



**ASIA PACIFIC REGIONAL INITIATIVE ON TRADE,  
ECONOMIC GOVERNANCE, AND HUMAN DEVELOPMENT**

**Trade in Environmental Services and Human Development  
Country Case Study: Thailand**

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\* The opinions expressed in this paper do not necessarily reflect those of UNDP. The sharing of this paper with the external audience is aimed at generating constructive debates, and does not constitute an endorsement by UNDP or the institutions of the UN system.

## Preface

# Trade in Environmental Services and Human Development<sup>1</sup>

The UNDP Asia Pacific Regional Initiative on Trade, Economic Governance and Human Development was conceived in 2000 in the aftermath of the collapse of the WTO Seattle Ministerial Conference which was unable to launch a new round of trade negotiations in the face of new initiatives by developing nations. The fundamental motivation is that multilateral rules should craft globalization, so that it provides real benefits for poor people, rather than exclude them. To this end, the Asia Trade Initiative is striving to advance human development in the region by promoting greater understanding on its interface with trade issues. This involves conducting comprehensive analyses of the far-reaching impacts of trade agreements on the ability of developing countries to shape national human development outcomes. By facilitating debates among governments and civil society, and introducing human development considerations into the national and regional debates on trade issues, it is hoped to strengthen the capacities of the weaker and more vulnerable stakeholders to defend and articulate their interests. The main objective, thus, is that human development considerations be more fully taken into account in negotiating positions and in the ensuing trade agreements.

The Asia Trade Initiative became operational in the second semester of 2002. Its first step was to provide more substance to the link between trade and human development by conducting studies at the country level and drawing these together in synthesis documents, "Technical Support Documents" (TSDs). The subjects selected for study are those items on the Doha Development Agenda, where any new international commitments or intensification of multilateral disciplines could affect the human development, for better or for worse, of many poorer and more vulnerable people in Asia. Another criterion has been the existence of parallel efforts in UN bodies aimed at human development goals. The TSDs have been prepared in a consultative manner with reliance on specific grassroots evidence. A conscientious effort is made to examine the impact of possible outcomes of trade negotiations on the broad human development objectives of empowerment, equity, productivity, sustainability to ultimately expand people's choices, and their capabilities to lead the kind of life they have reason to choose and value.

This paper, part of a series of country studies on trade in environmental services, is aimed at stimulating a more intensive debate on trade and human development issues in Asia, in the period leading up to the 5<sup>th</sup> WTO Ministerial Conference to be held in Cancun, Mexico, in September of this year, and later. The following summarizes the trend and growth of trade in environmental services, within the context of multilateral negotiations and beyond, and their interface with select human development objectives.

- **Environmental Goods and Services are directly linked with the core end of human development which is to improve well-being and quality of human life.** Millions of people living in absolute poverty lack access to and use of fresh drinking water and sanitation. Globally, some 2.4 billion people lack access to basic sanitation, and 1.1 billion to safe drinking water. In fact, over 180 countries have endorsed the Millennium Development Goals to halve, by the year 2015, the proportion of people without sustainable access to safe drinking water, and improve the lives of 100 million slum dwellers, while also committing to improve access to basic sanitation and reduce atmospheric pollution. Disposal of solid waste and hazardous waste, effluent treatment, contamination of various sources of water, and also preservation of rich biological habitats are broad environmental concerns with a bearing on human health, and in turn people's capability to lead the kind of life they value. More indirectly, environmental goods and services also constitute an increasing share of national economic activity which means that national policies on growth-generation, fiscal allocations, and job creation in this growing sector will have an increasing potential to promote human development.

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<sup>1</sup> Some ideas draw on, "Energy and Environmental Services: Negotiating Objectives and Development Priorities", ed., S. Zarrilli, UNCTAD, 2003

- The capacities to address these concerns are extremely divergent, necessitating roles for international trade and resource transfer.** The global environmental industry evolved in the advanced countries largely in response to stringent environmental regulations as their per capita incomes grew. However, the rate of growth of this industry in the developed countries is declining. The developing countries, namely the transition economies and East Asia, on the other hand, are witnessing a surge in new demands, at annual rates averaging 10% or more for key environmental services such as water delivery, wastewater treatment, pollution control, and solid waste and hazardous waste disposal as countries struggle to cope with rapid population increases and urbanisation, while simultaneously facing weak fiscal, institutional and regulatory apparatus. By 2010, this industry is expected to reach over \$600 billion in revenues. There is thus great scope for the expertise and wealth of the rich countries to be transferred in aid or trade to the new markets. The reduction or elimination of tariff and non-tariff barriers to environmental goods and services has also been singled out for priority in the WTO Doha Ministerial Declaration. But because these services have traditionally been under state monopolies, any liberalisation is seen as paving the way for profit-seeking private investment and control from home and abroad, countries are exercising caution in assessing the implications of liberalization for access, price affordability, quality assurance, especially to the less well-off. While Asian countries vary in their readiness to meet these growing challenges, most accept in principle that there is an inevitable role for non-state, even foreign entities, in providing environmental services. In China, the world's biggest potential market, its Ministry of Water Resources puts the cost of water and sanitation related infrastructure at US\$ 26 billion, ending 2005.<sup>2</sup> In poorer countries like Pakistan, there simply is a void in the formal provision (the informal sector might be significant in solid waste disposal, etc.) of many of these services which can only be filled with external resources. Thailand too is keen to welcome foreign investment in sectors like hazardous waste management.
- The WTO General Agreement on Trade in Services (GATS) offers a narrow framework to negotiate trade and investment in environmental services.** The definition of environmental services in GATS draws on a decade-old list which only includes sewage, refuse disposal, sanitation, and an 'other' basket category including cleaning of exhaust gases, noise abatement and landscape protection services. This classification has been criticised for being narrow, and not reflecting market realities, and for focusing on end of pipe solutions that ignore pollution prevention and resource management services; it also excludes the design, R&D, engineering, analytical and construction services essential to core environmental services. While GATS does not require privatisation or deregulation of any service, some developed countries have submitted requests for such broad commitments from developing countries. In proposing to include a new sub-sector (Water for Human Use and Wasterwater Management) by re-classifying environmental services in GATS, the EU is said to have prepared requests for 72 countries to open up their water distribution.<sup>3</sup> Separately, in China, following its WTO accession in 2001, giant multinational companies have already secured several high-profile contracts in environmental services. In WTO discussions, developing countries like India have made an export case for their own environment-related goods and services saying that measures in rich countries hamper market access (largely through standards and certification requirements than high tariffs ) of environmentally-preferable products (EPPs), those that often draw on traditional knowledge and processes. These countries also note that they do have the capacity to become exporters of select environmental goods and services, such as energy-saving consumer goods, pollution detecting instruments, and renewable energy technologies. To date, some 50 WTO members have made commitments on environmental services in the context of GATS, but only 2 are Asian. It should also be noted by developing countries that because WTO negotiations are conducted on the basis of reciprocity and as GATS commitments in environmental services are coveted, they should only be traded off only for meaningful reciprocal commitments that serve to promote human development by enhancing domestic capacity and technology transfer, or improve access for labor movement, agriculture and fisheries exports.

<sup>2</sup> Far Eastern Economic Review, May 15, 2003, p 27.

<sup>3</sup> Whose Development Agenda: Analysis of EU's GATS Requests, World Development Movement, London, April 2003

- **But trade in environmental services is complicated by implications for large-scale, direct foreign investment and ownership of assets.** Unlike many service sectors, the supply of environmental services involves large investments, which become profitable over long periods of time, thus making effective control a major factor in investment. As a result, Mode 3 (commercial presence) restrictions are viewed as the most important by suppliers and exporting countries have an interest in pressing for privatisation of such services in developing countries. Such privatizations have also been included in packages of conditionalities often put forth to countries by the Bretton Woods institutions. The most controversial of these involves collection, purification and distribution of water. Civil society organizations are wary of such proposals (as expressed during the G-8 Summit in May 2003, and also the Third World Water Forum in Kyoto, March 2003) for their perceived human development implications on access and affordability by the poor -- although there may be gains on efficiency, quality, transfer of technology, and even freeing up of public resources for more urgent human development objectives like education and health. Since 2002, China has allowed in several multinational companies -- Veolia recently signed a 50-year contract worth nearly 250 million USD in Shanghai to treat, distribution, and collect fees for water. In general, however, there is secrecy in GATS negotiations, and an overwhelming lack of understanding of WTO provisions; discussions on the assessment of proposals and implications are non-transparent and limited to a narrow group of specialised civil servants and negotiators. Even when projects may be badly needed (for illustration, one sixth of China's 668 cities are said to suffer from "serious" water shortages) and make economic sense, part of the general public's ex ante hostility to such schemes emanate from their desire to have these processes subjected to broad civic scrutiny prior to making sweeping, multigenerational commitments.
- **Participatory, cost-effective, self mobilized indigenous models of community managed environmental services deserve notice and replication.** Discussions on foreign investment, and sheer national helplessness, often overshadow "alternative" success models of low-cost service delivery to the poor. Pakistan's Orangi Pilot Project (OPP), for instance, has been working since 1980 to support people's efforts in upgrading Orangi township, a low-income informal settlement with over 1 million residents in Karachi (a city whose Water and Sewerage Board does not reach the informal settlements that contain 60% of the city's population). The OPP model of sanitation comprises of internal development such as latrines, lane sewer and collector sewer at neighbourhood level. It has demonstrated that communities can finance, manage and maintain internal development, contributing \$1.5 million, constructing 1.5 million running feet of sewerage lines and sanitary pour-flush latrines in 90,000 houses. The OPP model has been replicated in 42 settlements in Karachi and in seven cities across Pakistan with varying degrees of success. The human development notions of empowerment, sustainability, as well as equity in access may often be best served by low-cost community-led initiatives such as these, but their replication might be limited by their context specificity. Alternative models of successful, co-operative non-profit water delivery systems also exist elsewhere, in Porto Alegre in Brazil, or Santa Cruz in Bolivia, for instance. More broadly, the recognition of the importance of civic engagement and participation in debates on reforming utilities is growing, especially when deemed sensitive to consumer interests. In this vein, Thailand's new constitution, in its Articles 45 and 46, requires stakeholder consultations prior to project undertakings that might affect livelihoods or the environment.
- **Asian countries need to frame their strategic responses so as to precede liberalisation by enhanced domestic legislative, regulatory and institutional infrastructure.** The daunting new demands for services and overwhelming fiscal shortage means that Asian countries will inevitably need to draw on foreign technology and capital to meet these new needs. The question, thus, is not whether to open up, but when, how fast, and with what kind of policy safeguards in place. But countries need to retain their prerogative to decide the sequencing and nature of roles, policies and capacities for the state and non-state entities. Foremost, governments need to adopt environmental laws and regulatory regimes to strengthen management and oversight of environmental services. With domestic capacity to regulate (on pollution, wastewater, etc.) responses to request for liberalisation commitments ought to retain policy options that ensure that the poor are not penalised by aspects of liberalization, and that adequate opportunity is provided for the development of

national capacities, including transfer of environmentally sound technologies. Other measures for national preparedness include, clarifying definitional issues and maintaining information systems, strengthening negotiation capabilities, and gradually encouraging private sector involvement in a manner that does not compromise human development objectives of equity and sustainability.

