the framework meets the ISWM principle of equity.

Chapter III of the policy, the actual substance of the Act, provides us with more material for assessing the dimensions of the ISWM framework. The policy does well in this section in meeting ISWM criteria of inclusion and participation of stakeholders, acknowledgment of all elements of the waste cycle, and the taking into account of the six aspects of local context when analyzing and planning a SWM system (Klundert, Anschutz 2001;12). The Act does call for extensive inclusion and participation of most stakeholders (again the waste picking community is left out here), and it definitely acknowledges all aspects of the waste cycle through its focus on mandatory segregation, collection, transport and environmentally safe disposal. The Act also mandates recycling and composting measures aimed at reducing the country's final disposal of waste by 25% within five years of the implementation of the Act (Sec 20, ESWMA 2000; 35). It could be said that the acknowledgment and attempt to deal with all aspects of the waste management cycle is one of the most impressive thing about this Act. To continue on with the ISWM criteria, chapter's III's section on the National Solid Waste Management Status Report does manage to account for five out of the six aspects of local context (see pages 13, 14). This is impressive but it is not clear whether or not the status report was ever even written. Furthermore, the status report does not have to

include socio-cultural aspects of the Philippine society. If it did, it would have to include the status of the large waste picking population in the country so that the framework (which is supposed to be based on the findings from the report), could include ways of dealing with the challenges the waste picking population represents.

Despite the two main criticisms enumerated, this policy is obviously the result of a great deal of work and commitment to safe environmental management. Even the overlap between the institutional bodies could be seen as an improvement over the past scenario where the absence of clear role definition and responsibility for costs between the levels of government was one of the causes for the poor state of SWM in the country (Philippines Environment Monitor, 2001, 2). From the little information that can be gained it seems as though the country has made some SWM improvements and that the goals and principles behind the ESWMA are slowly being ingrained in the country's citizens. The government will have to maintain its commitment to safe environmental management because the successful implementation of this policy is bound to take time and a great deal of effort.

It will be very important that political will is kept up in the enforcement of this Act. The government will also need to put a lot of effort into ensuring the institutional national and regional bodies created for SWM are maintained through capacity building exercises. With so many bodies being charged with information gathering, the government will need to ensure that such information is actually obtained, and that it is accurate and reliable (Philippines Environment Monitor 2001; 25). The authorities will have to keep up efforts aimed at increasing awareness of the importance of SWM, especially if they want to counter the NIMBY syndrome people have towards the siting of new sanitary landfills (Philippines Environment Monitor 2001; 24). Finally, the government will need to expand and protect coverage of the poor and underserved. This will entail acknowledging and paying attention to the waste picking communities as well as those poor communities who live and work in the vicinity of the waste disposal sites. Of course, every effort will have to be made to ensure that disposal practices are safe and not environmentally harmful (Philippines Environment Monitor 2001; 26).

As of 2001, the initial operating expenses of the ESWMA were being covered by an appropriation of 20 million pesos from the country's Organizational Adjustment Fund ($354,987.58 US—international currency converter). This money was used for the expenses of the National Ecology Center, the Commission, and for some of the LGU's (Sec. 58, ESWMA 2000; 58). While there is no available record of what fines and penalties have been levied since the implementation of the Act, nor of what international contributions have been donated to the cause, we can assume that this fund has in some way continued to grow since 2001. Or at least we can hope so because the successful implementation of the ESWMA will take a lot of hard work, dedication and money. It would be really interesting to assess how the country is doing in a few years. As for now, the political will appears to still be intact and if not anything else, the country has a very comprehensive policy on SWM, even if in practice, things are less than perfect.

The Management of Hazardous Wastes in India and the Philippines

The generation of hazardous waste, while often small in relation to overall waste generation, is slowly rising in almost all developing countries. Because of all the potential dangers associated with hazardous waste, its management is an important reflection on how committed a government is to keeping its citizens safe, particularly those working with the waste and/or living in the vicinity of disposal sites. In the section on Cambodia we dealt with hazardous waste separately and will here do the same for India and the Philippines. Both countries have specific policies for hazardous waste treatment that will be explored.

India

India has a specific policy just for the management of hazardous wastes. It also has an institutional body that operates within the Ministry of Environment and Forests called the Hazardous Substance Management (HSM) Division. The division promotes safe management of hazardous materials and carries out activities related to hazardous waste management, chemical safety and solid waste management. It is responsible for the enforcement of various handling rules including the Batteries Management and Handling Rules of 2001, the Biomedical Waste Management and Handling Rules of 1998, and the Hazardous Waste Management and Handling Rules of 2000. All three Acts refer to the management of hazardous wastes but it is the last one that is more comprehensive and hence will be looked at below. The other two acts are interesting too in that the Batteries Act makes it mandatory for consumers to return used batteries to manufactures/assemblers, and the Biomedical waste Act classifies clinical waste into ten categories for which there are different methods of disposal specified (Ministry of Environment and Forests 2004).

The Hazardous Substance Management Division is also the main contact point for international conventions to which India is a signatory. These conventions include the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Wastes and their Disposal, and the Stockholm Convention on Persistent Organic Pollutants (Ministry of Environment and Forests 2004). Division members represent the Ministry at international meetings for these conventions. The Division is also responsible for the convening of High Powered Committees, HPC's, that are gathered to discuss problems and come up with new directions on environment related issues. One such committee was convened in 1999 to deal with new legislation on fly ash, and another was set up by order of the Indian Supreme Court to deal with the issue of importing hazardous wastes into the country (Ministry of Environment and Forests 2004).

The former committee was created in response to a public interest litigation that was filed with the Supreme Court by the Research Foundation for Science, Technology, and Natural Resource Policy (New Delhi) in 1995. The Research Foundation alleged that under the guise of recycling, industrialized countries were sending hazardous wastes to India where they were being accepted and consequently disposed of without proper treatment. The Foundation argued that not only was this practice wrong in principle, but that

India was at fault for not having brought its laws and practices up to conformity with the Basel Convention which bans such imports (High Power Committee Report, HPC, 2000; Introduction). The matter was clearly taken seriously and the committee convened to examine the issue.

The Committee was made up of experts on the issues of environment and legislation and was asked to look generally at the issue of hazardous waste in India and to answer several specific questions. To go through some of the more important research questions (there were fourteen in all), the HPC was to examine to what extent the situation in India was out of touch with the requirements of the Basel Convention. It was to further verify the state of the commercial units handling the hazardous wastes that were supposedly being imported to be recycled. The HPC was also to verify the status of the 1989 Hazardous Waste Handling Rules in the States and to examine what safeguards had been put into place to ensure that hazardous wastes were not being imported into the country. Finally, the HPC was to determine, from information on the status of hazardous waste management and treatment in the country, what changes would be required in existing legislation in order to protect both workers and the general public from environmental ills generated from hazardous wastes (HPC Report 2000, Introduction). From what they found, it is evident that there are still a lot of unsolved issues around hazardous waste, and in fact, "the HPC has concluded that the hazardous wastes situation in India is fairly grim (HPC Report 2000; 4 of 9)."

