

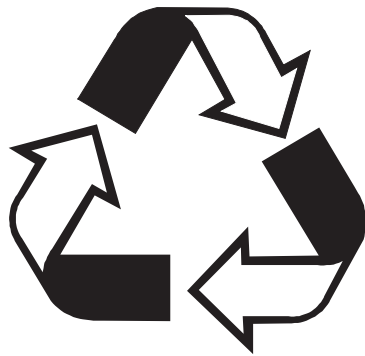


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THAILAND ENVIRONMENT MONITOR 2003



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The Pollution Control Department (PCD) of Thailand's Ministry of Natural Resources and Environment (MoNRE), the World Bank, the United States-Asia Environmental Partnership (USAEP), and Japan Bank for International Cooperation (JBIC) contributed to the preparation of this document. The World Bank Team consisted of John Morton (Team Leader), Sirinun Maitrawattana, Catalina Marulanda, Nat Pinnoi, Sutthana Vichitrananda, Patchamuthu Illangovan and Anjali Acharya. The team received guidance from Maria Teresa Serra, Sector Director; and Magda Lovei, Sector Manager of the Environment and Social Development Unit of the World Bank. Jack Kneeland and Saengroaj Kraisorng represented USAEP, Norio Saito represented JBIC, and Sopon Tatichotiphan, Paisarn Padungsirikul, Taweeporn Jung, and Suntorn Uppamarn represented the PCD. The municipal benchmarking survey was undertaken under the guidance of Jeff Bowyer (Louis Berger and USAEP) by a consortium of university professors led by Dr. Wanpen Wirojanagud and Dr. Somsak Pitaksanurat (Khon Kaen University) and included Dr. Tares Srisatit (Chulalongkorn University), Dr. Chatchai Ratanachai (Prince of Songkhla University), and Dr. Praphon Kemmadamrong (Chiang Mai University). Pornsri Kitcham of the Municipal League of Thailand and Nonthaburi Municipality provided valuable assistance in testing the survey methodology in Nonthaburi. Analysis of landfill gas potential was undertaken in conjunction with Brian Guzzone (USEPA) and Alex Stege (SCS Engineers). The document was peer reviewed by World Bank Staff David Hanrahan, Dan Hoornweg, and Allan Rotman. Jack Fritz from the National Academy of Engineering (US) also peer reviewed the document. The cooperation of Bangkok Metropolitan Administration (BMA), Department of Industrial Works (DIW) of the Ministry of Industry, Municipal League of Thailand (MLT) and the many municipalities surveyed as part of the preparation of the document helped enhance the quality and clarity of the data presented in the report and we gratefully acknowledge their patience and assistance. Sorachai Nuntawatcharaviboon and Kamolnat Nillachad were responsible for the cover design and layout.

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ABBREVIATION AND ACRONYMS

BMA	Bangkok Metropolitan Administration
BMR	Bangkok Metropolitan Region
DEQP	Department of Environmental Quality Promotion
DIW	Department of Industrial Works
DoH	Department of Health
EIA	Environmental Impact Assessment
ESTs	Environmentally Sound Technologies
EU	European Union
GDP	Gross Domestic Product
GENCO	General Environmental Conservation (Public Company Limited)
IEAT	Industrial Estate Authority of Thailand
ISO	International Organization for Standardization
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
Kg	Kilograms
MoIND	Ministry of Industry
MoInt	Ministry of Interior
MoNRE	Ministry of Natural Resources and Environment
MoPH	Ministry of Public Health
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
MW	Megawatts
NEQA	National Environmental Quality Act
NESDB	National Economic and Social Development Board
NGO	Non Governmental Organization
NIMBY	Not in My Backyard Syndrome
NSO	National Statistical Office
ONEP	Office of Natural Resources and Environmental Policy and Planning
PAO	Provincial Administration Organization
PCD	Pollution Control Department
PoNRE	Provincial Office of Natural Resources and Environment
REO	Regional Environmental Office
TAO	Tambon Administration Organization
TDRI	Thailand Development Research Institute
TECDA	Thai Environmental and Community Development Association
THB	Thai Baht
UNEP	United Nations Environment Program
UNESCAP	United Nations Economics and Social Commission for Asia and the Pacific
USAEP	United States-Asia Environmental Partnership
USEPA	United States Environmental Protection Agency



SUMMARY

Thailand currently produces nearly 22 million tons of waste from residences, industries, businesses, and hospitals. This is likely to increase in the coming years as the country is recovering from the financial crisis, and once again returning to a period of high growth, fueled by consumer spending and exports. For example, if current trends hold and recycling rates remain low, it is likely that by the end of the decade municipal waste generation would grow 25 percent and industrial hazardous waste would grow 35 percent. Management of this waste is a huge task that depends upon successful programs for recycling and reuse; providing safe and effective waste collection and disposal; the availability of sustainable financing; and, effective contributions from government, the public, and civil society. Thailand has made great progress in addressing many of these issues and at the same time has further opportunities to make real progress in improving the health and environment for future generations through better waste management.