- **Access to and affordability of some environmental services are to be recognized as inviolable human rights.** To the extent that liberalisation can promote efficiency, halt or reverse environmental degradation, and ensure increased access to services, human development benefits would be high. Often, privatized entities replace grossly mismanaged and failed public entities, and in principle, make up for expanded service as well as reasonable water tariff through cost-cutting and efficiency. But in practice, the record has been mixed globally, often leading to political disturbances, and limiting service provision to higher income groups. From a human development perspective, thus, along with the economic rationale of cost reduction and extended coverage, the twin goals of equity in access to services and respect of human rights are paramount. There is a strong recognition in many countries that water, for instance, is a public good, and as recognised during the World Summit on Sustainable Development in South Africa in 2002, access to clean water is a human right which ought to be viewed in conjunction with similar rights to basic food and adequate housing. This matter has been discussed in fora outside the WTO such as the UN High Commission for Human Rights where it has been stated that assessments should be conducted to understand the impact of trade policies on human rights. The key point is that states have, over the years, undertaken many international human rights treaty obligations which need to be respected by WTO members during their negotiations and while implementing commitments to liberalise trade in managing air, water, and waste.

*Asia Trade Initiative.*

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## Abbreviations

AD	Anti-dumping
ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
BMA	Bangkok Metropolitan Administration
BOD	Biochemical Oxygen Demand
BOI	Board of Investment
CBD	Convention on Biological Diversity
CVD	Counter-veiling duty
DSM	Demand-side management
ECOSOC	The UN Economic and Social Council
EEAT	Environmental Engineering Association of Thailand
EU	European Union
FIO	Forest Industry Organization
GATS	General Agreement on Trade in Services
GENCO	General Environmental Conservation Public Company Limited
GDP	Gross Domestic Product
GIS	Geographical Information System
HDI	Human Development Index
IMF	International Monetary Fund
IPP	Integrated Product Policy
IPR	Intellectual property rights
ITD	International Institute for Trade and Development
JPI	Johannesburg Plan of Implementation
LDD	Land Development Department
NAA	National Anti-corruption Agency
NCSD	National Commission for Sustainable Development
NESDB	National Economic and Social Development Board
NEB	National Environment Board
NRCEHWM	National Research Center for Environmental and Hazardous Waste Management
MEAs	Multilateral Environmental Agreements
MFN	Most-favored Nation
MONRE	Ministry of Natural Resources and Environment
MOSTE	Ministry of Science, Technology and Environment
ODA	Overseas Development Assistance
OEPP	Office of Environmental Policy and Planning
OTTR	Office of Thailand Trade Representatives
PCD	Pollution Control Department
PPM	Production Process Method
PWD	Public Works Department
RFD	Royal Forest Department
SIA	Social Impact Assessment
SMEs	Small and medium size enterprises
TAMC	Thailand Asset Management Corporation
TRIPs	Trade-related Intellectual Property Rights
TRF	Thailand Research Fund
TSD	Technical Support Document
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme

UNFCCC	United Nations Framework Convention on Climate Change
WEEE	Waste in electric and electronic equipment
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization

# TRADE IN ENVIRONMENTAL SERVICES AND HUMAN DEVELOPMENT: PERSPECTIVES FROM THAILAND

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This paper examines the environmental-services sector in Thailand in the context of the ongoing negotiations on trade in services in the World Trade Organisation (WTO). The paper focuses, in particular, on the management of wastewater and hazardous waste – subsectors that have been singled out for liberalization in these negotiations. Section I of this paper addresses the issue of sustainable development in the context of Thailand, while section II discusses the environmental-services sector in the country. Section III of the paper examines the linkages between environmental management and human development. Section IV looks at trade in environmental services in the context of the General Agreement on Trade in Services (GATS), focusing on the definition of the sector in the negotiations, the implications of the liberalization of trade in this sector for human development in Thailand, possible strategic responses to the issues involved and Thailand's offers in this sector. Based on an assessment from the perspective of human development, the paper argues that Thailand could benefit more from opening its industrial hazardous-waste sector to foreign competition than from liberalizing its wastewater services. Section V concludes the paper by examining some of the future policy implications of increased trade in environmental services for Thailand.

## I. THAILAND AND SUSTAINABLE DEVELOPMENT

In the eve of 1997 Thailand's financial sector faced an overnight collapse, leading to an economic crisis that has persisted since then. Before this crisis, Thailand had been striving to become the sixth Tiger of Asia – after Hong Kong, Malaysia, Singapore, Taiwan and South Korea. The unexpected crisis involved not only the collapse of 56 financial firms, the dramatic devaluation of the Baht against the dollar, and the loss of millions in Thailand's international reserves (Table 3). The crisis had a severe impact on the country's real sectors, leaving a sizeable proportion of its industrial capacity idle. Even today, six years later, it is not easy to say that Thailand's economy has returned to normalcy; nor is it possible to conclude that its present path of development is secure against the recurrence of situations like that in 1997. Did the crisis then indicate that Thailand's economic development had been unsustainable all along?

To some researchers this was not the case. For example, Panyawadee et al. (2002), using the Index of Sustainable Economic Welfare – Gross Domestic Product (GDP) netted by costs associated with pollution and environmental degradation – have

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claimed that the decline in sustainability began after the financial crisis, and that before 1997 the economic development of Thailand has been on a sustainable path. This argument may not however be tenable since the seriousness of Thailand's environmental problems had been acknowledged even before 1997, and even highlighted in national economic and social development plans. This was particularly evident in Thailand's report at the Earth Summit (see MOSTE, 2002). Hence, it might be more accurate to view the 1997 crisis as the result of a compounded unsustainable trend rather than as the beginning of unsustainable development in the country.

Thailand's economy has gone through significant structural changes. The rise in the share of the non-agricultural sector in Thai economy to nearly 90 percent of the country's GDP today and the continuing decline of agriculture (see Table 1) are indications of these changes.<sup>4</sup> This has been, in a large measure, due to (a) the export-led growth strategy that has been adopted to spur economic growth, to generate employment and to reduce absolute poverty<sup>5</sup>, and (b) Thailand's open-door policy to foreign investment since the early 1990s, which was used in order to fuel industrialization and the real-estate industry in the country.<sup>6</sup>

With a population of approximately 62 million, the impact of the financial crisis of 1997 on Thailand has been severe, both in terms of reduced growth and GDP. Both agricultural and non-agricultural sectors registered a major contraction in 1998 (Table 3). The GDP, in 1988 prices, returned to the pre-crisis level only four years after the crisis. The crisis brought the poverty level back to that of 1994 (Table 2), and major lay-offs drove massive sections of the unemployed to rural areas, thus reversing the Lewis' model which Thailand had emulated successfully (Table 1). Although Thailand's ranking in terms of the Human Development Index (HDI) improved steadily from 1995, taking it, despite the crisis, to the sixty-sixth position in 2001, it dropped again to the seventieth rank in 2002.

**Table 1: Value and Share of GDP by Economic Sector and Unemployment**

*(billion Baht)*

Item	1990	1997	2000
GDP (1998 price)	1,945	3,073	3,005
Agriculture (%)	264 (14)	324 (11)	342 (11)
Non-agriculture (%)	1,682 (86)	2,749 (89)	2,663 (89)
Unemployed	Na	488	1,194

<sup>4</sup> This has been enabled by the Board of Investment (BOI), the government's investment-promoting agency, which granted generous incentives such as differentiated corporate-tax exemption and flexible land ownership to foreign and local firms to locate their operations in areas outside Bangkok and its vicinity. Imports of machinery might receive tax exemption, for instance. In addition, if technologies were proven "clean" the import tax would be reduced drastically to 5 percent from as high as 20 percent of the value in situations when the machinery is not considered as "clean".

<sup>5</sup> Poverty incidence was found reduced more quickly during the period of high economic growth, than during the slower ones. (Warr, 2003: 182).

<sup>6</sup> Around the same time, the government injected a handsome amount of funding for provinces to draw up their own development plans. Most of them came up with investment plans that consisted of their own airports and industrial estates, showing how industrialization had been fashioned, and was expected to serve as a source of development aspiration—if not a symbol of "development".

Source: Calculated from [www.bot.or.th](http://www.bot.or.th)

**Table 2: Poverty Incidence, Selected Years**

*(% of total population)*

Year	Aggregate	Rural	Urban
1962	88.3	96.4	78.5
1975	48.6	57.2	25.8
1990	27.2	33.8	1.6
1994	16.3	21.2	4.8
1996	11.4	14.9	3.0
1999	15.9	21.5	3.1

Source: NESDB and Krongkaew (1993); cf. Warr (2003: 178).

During the crisis, the agricultural sector in Thailand helped cushion social shocks, and even helped the country's economic recovery through export earnings. Although after the crisis Thailand promoted its exports even more actively than before, the global market was not very favourable at that time since the Asian crisis was contagious and the United States economy was also undergoing a period of contraction. Therefore, Thailand's export earnings fell in comparison to pre-crisis levels, although its trade balance improved on account of reduced imports (Tables 3 and 4). The top ten exports and the leading trading partners of Thailand have remained unchanged for years, revealing a source of vulnerability in Thailand's trade patterns (Tables 5 and 6). Although this was not unknown, diversification in export items and markets was difficult to achieve. The crisis made it even more difficult to change Thailand's export dependency, but the governments have been striving hard to find new markets for Thai exports.

Thailand's macroeconomic management was successful in keeping inflation rates low even after the crisis. Motivated in part by a fear of deflationary trends, the government adopted a number of policies that stimulated private consumption. Although the total outstanding debt of the country began to decrease after 1997, private debt was "transferred" to the public sector, leading to an alarming increase in the total public outstanding debt. Debt-service ratios continue to remain high in Thailand. (Table 3).



Table 3: Selected Economic Statistics of Thailand, before and after the 1997 Crisis

	1990	1995	1997	1998	1999	2000 P	2001 P
<b>1. Population (millions) (Average)</b>	55.84	59.28	60.50	61.20	61.80	61.88	62.31
<b>2. GDP</b>							
2.1 GDP at constant 1988 price	1,945.4	2,941.7	3,072.6	2,749.7	2,872.0	3,005.4	3,063.7
(% change)	(11.2)	(9.2)	(-1.4)	(-10.5)	(4.4)	(4.6)	(1.9)
Agriculture	263.6	313.9	323.9	319.0	325.9	346.9	356.1
(% change)	-4.7	3.5	-0.9	-1.5	2.2	6.4	2.7
Non-agriculture	1,681.8	2,627.9	2,748.7	2,430.7	2,546.1	2,658.5	2,707.6
(% change)	14.1	10.0	-1.4	-11.6	4.7	4.4	1.8
2.2 GDP at current price(billion Baht)	2,183.5	4,186.2	4,732.6	4,626.4	4,637.1	4,916.5	5,123.4
(% change)	(17.6)	(15.3)	(2.6)	(-2.2)	(0.2)	(6.0)	(4.2)
2.3 GNP per capita (Baht)	38,613	69,326	76,057	72,979	72,981	77,551	80,083
<b>3. Inflation</b>							
3.1 Headline Inflation	65.5	82.8	92.5	100.0	100.3	101.9	103.5
(% change)	5.9	5.8	5.6	8.1	0.3	1.6	1.6
3.2 Core Inflation 1/	66.7	84.8	93.3	100.0	101.7	102.5	103.8
(% change)	6.1	5.3	4.7	7.2	1.8	0.7	1.3
<b>4. External Account (billions of US\$)</b>							
4.1 Export	22.9	55.7	56.7	52.9	56.8	67.9	63.2
(% change)	(15.1)	(24.8)	(3.8)	(-6.8)	(7.4)	(19.5)	(-6.9)
4.2 Import	32.7	70.4	61.3	40.7	47.5	62.4	60.7
(% change)	(29.8)	(31.9)	(-13.4)	(-33.8)	(16.9)	(31.3)	(-2.8)
4.3 Trade balance	-9.8	-14.7	-4.6	12.2	9.3	5.5	2.5
4.4 Current account balance	-7.1	-13.2	-3.1	14.3	12.5	9.3	6.2
(% of GDP)	(-8.3)	(-7.9)	(-2.0)	(12.7)	(10.2)	(7.6)	(5.4)
4.5 Balance of payments	3.8	7.2	-10.6	1.7	4.6	-1.6	1.3
4.6 International reserves (billions of US\$)	14.3	37.0	27.0	29.5	34.8	32.7	33.0
4.7 Swap Obligation (billions of US\$)			18.0	6.6	4.8	2.1	2.1
4.8 Total debt outstanding (billions of US\$)	29.3	100.8	109.3	105.0	95.0	79.7	67.5
(of which : public debt 2/ )	(11.5)	(16.4)	(24.1)	(31.6)	(36.2)	(33.9)	(28.3)
4.9 Total debt service ratio (%)	10.8	11.4	15.7	21.4	19.4	15.4	20.7
<b>5. Government Finance (fiscal year) (billions of Baht)</b>							