While in some respects it is impressive that the Indian government has created so many waste management related acts that cover such a wide spectrum, it must be remembered that the primary method of waste disposal is still open dumping and there is little waste segregation practiced throughout the country (Visvanathan et al 2004; 34). There are about thirteen thousand producers of hazardous waste in India who generate approximately 4.4 million tons of hazardous waste per year (Visvanathan et al 2004; 34). While many producers have over the years been granted permission to temporarily store hazardous wastes on site, in many cases, this method has become permanent, and this is hardly sustainable (HPC Report 2000; 2 of 9). After going through some of the important points of the Act itself, we will look at some of the HPC's criticisms of it to get a picture of what actually goes on in the country and not just what the policies say is supposed to happen.

The Hazardous Wastes Management and Handling Rules 2000

These rules are an amendment to the 1989 version of the same Act, which is widely criticized in the HPC Report. The 2000 Act is actually quite technical and goes into some detail over the labeling system that hazardous waste packages are to have. We will go through some of the Act's important points. Some of the main additions in this Act pertain to the problems of open and mixed dumping of hazardous wastes, and the importing of wastes from abroad. In general the Act seems to take the current reality of the hazardous waste situation in India into account. Many of the new sections pertain to the storage of hazardous waste before treatment and final disposal, something that appears to be quite common. This is even reflected in the new definitions and terms. For example, in the terms section of the document, the word 'storage' has been adapted to read the "keeping of hazardous wastes for a temporary period, at the end of which the hazardous waste is treated and disposed of (Hazardous Waste Management and Handling

Rules 2000 2 of 10). The mention of final treatment and disposal is meaningful because of the problems that India has experienced with foreign sources of hazardous waste. Included in the definitions is hence also a description of what illegal trafficking means in the context of hazardous wastes. Finally, the new version of the Act also includes a definition of an environmentally sound method for the management of hazardous wastes.

The Act makes it very clear that it shall be those who operate the hazardous waste storage facilities who are responsible for the proper handling and final disposal of wastes in a manner that does not have any adverse effects on the environment. Said operators will have to ensure that storage sites are contained to prevent accidents, and that workers are provided with adequate information, training and equipment so as to ensure their safety. The operator will also have to meet certain packaging criteria for the transport of hazardous waste. Materials shall be packaged based on the composition of the waste, and in a way that is suitable to physical conditions and climatic factors (Hazardous Waste Management and Handling Rules 2000 4 of 10). Before any transportation of waste can take place though, the operator will have to obtain necessary clearance certificates from their respective State Pollution Control Board (SPCB—located in every State, operate under the Central Pollution Control Board, CPCB). The operators will also have to help the SPCB's locate possible sites for hazardous waste disposal, something that has been mandated previously and is reiterated clearly in this Act. The State government is obligated to conduct public hearings on the site selection and on the procedures necessary for successfully passing an Environmental Impact Assessment (Hazardous Waste Management and Handling Rules 2000 5 of 10).

The main substantive addition to the 1989 Act refers to the problem of the importing of hazardous wastes. While the import and export of hazardous waste is said to be strictly forbidden, section 12 of the Act describes a way one can apply to the government for permission to import a reasonable amount of waste that is to be used, processed, and disposed of in an environmentally safe manner. This section also includes information on how an applicant can export waste from India. It is very clearly stated that the transport of hazardous waste, either to or from India, will be considered illegal if permission from the Central Government has not been granted (Hazardous Waste Management and Handling Rules 2000; 8 of 10). If such illegality is found out, the materials shall be shipped back within thirty days. Those responsible for the illegal activity shall bear the storage, treatment and final disposal costs. The State Pollution Control Boards are tasked in this Act with the implementation of the new measures and with ensuring compliance (Hazardous Waste Management and Handling Rules 2000; 9 of 10).

Without getting into more specific sections of this Act, we will go through some of the criticisms of both the Act, and the general institutional make-up for environmental management in India, that are levied by the High Power Committee. The report basically contends that the government of India generally, the MOEF, and the Central and State Pollution Control Boards in particular, are not taking the issue of hazardous waste seriously enough (HPC Report 2000; 6 of 9). The Hazardous Waste Rules do not specify time limits for when the States are supposed to identify appropriate disposal sites, and they do not provide any standards, hence landfills end up being constructed that do not meet proper health and safety

requirements (HPC Report 2000; 3 of 9).

During its research conducted between 1997 and 2000, the HPC found that unauthorized imports of hazardous waste were still common and that Port authorities were unaware of what they were supposed to be regulating (HPC Report 2000; 5 of 9). In fact though, section twelve of the HW Rules of 2000 legislates that port and customs authorities shall be responsible for ensuring that the shipping documents they receive for the import of potentially hazardous waste are authentic. They are also tasked with ensuring that the wastes are accompanied by a valid test report from an accredited laboratory. This is in addition to the proof of permission that importers should have received ten days before the arrival of materials into the country (Hazardous Waste Management and Handling Rules 2000; 7 of 10). From what the HPC Report is saying though, it does not appear as if any of this verification is taking place.

Some of the problems with hazardous waste management could stem from the fact that only four officers from the MOEF are responsible for overseeing the implementation of the HW Rules. This lack of capacity is not an uncommon scenario in developing countries, but it is one that must be dealt with. The HPC Report recommends that the management of hazardous waste in the country be handed over to the Central Pollution Control Boards because the present system of having the State Pollution Control Boards manage with little institutional support is clearly not working (HPC Report 2000; 6 of 9). Instead of an effort to move towards systems of cleaner production, India currently faces the risk of a shift to dirty industries and technologies (HPC Report 2000; Introduction). Despite its institutional bodies and various environmental policies, India still lacks a meaningful control system and in the face of growing amounts of hazardous waste, this is a very scary thing.

The Philippines

Over the past several decades of rapid industrialization, the Philippines's hazardous waste generation has increased quickly. All hazardous waste generators are supposed to be registered with the Ministry of Environment, but as of 2001 only a small percentage of the approximately three thousand waste generators had registered (Philippine Environment Monitor 2001; 14). Together, these industries produce 278,389 tons of hazardous waste per year while the medical establishments produce about 6,750 tons of clinical waste per year (Philippine Environment Monitor 2001; 14). A lot of the hazardous and clinical waste has traditionally been incinerated, but the Clean Air Act of 1999 has prohibited this and things are going to have to change. There are no landfills in operation that are specifically for hazardous waste, but a lot of the waste is treated off site and then transported to dump sites where it is mixed in with municipal non-hazardous waste. Some hazardous waste sources store their wastes on site but this is obviously not sustainable. The Ecological Solid Waste Management Act of 2000 has mandated the designation of separate landfills for household and industrial hazardous waste (ESWMA 2000; 43). The status of that section of the Act is not known.

The Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990

This Act was written to reinforce the Philippine government's strong commitment to regulate, restrict and even prohibit the movement of chemical substances and mixtures that present an unreasonable

threat to public health or to the environment. The Act covers all types of movement of hazardous and nuclear waste including the importation, manufacture, processing, handling, storage, transport (including in transit from another country), sale, distribution, use and final disposal of all unregulated chemical substances and mixtures (Control Act 1990; 2 of 16). The beginning of the Act defines relevant terms and then goes on to mandate the responsibilities of different bodies for the control and management of hazardous substances.

The main objectives of the Act are:

a) To keep an inventory of all chemicals that are used, imported or manufactured in the country, including a list of all names of firms that are using or manufacturing them.
b) To monitor and regulate all types of movement of such wastes to ensure they don't present unreasonable risks to public health and the environment.
c) To prevent the entry of such wastes into the country for keeping or disposal.
d) To inform the public of the hazards and risks associated with such wastes.