Reducing and Recycling Waste - Untapped Potential!

While industries have effectively harnessed the market for recyclables such as glass, paper, metal and plastic, annually more than 4.5 million tons of recyclables valued at Thai Baht (THB) 16 billion (nearly US\$400 million) are thrown away by households and businesses. With improved recycling, a portion of this potential market could be tapped. Despite an active group of approximately 25,000 informal recyclers in the country who profitably collect and trade this waste the limited number of formal recycling programs and low levels of public participation have kept recycling rates low in Thailand. Taking advantage of this opportunity will hinge upon developing effective incentives and awareness of the people to separate and recycle waste in their homes; and developing private sector and community-led recycling programs while protecting the welfare of the informal recyclers who depend upon recycling for a living.

Municipal Solid Waste - Providing Safe and Cost-effective Collection and Disposal!

Much of the efforts in municipal solid waste management in Thailand have focused on establishing the core infrastructure and services to properly collect and dispose waste. These efforts have improved the alarming level of littering found in urban areas in the 1980s and have established modern disposal facilities in many areas. In order to reach the goal of proper collection and safe disposal in urban areas nationwide several key challenges remain.

- **Building on Gains in Collection.** The last decade saw significant spending by the national and local governments to upgrade and improve collection systems and today Bangkok Metropolitan Administration (BMA) collects nearly all of the municipal solid waste generated by its population of eight million people and collection in other cities and smaller urban areas averages between 75 and 90 percent. Building on these accomplishments, municipalities will need to strive to improve their services by addressing underserved areas better and ensuring the sustainability of their collection systems through better time and cost efficiency.

Solid Waste Management in Thailand At a Glance

Indicator	Value
Municipal solid waste generation (tons/year)	14.4 million
Hazardous waste produced by community activities	0.38 million
Hazardous waste produced by industries (tons/yr)	0.96 million
Non hazardous waste produced by industries (tons/yr)	5.9 million
Hazardous and infectious waste generated by medical facilities (tons/year)	21,300
Share of municipal waste generated that is collected <ul style="list-style-type: none"> • Bangkok • Medium sized cities-(Muang municipalities) 	>99% 86%
No. of solid waste disposal sites nationwide <ul style="list-style-type: none"> • Sanitary Landfills • Engineered Landfills and Controlled Dumps • Open dumps 	5 99 >1000
Percentage of infectious waste treated	46%
Percentage of community generated hazardous waste treated or reused	53%
Percentage of industrial hazardous waste treated in centralized treatment facilities (Bangkok and vicinity)	24%
Municipal waste recycling and reuse as a percent of total waste generated <ul style="list-style-type: none"> • National • Municipal area • Non-municipal area 	11% 16% 5-8%
Recycling by industries as a percent of total waste generated (Bangkok and vicinity) <ul style="list-style-type: none"> • Hazardous waste • Non-hazardous waste 	18% 78%
Local Government SWM staff having received education above high school (sample of 8)	15%

Data compiled from sources cited in Thailand Environment Monitor 2003.



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- ***Gaining Public Confidence through Safer Disposal,*** Public confidence in disposal facility operation is low with nearly half of the proposed sites in provincial capitals experiencing Not In My Backyard (NIMBY) syndrome, manifested in the outcry from the local people over the health and environmental risks currently posed in existing and future sites. The construction of more than 100 new disposal sites over the last 10 years has introduced many modern disposal practices. However, they comprise less than 10 percent of the estimated 1,000 or more municipal disposal sites in the country, and many lack well functioning environmental controls necessary for sanitary disposal. One of the key challenges is finding a cost-effective way of providing safe disposal facilities to more than 1,100 municipalities nation wide. The development of disposal sites that are shared within or among provinces provides great promise as it could make oversight easier and potentially could save over THB 180 billion (approximately US\$ 4 billion) in investments and operation and maintenance costs over the next two decades. Incineration of municipal solid waste is a less attractive option as it is unlikely to be a cost-effective use of resources due to the high investment costs and the technical and operational difficulties this technology poses in Thailand. In addition to providing safe disposal sites, other major challenges include providing incentives for good disposal site operation by establishing an effective system for regulatory oversight and bridging the gap on NIMBY through education, consultation, and demonstrating good disposal.

Industrial Waste-Plugging the Regulatory Gaps!