5.1 Cash balance	+103.3	112.5	-87.1	-115.3	-134.4	-116.6	-107.9
(as % of GDP)	(4.7)	(2.8)	(-1.9)	(-2.5)	(-2.9)	(-2.4)	(-2.1)
5.2 Total public debt outstanding 3/			936.2	1,242.3	1,956.7	2,180.8	2,316.0
- domestic debt			(316.6)	(524.9)	(1012.6)	(1200.0)	(1337.2)
<b>6. Monetary Statistics</b>							
6.1 Interest rate (year end) 4/							
Prime rate	16.25	13.75	15.25	11.50-12.00	8.25-8.5	7.50-8.25	7.00-7.50
<b>7. Exchange rate</b>							
Baht : US\$ (Reference rate) average 5/	25.59	24.92	31.37	41.37	37.84	40.16	44.48

Remark :

- 1/ Exclude raw food and energy items from the consumer price index basket.
- 2/ Include Bank of Thailand's debt.
- 3/ Exclude Bank of Thailand and Financial Institutions Development Fund's Debt.
- 4/ As quoted by the 5 largest banks.
- 5/ Since July 1997, the figures are represented by average inter-bank exchange rate.

**Table 4: Trade Statistics of Thailand***(billion Baht)\**

Year	Total	Import	Export	Trade Balance
1990	1,443	853	590	-263
1991	1,685	959	725	-234
1992	1,858	1,033	825	-209
1993	2,112	1,171	941	-230
1994	2,507	1,369	1,138	-232
1995	3,170	1,764	1,406	-357
1996	3,244	1,833	1,411	-422
1997	3,731	1,924	1,807	-118
1998	4,022	1,774	2,248	474
1999	4,122	1,907	2,214	307
2000	5,272	2,494	2,778	284
2001	5,650	2,757	2,893	137

\* Figures are rounded.

Source: Ministry of Commerce

**Table 5: Share of Top Ten Imports and Exports, by Commodity***(Percentage of Total)*

Exports	1997 share	2001 share	Imports	1997 share	2001 share
Computers and parts	12.2	12.0	Electrical machinery	11.0	11.6
Integrated circuits	4.2	5.4	Industrial machinery	13.2	9.6
Vehicles and parts	2.7	5.0	Crude oil	7.5	9.7
Garment	5.4	4.5	Integrated circuit	6.4	8.8
Frozen shrimp	2.6	3.4	Chemicals	7.4	7.9
Jewelry	3.1	2.7	Computers and parts	5.0	6.1
Plastic pellets	1.3	2.5	Iron and steel	5.3	3.8
Rice	3.6	2.4	Metal products	3.3	3.1
TV and parts	2.4	2.4	Jewelry, silver and gold	1.9	3.1
Para rubber	3.2	2.0	Ore, and other metals	2.5	2.6

Source: Ministry of Commerce

**Table 6: Major Trading Partners and Trade Value***(Billion Baht)*

Trading partners	1997 value	2001 value	2001 share (% of Total)
Japan	763	1,059	18.7
NAFTA	665	982	17.4
USA	623	907	16.0
Canada	33	50	0.9
Mexico	11	25	0.4
EU	559	804	14.2
Germany	136	183	3.2
UK	106	147	2.6
World	3,731	5,650	100.0

Source: Ministry of Commerce

All these factors seem to indicate that it might not be correct to claim that Thailand's past development patterns were sustainable, as the pre-crisis years saw a widening gap in income across regions and socio-economic classes alongside dwindling natural resources. Pollution from households and the industrial sector continues to remain a critical challenge, despite the existence of command-and-control measures and environmental standards for most pollutants. Contrary to claims made by official documents, 'Agenda 21' – adopted by Thailand in 1992 – has not been fully implemented even a decade later,<sup>7</sup> although fragmented efforts towards sustainable development have been made in the form of isolated policies and measures.<sup>8</sup> Thailand's twenty-year Environmental and Natural Resources Management Plan, for example, was necessitated by the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992) (Wongbundit, 2002:55).

Over the past ten years, there have been attempts to incorporate the concept of sustainable development into policies pertaining to economic and social development in Thailand. The Rio Summit led to an increase in public awareness of environmental issues, reflected at the local level in efforts to minimize the adverse environmental impact of major projects. There is a legal requirement that an environmental impact assessment (EIA) be conducted for all mandated projects.<sup>9</sup> The Constitution of Thailand also stipulates public participation in project scrutiny. A National

<sup>7</sup> Refer to the Office of Environmental Policy and Planning, 2002 and MOSTE, 1997. See also the publication of a major alliance of civil society groups in Thailand, Working Committee on People Agendas for Independence (2002).

<sup>8</sup> Demand-side Management (DSM) for energy conservation and the reforestation programme to celebrate the King's Golden Jubilee were perhaps the best known among these.

<sup>9</sup> The law exempts private sector projects from this requirement.

Commission for Sustainable Development has been established, with the Prime Minister as chair, to supervise the implementation of Agenda 21. More recently, Thailand signed the ‘Plan of Implementation’ during the World Summit on Sustainable Development (WSSD) in Johannesburg. Thailand is also a signatory to a large number of multilateral environmental agreements (MEAs) such as the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, Montreal Protocol, Basel Convention, etc.

Thailand’s commitment to sustainable development is reflected in measures including:

- the recognition of environmental concerns – and the need for participation from major groups in sustainable development – in the country’s constitution;
- laws, regulations and policies to protect the environment and to conserve natural resources;
- active engagement in World Trade Organization (WTO), and in exploring synergies between trade and environment;
- participation in the Rio process and the implementation of Agenda 21;
- subscription to voluntary initiatives such as ISO 14000, green labelling and cleaner production;
- initiatives in energy efficiency and demand-side management (DSM);
- the promotion of renewable energy and sustainable livelihood; and
- reforestation and afforestation drives in degraded areas aiming at achieving forest cover for 40 percent of the total area.

## **II. THAILAND AND ENVIRONMENTAL SERVICES**

Rapid growth, combined with an inadequate recognition of environmental concerns in policies on economic development and investment in Thailand, led to an increase in various forms of pollution, a depletion of natural resources stock, and a loss of natural habitats (Jesdapipat, 1997). Given the poor management regimes practised by the government as well as the private sector, these externalities have had a significant negative impact on the population in the short and the medium term, in addition to having long-term implications for sustainable development in the country. This section provides an overview of the major environmental problems in Thailand, and how they have been addressed.

### **A. Major Environmental Sectors**

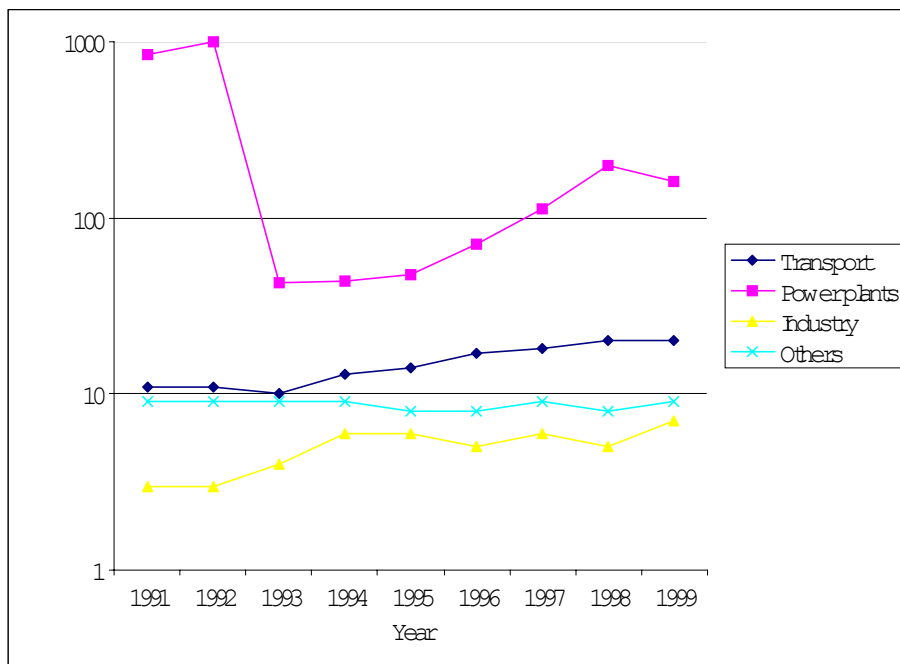
#### ***1. Air Pollution***

Bangkok is indeed an infamous case of urban air pollution. Recent health statistics show that half of Bangkok’s population is affected by some form of respiratory disease or illness. Health costs incurred by households as a result of air pollution can be significant. The Ministry of Public Health has estimated that on average a family

spends approximately 1.6 percent of its monthly income on dust-related health care.<sup>10</sup> It pointed out that the government would have saved 65,000-175,000 million Baht, if dust levels were reduced to 20 mg/cubic metre. Another study by the World Bank estimated that a 20 percent reduction in particulates in Bangkok would lead to lower morbidity and mortality, and reduce annual health costs by more than one billion dollars.

Several factors have contributed to air pollution in Thailand, and the problem is not confined to the capital alone. The development of Bangkok, Chiangmai and other major cities has attracted resources, investment and labour from the rest of the country. Congested urban areas face serious air pollution, especially arising from the transportation of people and goods as well as from power production using fossil fuels. The adverse health impact of air pollution can be seen in several major provinces in Thailand.