The Act defines hazardous substances as those that present either short or long-term chemically generated hazards. Short-term hazards are those of acute toxicity through ingestion, inhalation or skin absorption. Such substances would also be corrosive through skin or eye contact and would be at risk for fire or explosion. Long-term environmental hazards include chronic toxicity, carcinogenicity, resistance of substance to detoxification and the potential to irreversibly pollute underground or surface waters (Control Act 1990; 5 of 16). Because the Act also refers to the treatment and disposal of nuclear waste (an issue which Cambodia very fortunately does not have to deal with), some of the definitions and many of the measures of control do not apply to the types of hazardous wastes found in the other study countries. We will therefore look generally at the responsibilities of the Department of Environment and Natural Resources, DENR, while keeping in mind that some of the tasks listed refer to the special circumstances represented by nuclear materials and wastes.

The DENR is tasked with the implementation of this Act and with several other functions, powers and responsibilities. Most importantly, the DENR is to keep abreast of all chemicals being manufactured or used in the country to ensure that they are being processed and disposed of safely. The DENR is to require the testing of all chemical substances and mixtures and to evaluate the characteristics found in the tests. They are further to encourage research and development into safe and useful chemicals and mixtures, and to conduct spot inspections of establishments wherein such chemicals are manufactured, stored, processed, or held before commercial distribution. The DENR is also the body that will confiscate those materials found to not fall within the standards of rules and regulations set by the government (unclear where these standards appear). Finally, the DENR is charged with monitoring and preventing the entry of all hazardous and nuclear wastes into the country for disposal, and for disseminating information and educational materials to the public on the effects of chemical materials and how to safely handle them (Control Act 1990; 7 of 16).

The Act mandates that it will be the manufacturers, processors and importers of chemical substances who will be responsible for the costs of safety tests. It mandates generally that all chemicals will be tested if there is reason to believe that they might cause unreasonable risk to human health and the environment. This includes all of those chemicals upon which there is insufficient date for the DENR to determine their risk levels and those chemical mixtures that present potential new risks. The Act has ensured that chemical processors will have to keep track of a great deal of information on the potentially hazardous materials they plan on manufacturing, using or importing. Before any new chemical can be approved by the DENR, it has to undergo a series of tests, and the manufacturer, processor or importer has to provide information on the chemical's name, its chemical identity and molecular structure, proposed category of use, and any other pertinent information (Control Act 1990; 9 of 16). It will be up to the Secretary of the DENR, or someone duly appointed, to determine within ninety days of testing whether or not the chemical should be further regulated or prohibited altogether.

The fact that this Act was written in 1990 makes it all the more impressive because hazardous waste was not the same issue then as it is now. Rates of hazardous wastes are rising and overwhelming many countries' current methods of dealing with them. The drafters of this Act seem to have anticipated that and have really put some interesting measures into place in an attempt to control the negative effects that hazardous wastes can have on human health and the environment. Again, similarly to the ESWMA 2000, this Act calls for the establishment of a unique institutional make-up for controlling hazardous waste. The Inter-Agency Technical Advisory Council for example was created under the DENR for a variety of important tasks. The Council is chiefly responsible for formulating a set of rules and regulations for the implementation of this Act. The Council is to further assist the DENR in collecting pertinent information and updating the hazardous waste inventory. The Council is to be participatory and inclusive, made up of several representatives including the Secretary of Health, the Secretary of Trade and Industry, the Director of the Philippine Nuclear Research Institute, Secretary of Foreign Affairs, the Secretary of Agriculture, the Secretary of Labor and Employment, the Secretary of Finance, and finally, the Secretary of Science and Technology. The Council is also to include a representative from a NGO related to health and safety (Control Act 1990; 8 of 16).

Issues relating to hazardous and nuclear waste are serious and have the potential to be kept secret from the public and dealt with behind closed government doors. It is important therefore to note that the Act mandates both the inclusion of relevant NGO representation on the Council, as well as the public access to records, reports and other information concerning chemical substances and mixtures. The public is to have access to information on safety data submitted, tests conducted, and data on emissions or discharges into the environment (Control Act 1990; 11 of 16). The DENR does reserve the right to refuse access to some documents when to do otherwise would be to divulge trade secrets, production or sales figures or other business-related information.

While being open with the public, the DENR expects the cooperation of the Filipino citizenry and will ensure that unlawful acts are punished. Some such acts include using a chemical substance or mixture while

knowing that its manufacture or import violate the Act or its implementing rules and regulations, and failure to comply with the Act by refusing to test chemicals and submit necessary reports and information. The most serious offence is when someone aids or facilitates the importation and storage of hazardous or nuclear wastes into the Philippines. This last offence carries a jail sentence of between twelve and twenty years and a hefty fine if the perpetrator is a corporation. The other offenses also carry penalties and in some cases, prison time. The fines collected for basic administrative errors having to do with compliance with this Act, will be used to fund projects and research activities related to toxic substances and mixtures (Control Act 1990; 14 of 16).

The DENR was supposed to publish implementing rules and regulations for the Act within six months of its initial passing. Money was appropriated for this job and included in the DENR's budget. It is unclear from government websites whether these rules were ever published, but from what can be seen, the issue of hazardous waste is taken seriously in the new ESWMA. As in the case of that Act's implementation, the status of hazardous waste treatment is relatively unknown at this point.

Hazardous waste is a dangerous thing, the mismanagement of which can have very negative consequences. Both countries looked at appear to be taking the matter seriously enough (despite HPC claims otherwise in the case of India) and yet both are obviously still struggling. Although the act of doing so is morally reprehensible it is not uncommon for industrialized countries to dump their dangerous wastes on developing countries in the hopes of cleaning up their own environments (HPC Report 2000; 4 of 9). This is a really scary thing and governments need to be aware of the potential risks such transactions entail for both human and environmental health. There is also an important need in all of the study countries looked at in this report to shift emphasis away from end-of-pipe solutions to pollution such as landfilling, towards waste minimization and cleaner technologies. Like any environmental issue, there is a real need for appropriate institutional mechanisms to be in place that involve all stakeholders and will give these issues the technical, financial and scientific attention they need (HPC Report 2000; Introduction).

Sri Lanka

The management of solid waste has become a critical environmental concern in Sri Lanka. Because of the country's unique political situation, the recent introduction of more liberal, industrial and expansive growth policies over the last two decades have rapidly sped up the pace of urbanization and have had the consequent deleterious affects on the environment (United Nations Environment Project, UNEP—State of the Environment—Sri Lanka 2001). The urban areas of the country, particularly the over-populated Western province (Colombo), are often littered with garbage that is dumped into open sites and convenient bodies of water (Sri Lanka is an Island). The Central Environment Authority, CEA, oversees the state of the environment in the country with the majority of environmental management being delegated to the Local Government Authorities, LA's (UNEP-State of the Environment-Sri Lanka 2001; 9).

LA's are responsible for SWM in their jurisdictions with most duties going to the Public Health Departments under the supervision of Public Health Inspectors (Visvanathan 2004; 38). Because the Public Health Department and its Inspectors are responsible for many other aspects of public health and sanitation

aside from SWM, it consequently is not afforded adequate priority (UNEP—State of the Environment—Sri Lanka 2001; 2).The Public Health Department does a poor job of informing the public on their duties as citizens towards SWM and there is weak enforcement of existing by-laws. Because of weak enforcement and disorganization, decision-makers have very little accurate information on how much waste is actually collected in relation to how much is generated (Finnigan 2003; 3 of 4). Decision-makers are also unaware of actual costs for SWM because expenditures are often buried in LA accounting systems and disposal tonnages, administration, collection, transport and disposal costs are relatively unknown (Finnigan 2003; 4 of 4). As already discussed in this paper, the lack of accurate information on a country's SWM scenario makes proper planning very difficult if not impossible.