Thailand has made strides in addressing industrial waste through the establishment of centralized treatment facilities and through the actions of the many Thai exporting firms who have voluntarily improved their environmental practices. However, the regulatory regime and enforcement for industrial waste treatment is not adequate to ensure safe disposal by more than 60,000 industries, and waste treatment and recycling operations. Additionally, cases of open dumping and improper disposal have been reported over the last several years, largely because there is no active oversight and licensing of waste haulers and buyers, and insufficient penalties for open dumping. With the introduction of new waste treatment operators as part of the recent liberalization of the sector, improving upon regulatory oversight will be the key to ensuring that the desired increase in treatment capacity also results in an increased level of safe treatment and disposal. The main challenges are to provide consistent and comprehensive enforcement of disposal regulations on industries and waste treatment operators and reducing the incentives for improper disposal and open dumping through stronger oversight of waste haulers and buyers and tougher penalties.

Infectious and Community Generated Hazardous Waste - Establishing Safe Waste Management Systems!

Currently, 140,000 tons of hazardous waste from households and small commercial establishments and 10,000 tons of infectious waste from hospitals is disposed with municipal solid waste, directly deposited into sewers or dumped indiscriminately. These practices compound the hazards of the many poorly operated landfills in the country. The immediate challenge will be to develop a program to improve existing hospital and municipal treatment practices. In the long term should focus on cost-effective approaches to establishing safer, more sustainable systems.

Paying for Waste Management - Promoting User Fees!

Amounting to THB 22 billion since 1994, capital investments in collection trucks and disposal facilities have been provided primarily through grants to municipalities from the national government budget and the Environmental Fund. The cost of operation and maintenance of these facilities is paid for by municipalities through user fees and municipal budget. While these national and local expenditures have made genuine improvements in solid waste management, neither are supported by a sustainable source of financing. The Environmental Fund has been draining its resources over the past 10 years with no mechanism for replenishment. Additionally, the operation and maintenance costs are not recovered, because fees charged by municipalities for waste collection have only been able to cover a portion of the costs of operating and maintaining the collection and disposal system. A more sustainable financing system needs to be established using a balance of replenishable national government financing and improved local cost recovery. This may include: mechanisms to replenish the Environmental fund such as packaging or other solid waste related taxes; raising fee levels; improving fee collection; exploring other financing mechanisms; improving the cost-effectiveness of solid waste systems; and, building an environment conducive to private sector investment and operation.



Clarifying Roles and Confronting Capacity Constraints!

Since enacting the Decentralization Act the roles for civil society, local governments, and national government have been evolving. It is expected, in the longer term, that public participation will expand, local governments will obtain relative independence in policy making, planning, and providing waste management services, while national government will play a supervisory and supporting role.

- **National Government- Providing effective outreach and oversight.** With more than 60,000 industries and 1,000 municipalities, staffing remains a major constraint for national government agencies, which can only provide 1 solid waste officer per 142 municipalities and 1 inspector per 180 industries. The main challenge for these agencies is improving their ability to provide effective outreach and oversight through strong on-the-ground presence, while targeting their activities in areas with the greatest impact and comparative advantage.
- **Local Government- Providing local services.** Local governments have a limited number of staff and on average only 15 percent of the Staff are educated beyond high school. As a result municipalities have, in most cases, only been able to focus on the core tasks of collection and disposal. The major challenge for them will be to improve management and efficiency of their core services while building capacity to address new opportunities such as recycling, planning, and cost recovery.
- **Civil Society- Catalyzing grassroots initiatives.** Civil society has been active for years in Thailand with several very successful NGOs playing key roles in encouraging participation in solid waste management. The challenge will be to further catalyze grassroots participation by taking advantage of partnerships with government, civil society, and the private sector.

In summary, the main challenges for solid and hazardous waste management in Thailand are:

CHALLENGES	
Reducing and Recycling Waste	<ul style="list-style-type: none"> • Getting the incentives right • Taking awareness to the next level • Separating the waste • Harnessing the market for waste • Protecting waste pickers and sa leng
Municipal Solid Waste - Providing Safe and Cost-Effective Collection and Disposal	<ul style="list-style-type: none"> • Building on gains in waste collection • Expanding and upgrading safe disposal • Regulating solid waste facilities • Coming together on NIMBY
Industrial Waste - Plugging the Regulatory Gaps	<ul style="list-style-type: none"> • Encouraging safe practices in a liberalized industrial hazardous waste treatment market • Taking on illegal dumping
Infectious and Community Generated Hazardous Waste - Establishing Safe Waste Management Systems	<ul style="list-style-type: none"> • Improving treatment of infectious waste • Beginning to address community hazardous waste
Paying for Waste Management	<ul style="list-style-type: none"> • Investing in the future • Recovering operational costs • Improving private sector involvement
Clarifying Roles	<ul style="list-style-type: none"> • Providing local services • Providing effective outreach and oversight • Catalyzing grassroots initiatives

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One of disposal sites in Tambon municipalities



Glass collected by informal recyclers