**Figure 1**  
**Emission of Particulates by Source**  
**in Thousand tonnes 1991 - 1999 Logarithmic scale**



Source: Pollution Control Department, 1999

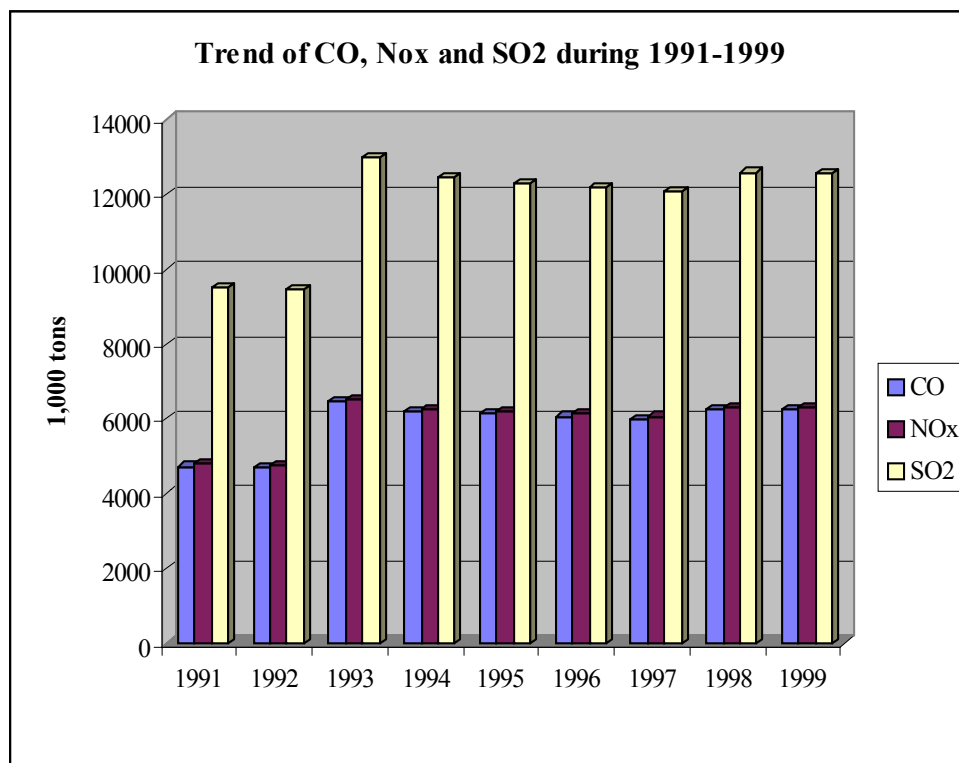
Transport and industries are two major economic activities that contribute to emissions of particulates, with rising trends over the past decades (Figure 1). Improved technologies and fuel switching have produced significant reductions in these emissions, although these sectors continue to be a major source for particulate emissions.

According to the Pollution Control Department (PCD), which monitors data on major air pollutants and particulates, the levels of NO<sub>x</sub>, CO and SO<sub>2</sub> have remained stable

<sup>10</sup> <http://www.anamai.moph.go.th/factsheet/dust.html>

over the latter half of the past decade, despite an increase in economic activities (Figure 2). This has been attributed to the success of government policies. Since new cars have to be equipped with catalytic converters or meet equivalent regulations, the problem of CO and NO<sub>x</sub> to some extent have been addressed through fleet replacement (e.g. the case of public buses in Bangkok) and technological improvement. Particulates from diesel engines continue to be a major problem that is difficult to resolve, since diesel engines are mainly used in lorries and heavy vehicles, which have no other compatible fuel cost-economy alternatives to diesel.<sup>11</sup>

**Figure 2**  
**Emissions of CO, NO<sub>x</sub> and SO<sub>2</sub>**



Source: Pollution Control Department 1989

Given the policies that favour subsidizing diesel over other kinds of fuels for social reasons, the phase-out of subsidies will be difficult. The government has chosen another alternative, however. The quantity of particulate emissions from diesel vehicles is closely related to the content of sulphur in the fuel, and in the early 1990s Thailand started introducing a number of measures to reduce air pollution from heavy vehicles. Tax differentiation has been used in favour of low-sulphur diesel, and better fuel standards have also been introduced. Since 2000, the maximum amount of sulphur permissible in diesel fuel has been reduced from 0.25 per cent to 0.05. The problem of particulate emissions cannot be addressed solely through measures pertaining to the transport sector, since old power plants and industrial production in Thailand continue to use high-sulphur fuels and lignite. Furthermore, the large number of vehicles being added onto the streets – about 1,000 units a day – makes it difficult

<sup>11</sup> Biodiesel is a recent “discovery” in Thailand and is used in limited scale. Its use is very much dependent on relative price to regular diesel fuel.

for governments to improve the air quality of a city. The effective management of transportation systems, as well as greening power production in the country, would be essential elements in any strategy to address air pollution in Thailand.

## ***2. Fresh Water and Water Pollution***

Recognizing the importance of fresh water for economic activities as well as for survival, water management policies in Thailand, from very early days, have tended to focus on assuring sufficient fresh water supply. Demand-side management was recently introduced after the incidence of chronic water shortages as a result of seasonal changes in rain patterns, the destruction of watersheds, and increasing population. With increased industrialization and urbanization, wastewater has become one of the local environmental threats<sup>12</sup> in Thailand. Poor management of water resources has further accentuated the problems associated with the management of fresh water supply.

Bangkok and the towns in its vicinity face a particular type of problem with fresh water supply. In early days, lack of access to municipality water supply forced many households and industrial establishments to rely on underground wells. In recent years, the government has used ban, licensing and permits to regulate underground water extraction<sup>13</sup>. The Ministry of Industry has proposed a drastic increase in user fee, from 3.50 Baht/ cubic metre to 8.50 Baht/cubic metre. To lessen the pressure on underground water supply, the government also devised plans to make more efficient use of surface water in major watersheds such as the Chao Phraya. The Committee of the project comprises representatives of various government departments, local administration and NGOs, whose duties include the dissemination of information on the current crisis to local users, the collection of data, the formulation of regulatory guidelines that relate to water-resource development, and the preparation of a 10-year strategic plan. This long-term initiative has yet to be evaluated on its effectiveness, while the crisis appears to continue unabated.

In the mean time, the government has been trying to accelerate the expansion of the water-services scheme. One of the strategies has been to privatise fresh water supply for industrial use and to differentiate water prices between household and industrial uses, in order to recover investment costs and increase efficiency. The introduction of a wastewater fee is also a strategy to finance the management of fresh water supply as well as to ensure that the cost of fresh water consumption reflects the “real” cost of water utilization. This reform has been underway, amidst protests from some corners, especially after the Thailand approached the International Monetary Fund (IMF) and the Asian Development Bank (ADB) for assistance in restoring its economy after the crisis in 1997. Protesters have argued against the enhanced role of the private sector in water management and the price of fresh water reflecting the full ‘real’ cost of water. Neither do they agree with the position that water belongs to the State, as defined in the new Water Law, currently under preparation.

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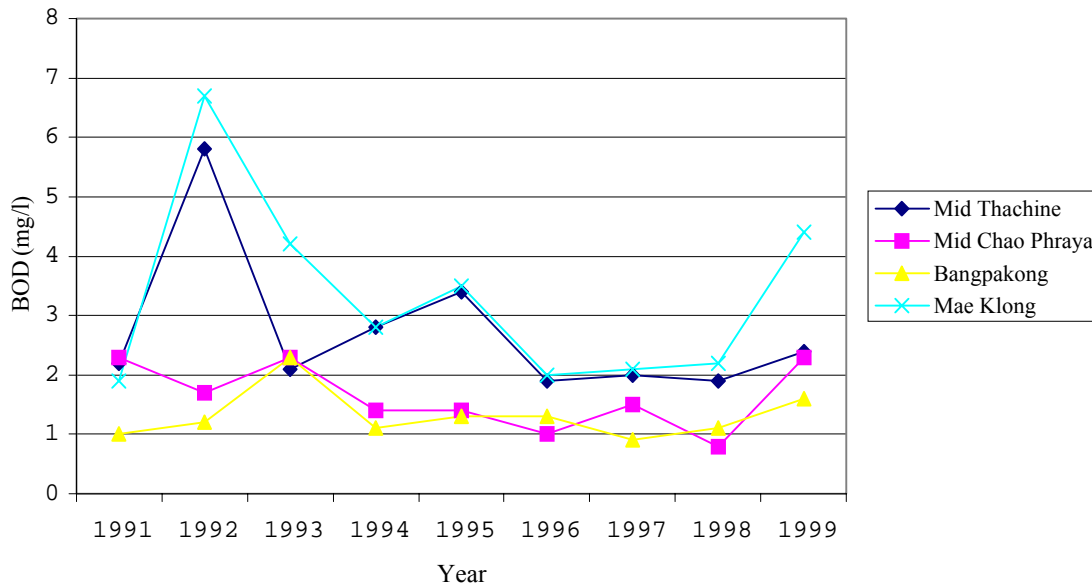
<sup>12</sup> Not to mention water pollution from agriculture (especially intensive livestock production) and aquacultural activities.

<sup>13</sup> In February 2003 the Prime Minister announced that a total ban will be enforced by the end of the year.

Water quality in Thailand's major rivers has declined considerably over the past decades. The PCD reported that water quality during 1997-1999, particularly in the northern portion of the Chao Phraya River about 200 kilometers before reaching Bangkok, showed deterioration in comparison to previous years. There are serious problems in other places too, with a drastic decline in the quantity oxygen in river water, especially during the dry season.<sup>14</sup> Any quality crisis could be very costly for the local economy, in addition to resulting in the loss of biodiversity. The pollution of Thachine River – Thailand's second-most important river – has been estimated to induce a loss in income for fishermen amounting to 15 million Baht in a month (OEPP, 2000).

Figure 3 shows that there has been an increase in biochemical oxygen demand (BOD) in Mae Klong River, while other major rivers show a decline in the past decade, along with an improvement in some years. A noticeable year-to-year fluctuation is clearly observable in Tachin and Mae Klong rivers.<sup>15</sup> These annual average figures, nevertheless, might not adequately indicate the critical nature of the problem, as flows and quality fluctuate with seasonality. Official monitoring of water quality in rivers in Thailand have often warned of a serious crisis. In addition, threats from floods have been on the rise, becoming more common in recent years.

**Figure 3**  
**Average Level of BOD in Major Rivers**



<sup>14</sup> A number of indicators have been employed to measure the quality of water. Biochemical Oxygen Demand (BOD) is one of the key parameters, which measures the amount of oxygen consumed in the biological processes that break down organic matters in water. Therefore, the higher the BOD is, the lower the quality of water. The acceptability of the quality depends on the outcome of comparing actual figures to those of the officially set standards.

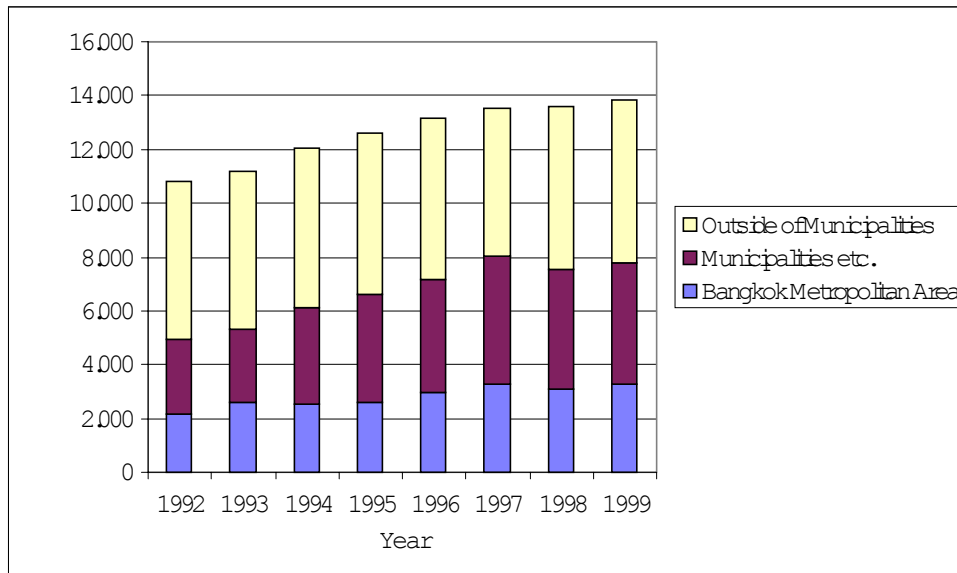
<sup>15</sup> These rivers are in fact the same river that runs through the western part of Bangkok, into the Gulf of Thailand. The different names are given to the sections that go through different provinces.