SWM: Current Status

Unlike some of the other countries looked at in this report, the SWM related problems in Sri Lanka have taken longer to become evident due to the fact that up to 72% of the population live in rural communities wherein the management of solid waste is undertaken by individuals or at the community level, and tends not to overburden the local environment's carrying capacity (Finnigan 2003; 2 of 4). This could explain why there isn't that much information on the SWM situation available, as well as why there is very little policy. Solid waste throughout the entire island is still predominantly organic in nature, but like most developing countries, the waste stream is changing. Non –organic material and commercial waste is increasing, and the amount of hazardous waste generated, while small in compassion to overall waste generation, is rising, and threatening to overwhelm current methods of management. Currently, hazardous industrial waste, if not mixed in and dumped openly with the rest of the municipal waste, is stored on site without an adequate form of management (UNEP—Sri Lanka 2001; 1). Obviously, this situation is not sustainable. In 1996,

hazardous waste, excluding medical waste, was estimated at 40,617 tonnes (UNEP—Sri Lanka 2001). As industrialization continues to speed ahead, this number will continue to grow rapidly. The hazardous waste generation rate for 2010 is estimated (conservatively) at 80, 420 tones (UNEP—Sri Lanka 2001; 1).

In contrast to the rural areas where SWM remains under control of local populations, the urban areas are becoming increasingly polluted. Sri Lanka is one of the most densely populated countries in Asia, and as urbanization increases, the government's control over pollution becomes more and more constrained (Finnigan, 2003; 1 of 4). Communities and concerned NGO's have exerted increasingly forceful pressure on the LA's to properly manage solid waste. The LA's however do no appear to have the capacity to meet their demands. LA's are responsible for collection, disposal and treatment of municipal waste (including market waste), hospital waste, industrial waste, slaughter-house waste, drain clearings and street sweepings (UNEP—State of the Environment—Sri Lanka 2001 1). The LA's collect about 2,500 tones of waste per day, with the waste generated in Colombo amounting to 57% of all that is collected (see country chart for more information on Sri Lanka on population, amount of waste generated, collection rates, disposal methods and processing methods).

Although local communities apply pressure to the LA's to improve on SWM, citizens also express

a strong feeling of NIMBY, Not In My Back Yard, towards the siting of landfills. Efforts to improve on SWM though, aside from emphasizing reduction and recycling, would have to include the acquirement of new land for landfill sites and eventually gain public support for sanitary landfilling (Finnigan 2003; 3 of 4). Securing proper disposal of solid waste is one of the most pressing challenges facing the country. Like many other developing countries, final disposal of waste is not afforded priority in community expenditures. Particularly in Sri Lanka where waste is often indiscriminately dumped, authorities have little concern for environmental safe-guards and landfill requirements. Most of the sites operating in the urban areas only have the capacity to receive waste for about six months until they are just too full (Finnigan 2003; 4 of 4). In the absence of available sites, haphazard dumping along streets, marshes and abandoned paddy fields goes unpunished by relevant LA's who, due to lack of capacity and financial resources, are unable to identify alternative options and hence enforce them (Finnigan 2003; 3 of 4).

Many LA's spend as much as 80% of their SWM budget on collection and transport, with the remainder going to salaries, machinery costs etc (UNEP-Sri Lanka 2001; 10). Because the LA's have such a small municipal budget, this spending pattern is unlikely to change unless proper disposal becomes a priority. LA budgets are made up of revenues from only the collection of property rates and taxes. Local Government Ordinances prohibit the collection of fees for any service rendered related to SWM (Finnigan 2003; 3 of 4). If SWM were afforded a higher priority, this would of course have to change and a user fee schedule would have to be implemented. Proper waste disposal is such a basic requirement for sustainable SWM that if such facilities are not built then regulations pertaining to SWM cannot be enforced and any objectives of new legislation cannot be accomplished (UNEP-State of the Environment-Sri Lanka 2001; 9).

Health and Safety Issues

There is no uniformity among SWM practices of the different LA's. The collection of waste that does take place within the LA's is meager and segregation and sorting are very rare. Hence the waste arriving at the open dump-sites is a mixture of municipal, hazardous industrial and medical. A few metropolitan hospitals are equipped with incinerators in which they burn all clinical waste. Other hospitals bury body tissues and remains from amputations on hospital grounds, and sell valuable wastes, such as placenta, to private vendors (UNEP-State of the Environment-Sri Lanka 2001; 4). The majority of medical waste ends up at open sites where it is picked over by waste pickers looking for valuable recyclables (1996, over 95% of medical waste generated in Colombo was dumped at open sites with no pre-treatment—UNEP 2001; 4). Like most developing countries, materials that can be recycled usually are. The country has an active and large waste picking population of about 10,000 people (Visvanathan 2004; 44). The recovery of resources in Sri Lanka is especially important, not only for an integrated SWM system, but also because the island has very limited natural resources.

Waste pickers in Sri Lanka are very well-organized. Scavengers recover materials at every point in the waste stream from the household level, to collection and transport and final disposal. The scavenging community visits up to 80% of all households in Colombo looking for recyclable materials (Finnigan 2001; 3 of 4). Scavengers sell their material to garbage collectors who then sell the materials to a broad range of

interested parties (Visvanathan 2004; 44). Like all countries with similar SWM scenarios, it is the scavengers who actually sort through the waste at the open dumps who are exposed to the worst of the health and safety risks combing through waste comprised of clinical material, fecal matter and hazardous wastes (Visvanathan 2004; 59). If the government wants the country to have a successful recycling program it will have to formalize the activities of the informal sector so that workers are protected and health, environment and economic benefits are maximized (Visvanathan 2004; 75).

The National Strategy for Solid Waste Management, NSSWM

The government has in recent years acknowledged the need for the adoption of an integrated approach to SWM. The Ministry of Forests and Environment, MOFE, developed a National Strategy for Solid Waste Management in 2000. That policy is still in the implementation phases today and it is very hard to find information on whether or not its initial implementation has been successful. We will evaluate the policy according to the Integrated Sustainable SWM framework that we have been using for the other countries. An ISWM framework is based on the four principles of equity, effectiveness, efficiency and sustainability. For the other countries, we have evaluated these principles by seeing how inclusive the policies are, and whether or not they take account of all stakeholders, including the waste picking communities. ISWM further takes account of six important contextual factors, which are, technical, environmental, social, economic, financial, institutional and political (Klundert, Anschutz 2001;11).

In the other country sections we have also looked at the system of decentralization of authority in place, and how involved the private sector is to be. It should be noted that even if a policy has all of the ISWM aspects on paper, this does not necessarily mean that its implementation is to be successful or that it will magically solve the relevant country's SWM problems. Integrating these aspects though is a good start and shows that policy drafters and decision makers are attempting to create a sustainable approach that is both environmentally sound and appropriate to human health and social needs.

The National Solid Waste Management Strategy 2000

It is claimed in the NSSWM Act that there are already adequate provisions for SWM contained in the Local Government Ordinances, but that the new Act is to strengthen them and contribute the concept of integrated waste management to them. It is the Local Government Ordinances that mandate the LA's to collect all street refuse, house refuse and night-soil (NSSWM 2000; 18). SWM is also mentioned in the National Environment Act, NEA, wherein it is specified that the Central Environmental Authority can at any time give the LA's special directions for safeguarding the environment, regardless of whether such directions are a part of a legislated act. The NEA specifies further that no person shall discharge, deposit or emit any polluting waste into the environment without a permit and only then in accordance with the standards and criteria set out in the NEA (NSSWM 2000; 18). Given the state of SWM in Sri Lanka, it is questionable whether the policies in place were really adequate. The hope is that the new policy will do

better.

The new Act was written in 2000 in response to worsening environmental conditions in Sri Lanka. The document actually begins its introductory section by noting this and argues that while the generation of waste is somewhat inevitable, national policies should be aimed at reducing the amount of waste generated through education and awareness on SWM (NSSWM 2000; 12). The rest of the policy's introduction describes what solid waste is, what its health and environmental implications are, and how a solid waste management strategy could help the situation.

The Act is not very long but it does cover an impressive amount of information. It is clear that policy writers had the ideas of ISWM in mind when drafting the policy and that they made an effort not to leave anything out. This is at least the impression one gets from reading the table of contents which includes everything from the sorting of waste at source, to the necessity for education and awareness programs and the creation of a institutional mechanism for monitoring national SWM (NSSWM 2000; 9). Beyond the table of contents though this Act is a bit strange in that part of it is just a description of what an appropriate SWM system should look like, while other parts of it actually make prescriptions for change. For example, under the first and second sections on strategy, descriptions of recycling, reuse and composting are all given along with the fact that these practices *should* be adopted in Sri Lanka.

The problems associated with open dumps are also discussed in sections three and four, along with the advice that the present haphazard dumping of waste, common in Sri Lanka, *should* be prohibited by the Central Environment Authority and that the design of sanitary landfills *should* be encouraged (NSSWM 2000; 15). This leaves one wondering what the point of a national policy is if it is just going to advise what should be done without providing any specifications or guidelines on how things *can* be done. The only real direction given in this section is when it is written that potential landfill sites shall be identified on a countrywide basis. No further specifications are given, but it is written later on in the Act in section eight on legislation, that all potential landfill sites need to obtain necessary clearance from the government before being built. It is further specified that current regulations *should* be changed so that all municipal disposal sites have to undergo Environmental Impact Assessments and be required to obtain environmental protection licenses in order to operate (NSSWM 2000; 19). Apparently, the Central Environmental Authority is supposed to have come up with guidelines for the Act's implementation, but these do not appear to have been written. Without them though, one is left with the feeling throughout that this policy is really an unfinished piece of work.

Continuing on in the policy, section five, the suitability of incineration in Sri Lanka, is discussed with the order that more emphasis should be placed on waste minimization practices for clinical and hazardous waste so that they need not be incinerated. It is mentioned that these are the only wastes incinerated at present because all other wastes are inappropriate for incineration (NSSWM 2000; 15). This is actually quite common in all of the countries looked at in this paper due to the high moisture content of municipal waste and its low calorific value, making it unsuitable for incineration. The idea behind this section seems to be that once segregation practices are increased, clinical wastes can be neutralized and/or

disinfected so as to facilitate low cost disposal. The remaining waste, following segregation, recycling and neutralization, can be utilized for the generation of electric and thermal energy. The policy also suggests the production of bio- gas from the non-compostable organic waste left for the landfill (NSSWM 2000; 16). These are all good ideas but the policy gives no indication on how they will be carried out, or what neutralization and disinfection will entail. These ideas of course depend on the proper segregation at source of waste materials.

Section six of the policy calls for the encouragement of segregation through education and awareness programs. It also calls for the development of appropriate infrastructure facilities for sorting and recycling so that both formal and informal waste collection systems can be further developed. This is the only mention in the policy on Sri Lanka's informal recycling network. In section seven of the policy an effort is made to bring the above mentioned ideas together in an Integrated Solid Waste Management Strategy that, through the combination of the efforts of several LA's will have a joint focus on reduction, reuse, recycling and final disposal in an environmentally safe and sound manner (NSSWM 2000; 17). The strategy would also aim to keep the hazardous content of waste at a low level and would "guarantee environmentally sound residual waste treatment and disposal as basic prerequisites for human existence (NSSWM 2000; 17)."

Section eight of the policy is on legislation which has already been discussed above. Section nine discusses incentives and law enforcement wherein it is written that the LA's should be given financial and technical assistance from the central government and the Ministry of Environment. In order to ensure compliance with the NSSWM, law enforcement should be coupled with such incentives. Section ten encourages continued research and development on SWM related issues. Section eleven is slightly more interesting in that it discusses private sector partnerships as an essential component of a successful SWM approach. This section argues that recycling and composting industries should be encouraged to further develop and participate in the creation of infrastructure for the collection, storage, processing and recycling of recyclable and compostable materials. Farmers are also encouraged to help develop the compost market by using it as a fertilizer and solid conditioner (NSSWM 2000; 19). Again this section gives the impression of leading up to something more when it is written that new policies should be written so as to encourage the private sector to get involved in recycling and to consider waste as a resource. One wonders when these policies are going to appear though.

Section twelve of the act is interesting in that it speaks to the need for community participation and involvement in SWM. This is an important section because the Sri Lankan public has displayed a strong degree of Not In My Backyard—NYMBY towards the siting of landfills. If the SWM scenario is going to change for the better, the public's attitude would have to change and the citizenry would have to be encouraged to embrace the principles of integrated waste management. The best way of changing the public's perceptions and attitudes is through education and inclusion. The NSSWM appears to acknowledge this and holds that the reducing, segregating, reusing and recycling of solid waste cannot happen without the active participation of relevant communities (NSSWM 2000; 20). The NSSWM also

speaks to community involvement in decision-making and creation of SWM strategies. This is impressive because as has been discussed in this paper at length, including relevant communities in decision-making is absolutely crucial for the sustainability of integrated solid waste management.

Section thirteen of the Act discusses the role the central government shall play in taking initiative to establish proper waste collection and transportation systems. The idea here is that the government would cover the initial costs of environmentally sound SWM until the private sector could become adequately involved. Here again we have an idea of what should be done in that it is written that national policies *should* be developed for the implementation of the NSSWM, and that these policies would provide greater detail on regulatory arrangements and the roles that different bodies are expected to play. The next section of the policy reiterates the fact that SWM will have to be a country wide effort, by stating that the LA's cannot be expected to cover SWM alone, so multisector partnerships will be encouraged involving government, the general public, private sector and various community groups (NSSWM 2000; 21). Included in this development of partnerships is the idea that education and awareness campaigns are going to be a big part of the SWM system in the country.

Finally, and very importantly, section fifteen of the policy discusses the creation of a suitable institutional arrangement to act as a coordinating mechanism at the national, provincial and local authority levels. The National Coordinating Committee shall be made up of representatives from all three levels of government, members of the private sector, the industry chambers and the community groups at the national, provincial, and local authority levels. The National Coordinating Committee shall oversee the drafting of guidelines for the NSSWM, to be written by the Central Environmental Authority (NSSWM 2000; 21). The provincial and local authorities will be charged with creating time-bound action plans detailing the implementation schedule for the NSSWM. This is an important aspect of the policy because it shows an attempt has been made to bring it all together under the supervision of one responsible body.