### 3. Solid Waste

The volume of solid waste in Thailand has reached dramatic 37,880 tons a day in 1999, registering an increase of 1.7 percent over that of 1998. Improper management of solid waste leads to the contamination of soil and fresh water sources, and causes nuisance to communities and their residents. Solid waste in particular has become a problem area, on account of the widening gap between waste generation and the capacity to handle waste. Failure in solid-waste management has also been due to laxity in the regulation of imports (especially the case of industrial chemicals and containers). Recently, Thailand Research Fund (TRF) – an independent governmental research organization – began exploring the possibility of networking stakeholders and exchanging information on chemical imports in order to improve management. The project tries to trace chemical imports from the port to the final destination. This can be seen as the first step in improved management.

Figure 4 shows that the amount of solid municipal waste managed in Thailand is less than the waste generated by several industries, especially food and beverages, and consumer goods. The packaging industry has not internalized its environmental costs into the material cost of packages, and industries that use packaging have also failed to take the externalities of packages into account. As a result, package prices do not correctly reflect their relative full costs.

**Figure 4**  
**Annual Generation of Solid Waste in Thailand**



Source: Pollution Control Department

#### *(a) Municipal Solid Waste*

Changes in consumption patterns and production and packaging technologies have led to the generation of new forms of solid waste, most of which are not biodegradable. Bangkok Metropolitan Area collects almost all the solid waste produced in the city each day, while other municipalities in the country do not possess adequate capacity

for the collection of solid waste. The strategy employed in solid-waste management in Thailand focuses on end-of-pipe treatment. Although Bangkok Metropolis and municipalities use landfills and incinerators for the disposal of solid waste, significant quantities of provincial and municipality waste remain, and are often dumped openly without proper management. In addition, the lack of effective management, capital and cooperation among communities, as well as weaknesses in existing laws,<sup>16</sup> pose serious challenges for solid-waste management. The problem is exacerbated by the lack of political support for the introduction or increase of waste-management fees.

There have been small, locally based initiatives in solid-waste management. For instance, civil society groups have worked with local communities to exchange recyclable household waste for eggs and candies. However, projects of this kind are too small in their scale to produce a sufficient impact, and they cannot be replicated in all localities. A more successful story has been that of private-sector commercialization of various kinds of waste, which was initiated in Northern Thailand. This has been emulated in a number of provinces, with the company that started this process expanding its operations to those areas. This experience suggests that if sufficient incentives and orientation are provided, the waste stream can be managed more efficiently.

#### *(b) Hazardous Waste*

Increased industrial and agricultural demand has led to a rapid rise in the production and import of hazardous chemicals (Figure 5). The production of hazardous waste in Thailand in 1999 alone was estimated at approximately 1.6 million tons, generated by households, gas stations, hospitals, airports, etc. (OEPP, 2000). The quantity of used lubricant oil, for example, far exceeds the capacity to treat it.<sup>17</sup> The financial crisis in 1997, however, led to a reduction in the level of hazardous waste because of a decline in economic activities.

At present, there are three plants for handling industrial hazardous waste in Thailand. The capacity of these plants and the shipment for overseas treatment could reduce only 15 percent of the total quantity of industrial hazardous waste produced in the country.<sup>18</sup> The rest is most likely disposed of improperly in the environment, thus posing serious hazards to health (Figures 6 and 7)<sup>19</sup> and to ecological systems. Despite the laws and regulations that prohibit this, hazardous wastes are still disposed of in many illegal ways on public lands. Another serious problem is that the collection of hazardous waste from communities has not been separated from that of general waste. In BMA, for example, only 0.08 percent of the total community hazardous waste is collected daily (PCD 2001). Although estimates are not available, the situation is likely to be much worse in other cities. This, again, indicates the inadequacy of management systems as well as the lack of responsibility of waste producers.

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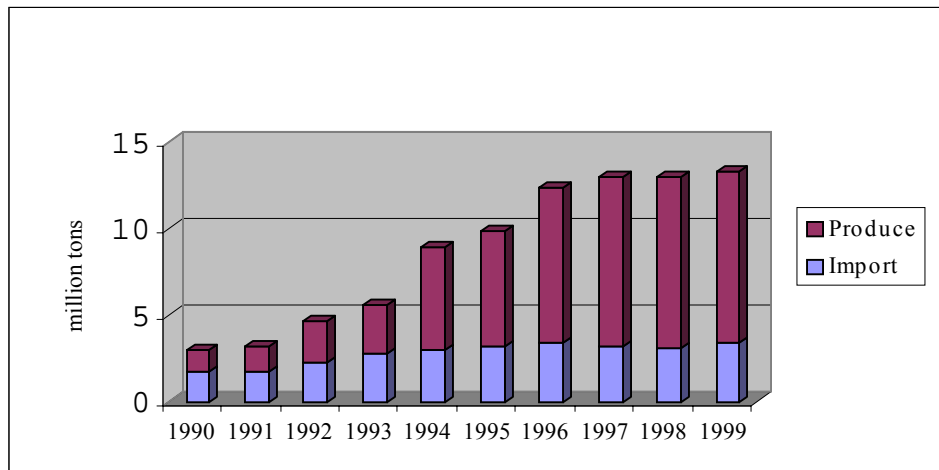
<sup>16</sup> For instance, a municipality cannot charge households more than the collection fee that was determined two decades ago by a law. That rate does not include disposal costs, and covers only the collection cost.

<sup>17</sup> It is estimated that around 20 percent of the total waste is collected by legalized collectors. There is no information on the collection of the remaining 80 percent.

<sup>18</sup> Increased from approximately 10 percent in the mid-1990s (see NREP, 1995).

<sup>19</sup> This could include impacts from improper use of agricultural chemicals.

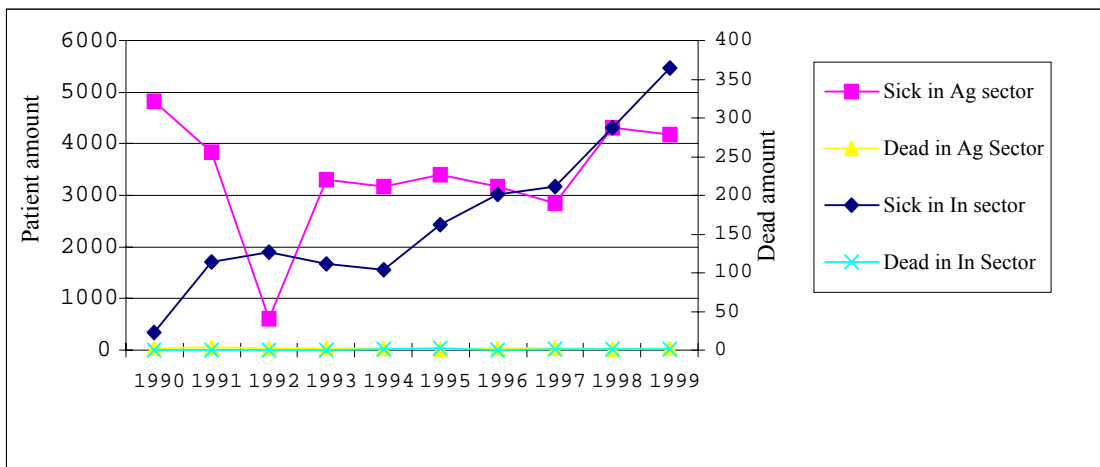
**Figure 5**  
**The Production and Imports of Hazardous Chemicals, 1990-1999**



Source: Pollution Control Department, 1999

The three treatment plants in Thailand are owned by a monopoly, GENCO. The escalation of treatment fees in recent years by GENCO caused a major uproar among waste producers,<sup>20</sup> and this may have slowed down the shipment of hazardous waste into its plants. Figure 8 below shows a decline in recent years for some types of waste.

**Figure 6**  
**Death and Chronic Illness Resulting from Chemicals**

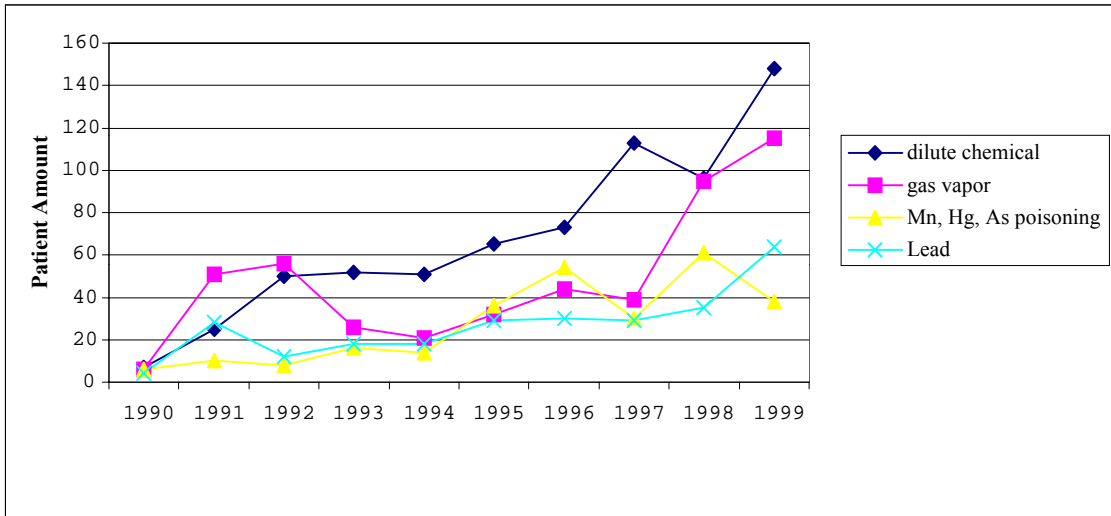


Source: OEPP, 2000

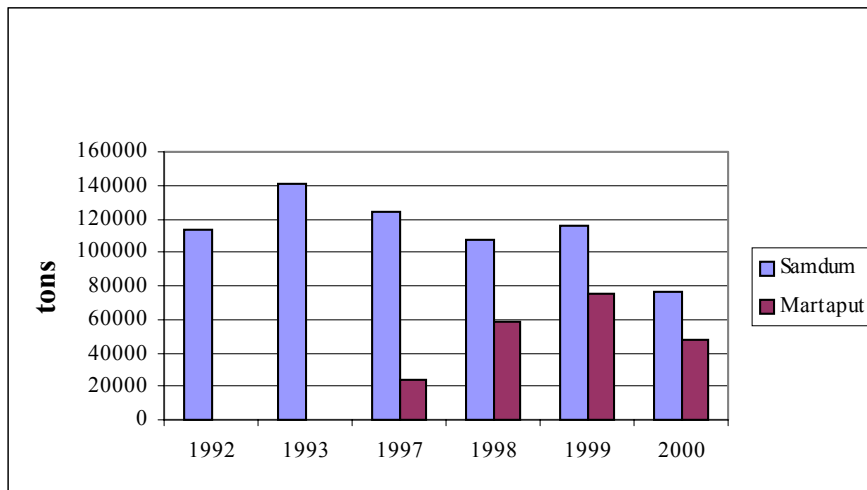
**Figure 7**  
**Illness by Cause, 1990-1999**

<sup>20</sup> A few months later, the fee was back to normal. While no one knew exactly what happened, the incident became a well-contested issue between the business community and the monopoly.