NSSWM Evaluation

This Act is difficult to evaluate because there is just not that much too it in terms of the aspects we usually look for in policy analysis. In terms of decentralization of authority, the Act has the right idea in that it holds LA's accountable for SWM in their jurisdictions but sets up some institutional measures in order to support them. Furthermore, private sector involvement and participation seems to be encouraged throughout, but one does not come away with a real sense of what incentives are going to be used or how the private sector involvement is really going to play out. With regard to the principles on which ISWM is based, this too is really hard to evaluate. The Act does call for community and NGO participation, but these parts are so brief that it is difficult to tell how involved stakeholders will really be. It almost seems as though some of the sections were included for good measure, but without real attention to how they would be put into effect. The policy seems to have some of the right ideas to make it sustainable, equitable, efficient and efficient, but for lack of more information, this simply cannot be judged.

The NSSWM does include several aspects of ISWM but it is generally a strange act and it is hard to get past the impression that it was left unfinished.

Certain parts of the Act display a real commitment to safe environmental management, and hence it does in some ways take the environmental context into account. At the same time though, many other issues of context are ignored or just glossed-over. The technical aspect is not accounted for at all, and the socio-cultural aspect only briefly through the mention of community participation. Like the Philippine's policy though, this Act does not acknowledge the social context of the large waste picking population and hence does not include measures on how to meet this challenge. The Act briefly discusses financial and economic aspects, leaves out political aspects entirely but does speak to the importance of a solid institutional set-up for the successful implementation of the NSSWM.

On the whole though, context does not seem to have been an important factor for policy makers. The hazardous waste situation for example is dealt with very superficially with only the suggestion that private industries should be encouraged to use materials that produce less hazardous waste. The Act does not provide any real details on the hazardous waste situation or viable options for decreasing its generation. The reality though is that it exists and its generation is *rising* (UNEP—Sri Lanka 2001; 1). The Act does not meet this challenge at all, and even its more detailed discussion of clinical waste is still shallow and does not provide a real solution or prescription for change. By not dealing with these issues or with the waste-picking situation in the country, the Act might take some aspects of context into account, but it fails in incorporating reality into its planning process. One of its most emphasized points is the importance of recycling, but by not formalizing or even acknowledging the waste picking community, the government cannot expect to have a successful recycling program. Instead of taking the unique challenges that Sri Lanka faces seriously, policy makers seem to have written an Act that includes some important concepts, but does not have much context-relevant substance.

Conclusion

This report has looked at the Solid Waste Management Situation in the developing countries of Asia, taking general trends and developments into account. We have seen that one of the most common problems the countries face is an overlap of administrative and enforcement duties at the national, regional and local level. There are also institutional deficiencies, inadequate legal provisions and general resource constraints (UNEP 2004). Almost all of the countries use inadequate methods of waste collection and practice unsafe final disposal. Governments have to deal with all of this in the face of growing urban populations coupled with increases in pollution and negative health affects caused from growth in waste generation. Predictably, this is a lot to handle and concerned governments, policy-makers, NGO's, CBO's, and citizens in general face a series of tough challenges before the SWM situation can be improved. Cambodia is certainly not alone in having to face a difficult SWM scenario.

This report has also looked specifically at the SWM situations in India, The Philippines, and Sri Lanka, in an attempt to gain insight through comparative analysis. The intention behind the report is to provide the Cambodian MOE with a wide range of information that will hopefully be of use to them in

drafting a new and successful SWM policy. As we have seen though throughout the report, what might look good on paper, may not always look the same way in reality. This is not to say that the information on the study countries will not be useful to the Cambodian MOE, only that it must be kept in mind that without political will and resources, both financial and otherwise, even a well written policy cannot be successfully implemented. We will now briefly review the major discussions of the report before getting into the lessons learned from the country policies.

Good Governance and Integrated Solid Waste Management

In the first part of the report we discussed the concept of urban governance and its relation to SWM. This relation is important because a government's method of service provision can be seen as a reflection of its commitment to good governance. Good governance is based on principles of equality and inclusivity. It is a focus on the relationship between a government and its citizens and the space allowed for public participation in decision-making. Good governance is a dynamic and changing process. It can be seen in a government's commitment to making life better for the country and its citizens. Keeping this concept in mind, we looked next to the actual situation in Cambodia in order to identify areas that needed improvements. Cambodia currently lacks a fully articulated national policy on SWM. There are certain pieces of policy that have been written but there is a need for an integrated approach to be taken to the issue in order to bring everything together. The SWM scenario in Cambodia shares many characteristics with the other countries. Most importantly, the SWM systems of all the countries looked at are under enormous financial and institutional stress. While in the past many developing countries have tended to adopt the SWM strategies of Western countries, is it clear that there needs to be a shift in thinking towards a different approach.

This paper has hence operated on the assumption that an Integrated Sustainable Waste Management Framework, ISWM, is the best approach that governments in developing countries can use to formulate and implement their national SWM strategies. The concept of ISWM can help a country move towards a system of good governance, at least in terms of how sanitation services function. Moreover, the public space created by the adoption of ISWM allows those who are most negatively affected by inadequate SWM to actually participate in the decision-making process. As has been seen in the policy evaluations, some of the countries already have integrated aspects of ISWM into their policy frameworks. We have evaluated the country policies according to this framework and have operated on the assumption that the closer a country gets to implementing an ISWM policy, the more successful it will be in meeting its waste challenges. Below is a list of some of the commonalities the study countries share.

a. All of the countries delegate responsibility for SWM to the local authorities with varying amounts of support. Some of the countries therefore face issues of local compliance with national policy implementation.
b. All of the countries face financial and institutional constraints with regards to SW disposal and the open dumping of unsorted waste remains the most common form of disposal in the developing countries of Asia (Zurbrugg 2002; 9.).

c. All of the countries are struggling to deal with the growing generation of hazardous and medical waste and the challenges presented in managing it appropriately.
d. None of the policy measures meant to deal with hazardous and clinical wastes and their disposal are adequate for dealing with the magnitude of the problem.
e. All of the countries have significant pockets of waste pickers who make-up the informal recycling sectors, the efforts of whom account for the majority of recycling going on in the countries.
f. None of the countries have properly addressed the challenges presented by the waste picking populations and hence strategies to formalize their work and reap the benefits of a proper, functioning recycling network have not been realized.
g. All of the countries continue to struggle to meet the level of involvement and cooperation from the private sector needed for successful SWM.
h. SWM in all of the countries looked at remains a general collection of ad hoc effort that have yet to be streamlined into one functioning, centrally mandated system.

The Study Countries

The governments of India, The Philippines and Sri Lanka have in recent years all stressed the importance of the environment and adequate SWM. This can be seen in the drafting of new policies in India with the National Environment Policy 2004, in The Philippines with the Ecological Solid Waste Management Policy 2000, and in Sri Lanka with the National Strategy for Solid Waste Management 2000. This is important because as discussed before, political will needs to be strong if improvements in environmental management are to be made in these countries. This is not to say that there aren't problems with each of the policies discussed though. To remind us of what we were looking for in the analysis of the policies, we were checking to see if authority for SWM was decentralized or not. We were also looking at the degree and success of private sector involvement in SWM, and of course, we were looking to see if the ISWM framework had been at all incorporated into policy planning. We will now go through some of the important aspects of each country policy to see how such information could be of use to the Cambodian MOE.

India

Because protecting the environment is said to be the duty of every Indian citizen, the 2000 legislation on SWM is heavy on community participation in the implementation process. Unfortunately, despite the mandatory implementation schedule, by 2004, most municipalities have yet to follow through with their mandates (Visvanathan et al 2004; 62). There are however, several impressive aspects of the Municipal Solid Waste Handling Rules and of the National Environment Policy, NEP, which we will go through below. If we assume that the NEP is to be the future of environmental management in India, then the SWM situation seems a lot more hopeful. The NEP is by far the better policy document of the two. However, we cannot know the status of the NEP at this point because it has yet to be implemented. Features of both policies are listed below.

The Municipal Solid Wastes Handling Rules, positive aspects

A. Divisions of authority are very cleared explained at the start of the policy. The municipal authority is supposed to stay accountable to the state authority by submitting an annual report every June to either the secretary in charge at the State level of the Department of Urban Development, or to the District Magistrate (Municipal Solid Waste Handling Rules 2000; 1).
B. The Application process that authorities have to go through to gain permission to construct SWM related facilities is also clearly described. The application must include information on the type of technology to be used, the location, site clearance, pollution control measures and the end uses for processed waste (Municipal Solid Waste Handling Rules 2000; 21).
C. Policy includes compliance criteria and site specifications for landfill construction, including the dates certain acts are to be accomplished by.
D. Policy includes specifications on collection, mandating the end to all open burning and dumping, and specifying requirements for transport and storage.
E. Waste processing prior to final disposal is advocated.
F. Chemical standards for compost and incineration are included in the policy document.

The Municipal Solid Wastes Handling Rules, criticisms

A. Authority for SWM is decentralized but municipal bodies seem to be given very little institutional and/or financial support.
B. There is only a very brief and inadequate mention of private sector involvement.
C. Policy does not mention the importance of including all stakeholders in SWM related decision-making. There is no mention of the numerous NGO's and CBO's working on SWM related issues throughout the country, although it does say that municipal authorities should try to encourage local community participation in the segregation of waste materials.
D. Policy falls short on the six contextual aspects of ISWM, particularly the socio-cultural aspect by not addressing the issues surrounding the country's large waste-picking population. It also neglects to discuss financial arrangements for the policy's implementation. Policy relegates responsibility for technical aspects to municipalities but does not acknowledge the large costs and difficulties associated with setting up waste processing and disposal facilities. There is furthermore no mention of transport vehicles or transfer stations, but the assumption is made that waste will somehow arrive at landfill sites having already been processed.
E. Policy has only a brief mention on the importance of recycling and reuse and does not discuss the option of formalizing the informal sector.

This policy does not truly embody the ISWM framework that we are looking for. In not taking current social realities and contextual factors into account, we cannot say that the policy entails the principles of equity, effectiveness, efficiency and sustainability. This policy also does not speak to the importance of good governance. One of the most central tenets of good governance is the government's encouragement of public participation and inclusion of all stakeholders in decision-making. We do not see this in the policy, nor do we see an emphasis on public education and awareness raising; two essential requirements if the

citizenry is to get involved. The Cambodian MOE might find this policy useful for the standards that are provided for composting, ambient air and water quality. The landfill specifications might also be helpful. Generally, though, this policy is unlikely to be very successful in the long-term and hence not one the MOE should be aiming to emulate.

The NEP 2004

A. Meant to review all regulatory reforms and legislations at the Central, State and Local government level.
B. Is supposed to be a call to action to all agencies and civic bodies involved in environmental management and infuse a sense of commonality into various environmental sectors such as pollution control, waste and water resource management.
C. Strong emphasis on the importance of decentralization, as well as increased public and community-based participation in environmental decision-making.
D. Very focused on integrating India's environmental agenda into development and economic policies.
E. Very focused on ensuring the well being of the poor and on formally recognizing the informal waste recyclers (NEP 2004; 11).
F. The NEP pushes for substantive and process based environmental reforms and for the development of a *feasible and equitable* model of public/private partnership.

The really impressive aspect of the NEP is that it is supposed to play an important streamlining function for India's environmental agenda. The fact that it was written so recently and that it emphasizes the integration of environmental concerns into development and economic policies is important because it shows a real government commitment to taking the environment seriously and not treating it as a side issue. Because we don't know the end results of the NEP it is difficult to speak more about it, but generally, an overarching policy, aimed at integrating environmental concerns into overall government planning, is very positive thing.

The NEP also calls for the review of all existing legislation, which is important because many developing countries maintain outdated environmental legislations. A review of such legislations could be a very useful thing and it would help a government to identify priority issues and discern whether or not the policies aimed at dealing with them were appropriate or not. The NEP also calls for a greater degree of equity and community participation in environmental decision-making and general management. This is certainly something all of our study countries should be aiming to achieve. The Cambodian MOE can certainly learn from this policy.

The Philippines

The ESWMA is a well-written policy that sets some very high standards for SWM in the Philippines. Included in this report is some information on the current reality of the policy's implementation to help us keep in mind the fact that what looks good on paper does not always translate well in real life. The ESWMA does take a very integrated approach to SWM with its main goals pertaining generally to the status of generation, segregation and collection of solid waste, recycling and composting, and safe final disposal. The Act also emphasizes the importance of collecting information on solid waste situations throughout the country before planning and decision-making. The Act is made up of eight chapters that pertain respectively to main goals and definitions, institutional mechanisms, details of comprehensive solid waste management from segregation to final disposal, financing for SWM, incentives, penal provisions, and finally a chapter on miscellaneous provisions. Below are some of the more important and interesting features of the Act.

A. The Act sets out a very clear division of responsibility, the most impressive aspect of which is the creation of the **National Solid Waste Management Commission, NSWMC**
B. The **NSWMC** is to basically oversee all aspects of SWM in the country and monitor all levels of political authority. The NSWMC has a wide range of responsibilities that are detailed throughout the entire Act.
C. Responsibility for SWM is decentralized with a clear mandate for higher levels of authority to provide institutional and financial support to lower levels of government, from the national government down to the LGU and barangay levels.
D. There are SWM Boards, modeled after the NSWMC at the Provincial and the City/Municipal levels with their own roles and responsibilities clearly mandated by the Act.
E. Every institutional body is mandated to be as inclusive in their membership as possible.
F. First order of business is the drafting of the **National Solid Waste Management Report,** which is to take account of pertinent contextual factors of the Filipino SWM scenario. Report drafters are to gather information on five out of the six ISWM factors, including the technical, environmental, the financial and economic, the institutional and the political factors. What the Report does not account for is the socio-cultural, leaving out entirely the existence of the large waste-picking community and their recycling efforts.
G. General framework for SWM is laid out in some detail in the Act and includes mention of the roles of the LGU's in segregation, collection, transfer, storage, processing and the final, environmentally safe disposal of solid waste.
H. The Act mandates specific methods and guidelines for managing all aspects of the waste cycle.
I. Act calls for mandatory solid waste segregation and mandates each LGU to come up with an implementation schedule that includes plans for processing, recycling and composting.
J. Very clear diversion rates and goals are specified in the Act.
K. Very specific criteria for the establishment of sanitary landfills are mandated.
L. The Act includes two entire sections on the specifics of private sector involvement and the incentives schemes that are to be set up by every level of government for encouraging citizen and

private sector compliance with the Act.