Source: Pollution Control Department, 1999.



**Figure 8**  
**Hazardous Waste Treated at Samaedum and Martaput Stations**



Source: Pollution Control Department, 1999

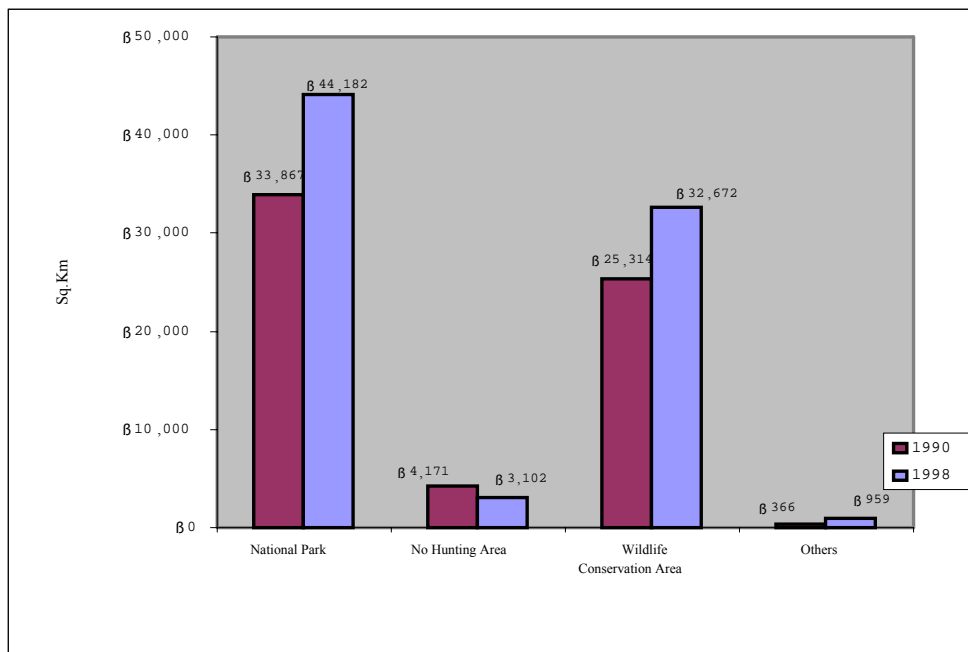
#### 4. Forests

The forests in Thailand face a critical situation at present. Forested land decreased from 53 percent of the total land area in 1961 to 25.6 percent in 1998, and non-governmental sources suggest that it may have further declined to one-fifth of the total area in 2002. One of the objectives of the Thailand National Forestry Policy of the Royal Forest Department (RFD) (<http://www.forest.go.th>) has been to raise the proportion of forested areas in Thailand to 40 percent of the total area. This will include protected forest (15 percent), which will be kept for nature conservation, recreation and environmental quality protection, and productive forest (25 percent), which will be designated for producing timber and other forest products. In pursuit of

this objective, the Forest Department has established more protected areas,<sup>21</sup> such as national parks, wildlife conservation areas, and no-hunting areas (Figures 9 and 11). Additional public resources have been allocated for afforestation and reforestation. The private sector has also participated in this scheme (Table 7 and Figure 10).<sup>22</sup>

With the stopping of logging concessions since 1989 and other efforts to increase green areas, the area of forested land has shown an increase in recent years (OEPP, 2000). The Forest Resources Assessment Division of the Royal Forest Department estimated the forested land in 2000, using Geographic Information System (GIS). Data from 46 out of total 76 provinces in Thailand revealed an increase of 13.32 percent in forest area since 1995. The total forested land in 2000 was estimated as 33.96 percent of the total land area (OEPP, 2000). This increase was believed to be a result of improved technology in forest measurement, better forest management, natural forest succession, reforestation by public and private sectors, and increasing local cooperation in forest protection. However, the figures continue to be well below the targeted 40 percent.

**Figure 9**  
**Trends in Protected Area Expansion**

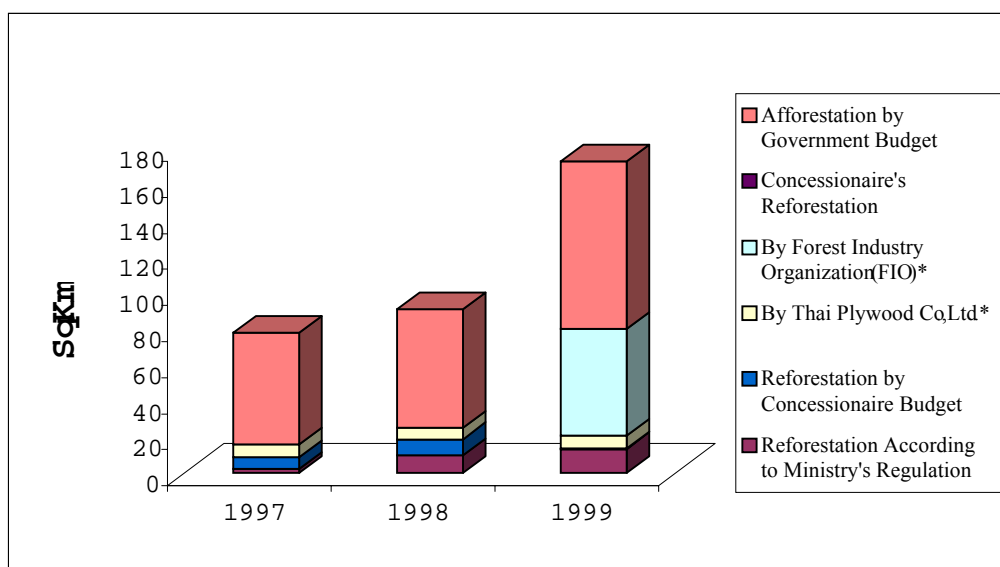


Source: Royal Forest Department, 1999

**Figure 10**  
**Reforestation by Agencies, 1997-1999**

<sup>21</sup> Protected Area is an area set aside for the preservation and protection of important natural and cultural features for scientific, educational and recreational use. Thailand has seven categories of protected areas: national park, wildlife sanctuary, non-hunting area, forest park, botanical garden, arboretum, and protected watershed (<http://www.pactbelize.org/protected.html>).

<sup>22</sup> The PTT has achieved its reforestation and afforestation target of one million rai this year.



Source: Royal Forest Department, 1999

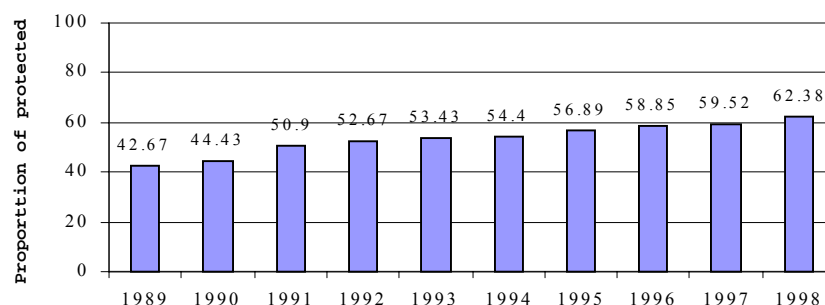
**Table 7**  
**Afforestation and Reforestation 1989-1999**  
(million Baht)

	1989-1996	1997	1998	1999	Total
Afforestation by Government Budget	6451.84	62.03	65.92	92.83	6672.62
Concessionaire's Reforestation	1468.97	0	0	0	1468.97
By Forest Industry Organization (FIO)*	270.25	0	0	59.24	329.49
By Thai Plywood Co.,Ltd.*	11.74	7.01	6.19	6.94	31.88
Reforest According to Ministry's Regulation	125.64	2.34	9.71	13.37	151.06
Reforestation by Concessionaire Budget	208.69	6.51	8.98	0.4	224.58
<b>Total</b>	<b>8,537.13</b>	<b>77.89</b>	<b>90.8</b>	<b>172.78</b>	<b>8,878.6</b>

Note: \*excluding Concessionaire's Reforestation. Total amount excludes other private projects, e.g. commemoration of the Royal Golden Jubilee project.

Source: Royal Forest Department, 1999

**Figure 11**  
**Percentage of Protected Areas to Total Forestland, 1989-1998**



Source: Pollution Control Department, 1999

### **5. Soils Resources**

Thailand is fortunate that half of its total land area, 320.7 million rai, is suitable for cultivation (OEPP, 1999). However, over the years, changes in patterns of land use have taken much of these fertile lands, particularly those in the central plain region, out of agricultural production for other kinds of use. Rice-growing areas have declined as a result of land speculation (which diverts rice land for other uses) fuelled by the rapid growth in GDP and in per-capita income. Construction and industry have taken over much of these lands.

The Land Development Department (LDD) has classified land problems in Thailand into four categories:

- *misuse of land*, involving residential and industrial construction on agricultural land, deforestation and encroachment into watershed-conserved area, and cultivation of plants that are not suitable to soil types;
- *consequences of land mismanagement*, e.g. soil erosion and low organic matters ;
- *topological and environment problems*, comprising “natural” processes such as soil degradation in Tung Kula Rong Hai, low productivity in coastal land area, excessive organic peat swamp, and low fertility of old mining soil; and
- *problems associated with soils*, including acid soil, saline soil, and acid and saline soil.<sup>23</sup>

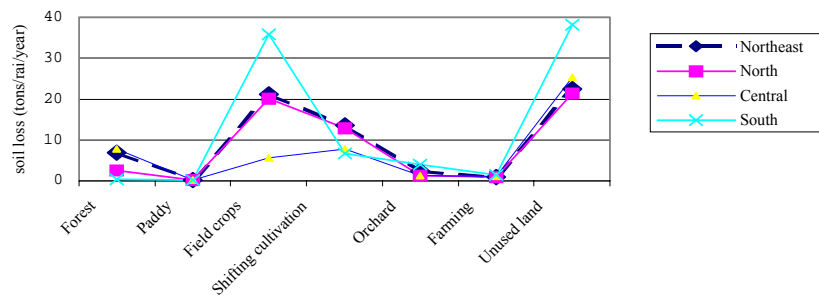
LDD (2000) indicated that among these, soil erosion was the most severe problem in Thailand, which adversely affected the productivity of land and the quality of water used by downstream communities,<sup>24</sup> and led to sedimentation in dams. Despite the implementation of soil-conservation and water-resources projects, very little progress has been achieved, and soil erosion continues to be a major problem in all agricultural regions, especially the South where hills are steep and rainfalls most intense and

<sup>23</sup> See <http://www.ldd.go.th>

<sup>24</sup> The most “classic” case is the well-known land-use conflict involving transboundary pollution between low-landers and hill tribes in Chomthong District of Chiangmai.

frequent (Figure 12). Soil erosion has been estimated to cost Thailand more than 200,000 million Baht a year – a figure much higher than Thailand’s exports of field crops (See Jesdapipat, 1995). Various efforts to prevent soil erosion were made in Northern Thailand from the mid-1980s to the late-1990s, with technical assistance from Australia and Germany. However, the success of remedial actions would require more than financial resources; social and cultural factors play a crucial role in determining the efficacy of any transfer of knowledge to mitigate or prevent these problems.

**Figure 12**  
**Soil Erosion Estimate, 1995**



Source: <http://worldbank.or.th/environment/>

The commercialization of agriculture in Thailand has led to other problems as well. The import of pesticides has increased from 24,000 tons in 1988 to approximately 46,000 tons in 1996, and continues to rise (<http://worldbank.or.th/environment/>). While contributing to increased yields, the intensive use of pesticides and chemical fertilizers in agriculture also contributes to soil degradation, loss of soil biodiversity, nitrification and other problems. An increase in pesticide use causes soil contamination and soil degradation, while inappropriate use sometimes results in adverse impacts on human health and aquatic life.

Salinity is also a critical problem for Thailand, for both agricultural production and infrastructure development. The expansion of saline soil has become a severe problem in many regions of Thailand, especially the Northeastern region, where underground salt domes are easily disturbed by surface irrigation and deforestation (OEPP, 2000 and <http://worldbank.or.th/environment/>). Better planning and close monitoring of development projects are necessary.

Trade opportunities could sometimes bring about unwanted environmental consequences, as in the case of the spread of salinity accompanying shrimp production. The increasing demand for shrimp in the international market provided considerable incentive for the expansion of shrimp aquaculture into freshwater land during the mid-1990s. The area under shrimp cultivation rose from 1,000 rai to 44,000 rai (<http://www.oepp.go.th/projects/shrimp/>), extending to provinces in Central and Eastern regions of the country, such as Prachinburi, Chachoengsao, Nakhonnayok, Suphanburi, Nakhonpratom, and Ratchaburi. This “new” expansion of shrimp farming into fresh water land areas is a cause of alarm for environmentalists, who saw in

abandoned coastal shrimp farms a testimony of the government's failure to police land-use and protect the precious mangroves and "rice bowls" of the country. Thus, in July 1998, shrimp aquaculture in freshwater land areas was banned, on the basis of Article 9 in the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992). This ban covered 170,000 rai, accounting for 85 percent of the total freshwater prawn farms. Legal restriction was severe in a number of provinces, and farmers who wanted to cultivate shrimp in controlled areas were required to register themselves.

## **6. Coastal Resources**

Coastal and marine natural resources, e.g. mangrove forests, beaches, coral reefs, sea-grass beds, and coastal water quality, have undergone a continuous process of degradation since the rapid expansion of activities along coastal zones, primarily due to the lack of efficient management of these resources. As a result, the area of mangrove forests halved from approximately 2 million rai<sup>25</sup> in 1961 to 1.05 million rai in 1996 (OEPP, 2000). The causes of this depletion include shrimp farming,<sup>26</sup> concessions in mangrove forest, mining, and encroachment (OEPP, 1999). The trade-off between shrimp farming and mangroves in several regions (see Table 8) is evident, despite the existence of legislative and administrative alternatives to control the number of shrimp farms and to increase mangrove forest covers. Examples of these efforts include (a) development plans for the conservation of mangrove areas, managed by the Royal Forest Department, (b) the Coastal Resources Management Project (1997-2001), managed by LDD, and (c) the recent mangrove forest management plan, approved by the Cabinet in 2000.<sup>27</sup>

In 1999, the National Environment Board (NEB), the Parliament and the concerned government departments resolved to initiate research to support sustainable shrimp farming in freshwater. The following areas were identified for special focus: (a) a system to protect the salinity of soil and water from shrimp-farming activities, (b) water-treatment systems to reuse water, (c) feeding systems to reduce salinity, water use, and to increase shrimp supply, and (d) the introduction of plants around shrimp pools to balance salinity and reduce sediment waste (OEPP, 2000). In spite of the ban, shrimp cultivation has continued in certain restricted areas. The debate on its merit seems to surface when the international price for shrimp is good and when environmentalists wake up to the reality that enforcement of the ban has not been effective.

There has been a degradation of coral reefs, beaches and shore water quality due to industrial activities, urbanization and tourism. A survey of the Fisheries Department found that, during 1995-1999, coral reefs in the Gulf of Thailand were in better health than those in the Andaman Sea. Many factors have adversely affected the health of corals in Thailand, including mining sedimentation and cyanide and dynamite fishing practices used in some coastal areas today. Although the overall shore-water quality in

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<sup>25</sup> One hectare equals 6.25 rai.

<sup>26</sup> Sathirathai and Barbier (2001) found that when environmental costs of coastal shrimp farming, such as coastal erosion, are included, the lucrative shrimp farming is not socially profitable.

<sup>27</sup> Objectives of the plan is to resolve conflict in mangrove forest uses, to control mining and forest concession, to protect and treat pollution, to collect user fee accordance with types of use and size of using area and determine zone of use (zoning) (OEPP, 2000).

the Gulf of Thailand and the Andaman Sea is up to the standards set by the Pollution Control Department (1999), several other important sites have been found to be contaminated by coliform bacteria. Examples include estuaries of Thachine, Chao Phraya, Bangpakong, Rayong, Chantaburi, Pranburi, Pagpanang Rivers, Naton pier at Koh Samui, Upper Phi Phi Island, and Patong beach. Most of these sites are located in provinces that have heavy industries and are popular tourist places. Environmental degradation in these areas can have an adverse impact on marine life – e.g. manatees, sea turtles, sea birds and sea fishes – endangering some species, as well as on tourism and the living conditions of people who are dependent on marine resources for their livelihood and commercial activities.

**Table 8: Comparison of Mangrove Forest and Shrimp Farming, 1989-1996  
(East and SouthE/W)**

Year	(rai)					
	Mangrove forest (E)	Shrimp farming	Mangrove forest (SE)	Shrimp farming	Mangrove forest (SW)	Shrimp farming
1989	129,430	99,420	106,775	160,430	888,564	9,149
1991	69,275	133,489	87,375	191,442	927,194	18,441
1993	81,548	131,971	102,654	165,050	836,545	26,452
1996	79,113	102,920	103,571	148,722	830,650	48,498

Source: OEPP, 2000

## B. Environmental Governance

Thailand has several laws and regulations related to the conservation of natural resources and the environment (Table 9). The Constitution of the Kingdom of Thailand, B.E. 2540 (1997) is sometimes referred to as a “Green” constitution, since many sections of the Constitution focus on the protection of natural resources and environmental management. It has differentiated the role played by the central government, local governments, and other stakeholders. The Constitution has made generous provisions to enable the participation of people in the process of environmental management. For example,

- Article 46 states that “Persons so assembling as a traditional community shall have the right to conserve or restore their customs, local knowledge, arts or good culture of their community and of the nation and participate in the management, maintenance, preservation and exploitation of natural resources and the environment in a balanced fashion and sustainable as allowed by law”.
- Article 56 states that “The right of a person to give to the State and communities participation in the preservation and exploitation of natural resources and biological diversity and in the protection, promotion and preservation of the quality of the environment for usual

and consistent survival in the environment, which is not hazardous to his or her health and sanitary condition, welfare or quality of life, shall be protected, as allowed by law”.

Therefore, any project or activity which may have serious adverse effects on the quality of the environment will not be permitted, unless its impact on the quality of the environment is studied and evaluated, and unless opinion has been obtained prior to the operation of such a project from an independent organization consisting of representatives from private environmental organizations and from institutions of higher education in the field of environmental studies. In addition, the law also protects the right of a person or an agency to sue a state agency, state enterprise, a local government organization or other state authority to perform the duties, as provided by law under paragraphs 1 and 2 (<http://www.meechailaw.com/>).

**Table 9: Selected Laws Related to Natural Resources and Hazardous Waste\***

Types of Natural Resources	Laws
Forest	<ol style="list-style-type: none"> <li>1. Forest Act, B.E. 2484 (1941)</li> <li>1. National Park Act, B.E. 2504 (1961)</li> <li>2. Wildlife Conservation Area Act, B.E. 2503 (amended 2535) (1960)</li> <li>3. National Forest Reserve Act, B.E. 2507 (1964)</li> <li>4. Reforestation Act, B.E. 2535 (1992)</li> </ol>
Soil and Watershed	<ol style="list-style-type: none"> <li>1. National Irrigation Act, B.E. 2485 (1942)</li> <li>2. Land Development Act, B.E. 2526 (1983)</li> <li>3. Land and Construction Tax Act</li> <li>4. The Enhancement and Conservation of the National Environmental Quality Act B.E. 2535 (1992)</li> <li>5. Excavation and Land Fill Act, B.E. 2543 (2000)</li> </ol>
Coastal Zone	<ol style="list-style-type: none"> <li>1. Fisheries Act B.E. 2490 (1947)</li> <li>2. Wildlife Conservation and Protection Act B.E. 2535 (1992)</li> <li>3. Hazardous Substance Act B.E. 2535 (1992)</li> </ol>
Hazardous Waste	<ol style="list-style-type: none"> <li>1. Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992)</li> <li>2. Factory Act, B.E. 2535</li> <li>3. Hazardous Substance Act, B.E. 2535</li> <li>4. Public Health Act, B.E. 2535</li> </ol>

Source: Extracted from Wongbundit, 2002

Some of the other legal instruments, such as National Park Act, B.E. 2504 (1961) and Land Development Act, B.E. 2526 (1983), also relate to the conservation of natural resources. However, these laws were enacted with the assumption that the State – and not the people – has the entire responsibility for the management of natural resources and the environment. The scope and nature of participation by the public are not

clearly defined in these laws.<sup>28</sup> The enactment of new laws or the modification of existing laws is necessary for the effective implementation of the articles in the Constitution that provide for people's participation in the conservation of natural resources.<sup>29</sup>

Despite the existence of these laws and regulations, and the escalating government budget to protect and conserve natural resources and the environment, Thailand's environmental problems persist. There is an effort now, initiated by PCD – the central authority of environmental control – to investigate why enforcement has been inadequate, and to suggest a mechanism of centralized control that relies almost exclusively on a command-and-control (CAC) regime through which standards are set (Table 10).<sup>30</sup> The Director General of PCD, in an interview, identified the following initiatives as central to the present reform environmental protection:

- Greater use of public disclosure and transparency;
- Broadening the public participation; and
- Strengthening existing laws and regulations.

Efforts to introduce market-based instruments into the work of the PCD also deserve mention. Since the Eighth Social and Economic Development Plan the government began to realize – and has provided – opportunities for introducing incentive-based instruments that would help strengthen the implementation of a CAC regime. Nevertheless, the introduction of market-based instruments for environmental protection is not easy, as the private sector does not wish new measures to increase its production costs. Stiff competition in many sectors, different levels of compliance among producers, and the current economic crisis make it difficult for a government agency to introduce new measures effectively, no matter how innovative they might be. The private sector also seems to rely on short-term strategies, in order to survive present difficulties.

The civil society in Thailand has been very active in many areas of public concern, including issues related to the environment and human development. However, grass-roots level organizations often take a micro-view of the challenges, at the expense of the “bigger picture”. Very few local organizations, for instance, follow the debates around GATS and most of them could be poorly informed about the issues involved.