M. The Policy includes a detailed list of penal provisions that are to come into affect with the passing of the Act.

N. The Policy details a selection of very clear measures for financing the Act including the creation of a national SWM fund.

This Act is impressive in many ways, but what is most striking about it are the efforts that have been made to make it sustainable. Accounting for financial and institutional support for the Act's implementation is one important example. This is not always found in SWM policies but its importance cannot be overstated.

Criticisms

A. Research done on the current status of the Report and the Act's implementation shows that not a lot of progress has been made in terms of the Act's successful implementation.
B. SWM efforts remain driven by the non-government sector and the large informal sector.
C. There is a lot of overlap in the policy that can lead to inaction wherein different authorities are charged with similar tasks. The worry here is that in the end nothing will get done because individuals might assume less urgency in completing tasks that have also been assigned to another.
D. ESWMA does not at all confront the challenges inherent in having such a large and active informal recycling sector, even though the new policy has had some adverse effects on this community of people.

Although this Act looks perfect on paper, it is really hard to recommend that Cambodian policy-makers should aim to emulate it because we have no idea whether or not the success of the policy is even feasible. Certain aspects of it are definitely worth thinking about and trying to adapt to the Cambodian context though. Such aspects include the fact that the roles of government are so clearly defined, a cost sharing formula is clearly identified, and no level of authority is charged with completing a task without the support of their immediate supervisory body. Furthermore, all levels of government are basically accountable to one another, and average citizens have the ability to exert some sort of influence though the use of citizens' suits (chapter eight). The policy is also somewhat overambitious, but at the same time it does fit most of criteria of an ISWM framework. The policy certainly takes all aspects of the waste cycle into consideration and it is clear that efforts have been made to include stakeholders on the SWM Boards. The Act also mandates recycling and composting measures aimed at reducing the country's final disposal of waste by 25% within five years of the implementation of the Act (Sec 20, ESWMA 2000; 35).

Furthermore, in terms of ISWM's six contextual aspects, aside from ignoring the large socio-cultural factor of the waste-picking population, the Act mandates the gathering of information on most contextual factors and it calls for a realistic time frame and financial cost-sharing formula between the different levels of government. In this sense, the Act is likely to be sustainable. Again, the one principle it is lacking somewhat is that of equity because of how it ignores such a large and disadvantaged sector of the

population. Not only is this a negative aspect in and of itself, but the exclusion of the scavengers from decision-making also compromises the degree of effectiveness and efficiency of the Act. The only way the government can really make its segregation and recycling plans work would be to formalize the informal sector. The Act of course contains no plans for doing. While keeping the lack of certainty surrounding the policy's status in reality in mind, the Cambodian MOE might find some aspects of this policy to be useful in the Cambodian context.

Sri Lanka

Like India and The Philippines, the Sri Lankan SWM situation has become rather dire over the last several years. The government responded by creating a national policy in 2000. The policy seems to have all the right elements in it, but actually it has very little depth. Its table of contents is impressive but moving beyond there, one is struck continuously by the sense that it was left unfinished. I have not been able to locate the guidelines that were supposed to have been published after the Act. Presumably, those would provide more detail. Information on the Sri Lankan SWM situation is generally lacking. Policy making of course suffers for this lack of information. The National Strategy for Solid Waste Management was written in response to worsening environmental conditions, but it seems unlikely that it would have had a very positive affect. The one really important aspect that the Cambodian MOE can learn from this Act is that it is not enough to simply have an impressive table of contents in a national SWM policy; the substance of the Act has to be included as well.

The Sri Lankan Act does discuss several important topics such as the issues of open dumps, incineration, segregation of wastes at source, education and awareness raising on environmental issues, keeping the generation of hazardous wastes at a minimum, and the necessity of involving the private sector in SWM. The Act also mentions the informal recycling sector but only very briefly where it is written that recycling facilities should be developed so as to facilitate this sector's work. Another interesting section of the Act discusses the importance of community participation in SWM. We noted earlier that this was important because Sri Lanka suffers from a sense of the Not In My Back Yard syndrome, wherein citizens want proper waste disposal sites, but they want them to be located far from them. Including the public in decision-making, and educating them on the benefits of sanitary landfills would be the most effective way of countering this feeling.

The Act also notes the necessity of creating an overarching institutional body that will be responsible for overseeing SWM throughout the country. Such a body would be made up of representatives from all levels of government, the private sector and the non-government community. This is a good idea, however, these discussions are really just discussions! There is almost no prescriptive element to the Act at all and no guidelines are given for how these ideas are to be realized. It is almost as if this document was written as a precursor to what was supposed to be the real Act. The Act has some good ideas, but would generally not be terribly useful to the Cambodian MOE in formulating their own policy.

This report also included a discussion of the current hazardous waste management situations in Cambodia, India and the Philippines. We did not get into the situation in Sri Lanka because of a limited amount of information and the fact that the country does not have a separate policy for hazardous waste management the way the other countries do. This issue, along with the issues of collection, safe final disposal of waste, and the challenges presented to every country by their waste picking communities, are some of the most pressing problems the countries are facing. Currently, none of these issues are being appropriately addressed in any of the study countries. If Cambodia is to do any better, it will have to address these issues.

It is evident that for Cambodia to formulate its own comprehensive, ISWM policy, it can certainly learn from other countries, but the policy will have to be based on the Cambodian specific context if it is to be successful and sustainable. The study countries are very similar in certain ways, but each country has their own history, political climate and socio-cultural make-up that are reflected in policy documents. The differences as well as the similarities between the study countries are very important to keep in mind. To conclude, there are several lessons that have been learned from this review that the Cambodian MOE will want to account for. This list is of course not comprehensive, but it should provide a helpful tool for policy makers when the time comes to draft the country's new SWM policy.

The drafting of a new policy on SWM should include:

a. Concerted efforts to gather as much pertinent information on SWM throughout the country as possible, including generation rates, composition, various management strategies, local initiatives etc. This information gathering should take the six contextual aspects of ISWM into account.
b. A detailed list of defined terms as seen in both the Indian and Filipino policies.
c. A description of the hierarchy of authority for SWM, as seen in the Indian and Filipino policies, including a list of methods for holding responsible bodies to account.
d. Plans for the creation of an overarching institutional body, similar to the Filipino National Solid Waste Management Commission, to generally oversee all aspects of the Act's implementation.
e. Identification of Cambodian priorities for SWM in terms of a waste hierarchy that should reflect the principles of ISWM.
f. The placing of priority on segregation of wastes, processing and importantly, final disposal in an environmentally safe way.
g. Identification of methods and strategies for the financing of each aspect of new legislation, including a discussion of incentives, financial or otherwise.
h. Plans for garnering the active participation of the private sector.
i. Plans for how policy makers are going to include all affected stakeholders as well as acquire the insight and participation of local communities.

j. Plans for involving the academic community and environmental experts in policy planning and implementation of new Act.
k. Plans for the inclusion of the waste picking community representatives in SWM decision-making, with future plans for formalizing their activities.
l. Identification of an education and awareness raising strategy for the country.
m. Detailed lists of guidelines in all sections of the policy prescriptions, if not to be included with the original policy, then to be published in no more than six months time.
n. Separate policy prescriptions for hazardous and clinical wastes.
o. Summary of expectations, along with strategies for dealing with difficulties created in the implementation phase.

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