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<sup>28</sup> There are many incidents of conflicts between local stakeholders and the State, as in the cases of natural gas pipelines and power plant construction. New laws, public hearings and procedures for direct public participation have all been suggested as means of resolving such conflicts. See, for example, Atibodhi (1993) and the Foundation for the Promotion of Local Economy and Environmental Development (2001).

<sup>29</sup> Over 140 laws, considered to be out-of-date, were abolished in April 2003.

<sup>30</sup> Thailand has six types of standards for water: drinking water; effluence; surface water; coastal water quality; groundwater quality and water quality for freshwater animals.

**Table 10: Industrial Effluent Standards**

Parameters	Units	Standard Values
1. pH	-	5.5-9.0
2. Total Dissolved Solids (TDS)	mg/l	<ul style="list-style-type: none"> <li>not more than 3,000 mg/l depending on receiving water or type of industry under consideration of PCC but not exceed 5,000 mg/l</li> <li>not more than 5,000 mg/l exceed TDS of receiving water having salinity of more than 2,000 mg/l or TDS of sea if discharge to sea</li> </ul>
3. Suspended solids (SS)	mg/l	not more than 50 mg/l depending on receiving water or type of industry or wastewater treatment system under consideration of PCC but not exceed 150 mg/l
4. Temperature	°C	not more than 40
5. Colour and Odour	-	not objectionable
6. Sulphide ( as H <sub>2</sub> S)	mg/l	not more than 1.0
7. Cyanide ( as HCN)	mg/l	not more than 0.2
8. Fat, Oil & Grease (FOG)	mg/l	not more than 5.0 mg/l depending of receiving water or type of industry under consideration of PCC but not exceed 15.0 mg/l
9. Formaldehyde	mg/l	not more than 1.0
10. Phenols	mg/l	not more than 1.0
11. Free Chlorine	mg/l	not more than 1.0
12. Pesticides	mg/l	not detectable
13. Biochemical Oxygen Demand (BOD)	mg/l	not more than 20 mg/l depending on receiving water or type of industry under consideration of PCC but not exceed 60 mg/l
14. Total Kjedahl Nitrogen (TKN)	mg/l	not more than 100 mg/l depending on receiving water or type of industry under consideration of PCC but not exceed 200 mg/l
15. Chemical Oxygen Demand (COD)	mg/l	not more than 120 mg/l depending on receiving water of type of industry under consideration of PCC but not exceed 400 mg/l
<b>16. Heavy metals</b>		
1. Zinc (Zn)	mg/l	not more than 5.0
2. Chromium (Hexavalent)	mg/l	not more than 0.25
3. Chromium (Trivalent)	mg/l	not more than 0.75
4. Copper (Cu)	mg/l	not more than 2.0
5. Cadmium (Cd)	mg/l	not more than 0.03
6. Barium (Ba)	mg/l	not more than 1.0

7. Lead (Pb)	mg/l	not more than 0.2
8. Nickel (Ni)	mg/l	not more than 1.0
9. Manganese (Mn)	mg/l	not more than 5.0
10. Arsenic (As)	mg/l	not more than 0.25
11. Selenium (Se)	mg/l	not more than 0.02
12. Mercury (Hg)	mg/l	not more than 0.005

**Remark:**

- 1) PCC – Pollution Control Committee
- 2) The standards were summarized from the Notification of the Ministry of Science, Technology and Environment, No. 3, B.E. 2539 (1996) and it specifies that pollution sources that the above standards are to be applied are factories group II and III issues under the Factory Act B.E.2535 (1992) and every kind of industrial estates.
- 3) Notification of the Pollution Control Committee, No. 3, B.E. 2539 (1996) dated August 20, B.E. 2539 (1996) has issued types of factories (category of factories issued under the Factory Act B.E.2535 (1992) that are allowed to discharge effluent having different standards from the Ministerial Notification No. 3 above as follows :
  1. BOD up to 60 mg/l
    - animal furnishing factories (category 4 (1))
    - starch factories (category 9 (2))
    - food from starch factories (category 10)
    - textile factories (category 15)
    - tanning factories (category 22)
    - pulp and paper factories (category 29)
    - chemical factories (category 42)
    - pharmaceutical factories(category 46)
    - frozen food factories (category 92)
  2. COD up to 400 mg/l
    - food furnishing factories (category 13 (2))
    - animal food factories (category 15 (1))
    - textile factories (category 22)
    - pulp and paper factories (category 38)
  3. TKN
    - 100 mg/l - effective after 1 year from the date published in the Royal Government Gazette of the Ministerial Notification No. 4
    - 200 mg/l - effective after 2 year from the date published in the Royal Government Gazette of the Ministerial Notification No. 4 for the following factories:
      1. food furnishing factories (category 13 (2))
      2. animal food factories (category 15 (1))

**Sources:**

1. Notification the Ministry of Science, Technology and Environment, No. 3, B.E.2539 (1996) issued under the Enhancement and Conservation of the National Environmental Quality Act B.E.2535 (1992), published in the Royal Government Gazette, Vol. 113 Part 13 D, dated February 13, B.E.2539 (1996)

2. Notification the Ministry of Science, Technology and Environment, No. 4, B.E.2539 (1996) issued under the Enhancement and Conservation of the National Environmental Quality Act B.E.2535 (1992), published in the Royal Government Gazette, Vol. 113 Part 13 D, dated February 13, B.E.2539 (1996)
3. Notification of the Pollution Control Committee, No. 3, B.E. 2539 (1996) dated August 20, B.E. 2539 (1996) issued under Factory Act B.E.2535 (1996), published in the Royal Gazette, Vol. 113, Part 75 D, dated September 17, B.E. 2539 (1996)

### **C. Environmental Services**

Although the importance of the services sector, especially its growing share in the GDP, was recognized in Thailand from the 1990s, government policies in early days had focused on employment generation, without paying much attention to questions of environmental protection (Jesdapipat, 1997). This meant a reliance on the natural capacity of the ecosystem to absorb wastes generated through economic activities, resulting in a low economic – as compared to physical – demand. The supply of environmental services such as hazardous-waste management was either low or provided by government agencies as part of general welfare policies. The government saw the poor quality of these services as indicating an early stage of their evolution in Thailand, with lack of capital preventing an adequate coverage of geographical areas or number of people.<sup>31</sup>

The natural carrying capacity for the absorption of waste reached its limits in the early 1980s. Environmental challenges were brought before the planning bodies at the commencement of the Fourth Economic and Social Development Plan. Around the same time, several non-governmental organizations (NGOs) began emerging as a response to the perceived failure of government policies, enabling a more direct participation of the population in the development process. The present Constitution of Thailand provides that those who would be affected by projects need to be part of the process of project formulation. Stakeholders, by this understanding, would include communities or individuals residing outside the project boundary, but may be affected by pollution or other adverse effects, guaranteeing them rights to participate in EIA. However, the notion of stakeholders has not been clearly defined, resulting in confusion whenever project scrutiny and public participation processes are initiated.<sup>32</sup> In the case of environmental services, stakeholders refer to a very broad domain, including every unit of society: country negotiators, the research community, the business community, civil services, civil-society organizations, and individuals as consumers and taxpayers. The size of their stakes could vary, depending on the role played by each entity.

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<sup>31</sup> Some government agencies, however, have shown a lack of interest in issues of environmental protection, giving priority to other goals including the generous provision of investment promotion to foreign firms.

<sup>32</sup> For instance, civil society groups travel hundreds of kilometres to join local protesters against natural-gas pipeline projects or power-plant construction. Would these groups be considered as stakeholders?

“Green issues” have largely been confined to forests, watershed, wildlife, and soils, addressed primarily by public sector bodies such as the OEPP or the Royal Forest Department. Official documents such as the annual environmental reports produced by the Pollution Control Department (PCD) indicate that “brown issues”, on the other hand, have met with more active participation from the private sector. It might be useful to focus initially on brown issues in priority environmental services sectors, as the public sector may not be willing to relinquish its traditional role as guardian of the natural-resource base and assume the responsibility of ensuring a liberal policy in sectors where the private sector has already become active. Water-treatment services and industrial hazardous-waste treatment are two major environmental services, and they have been chosen for special focus in this study.

### ***1. Estimated Demand for and Supply of Environmental Services***

There is considerable economic demand for environmental services in Thailand, given the pace of industrialization, the state of environmental degradation in the country and the amount of accumulated industrial and household waste that awaits proper treatment,<sup>33</sup> not to mention new opportunities in cleaner production and cleaner technologies. However, the “actual” size of environmental services in Thailand has not been estimated, except for a market survey conducted by the United States Department of Commerce (1998), which discussed the demand for environmental services in broad terms. The survey estimated the annual market value of pollution-control equipment and environmental services in Thailand before the financial crisis of 1997 at one billion dollars (Table 11). This was projected to grow by 15 percent over ten to fifteen years. Other sources, cited by the Department of Commerce, had put the value as high as US\$ 1.8 billion per year.<sup>34</sup> The total contract value for environmental infrastructure was estimated to be US\$ 13-15 billion by early 2000.

**Table 11 : Thai Market for Pollution-Control Equipment and Environmental Services**

(US million)			
Total value of	1995	1996	1997
• Market size	1,000	1,200	1,500
• Local production	40	45	48
• Exports	18	20	23
• Imports	820	1,000	1,370
• Imports from US	420	530	720

Source: US Department of Commerce, 1998: 1

Estimating the market size of environmental services is not easy, given the dynamism of several market conditions, the profitability of firms, public pressure, standards and compliance, enforcement, waste reduction and treatment options, and innovative environmental-management systems adopted by firms. Firms have an increasing

<sup>33</sup> Before the economic crisis of 1997, only one-third of annual industrial waste was properly treated, thus leaving the other two-thirds untreated. Some of this might be dumped illegally.

<sup>34</sup> Another reference to the estimates of Kenan Institute of Private Enterprise cited 1.5 billion per year before the 1997 crisis. (United States Department of Commerce, 1998: 1).

number of options available now, and market demand is determined by the choices that firms make.

Table 12 below clearly indicates that the poorer regions of the North and the Northeast lag behind others in terms of access to wastewater facilities. In the Northeastern region, the poorest, more than two-thirds of the population do not have access to these facilities. Compared with almost 100 percent access in Bangkok Metropolitan Area and in the rich industrial region of the East, this has given rise to concerns over equitable access. This confirms the need to link the liberalization of environmental services with human development in the country.

**Table 12: Municipal Wastewater Treatment Capacity in Thailand**

Region	(A) Existing treatment plants		(B) = (A) + those under construction	
	Capacity (m <sup>3</sup> /day)	Coverage (% of population)	Total capacity (m <sup>3</sup> / day)	Coverage (% of population)
North	83,600	22	139,500	37
Northeast	106,650	19	170,710	31
Central	164,350	23	399,850	57
South	102,950	35	233,650	51
East	214,400	85	326,300	85
BMA	270,000	27	992,000	98
Total	941,950	29 (average)	2,262,010	65 (average)

Source: Tabucanon, 2003: 4

In Thailand, the treatment of wastewater has been traditionally carried out by the local administration. A problem faced by local agencies concerns their inability to include treatment costs into their fresh water service charges. In 1995 the Wastewater Management Authority was established to manage wastewater treatment in Thailand (Box 1). Recently the involvement of the private sector in the formulation and execution of projects has been enhanced, with a view to (a) reducing the need for capital investment and procurement of new technologies by the public sector, and (b) rationalizing prices and internalizing costs, steps that have proved difficult for local governments and politicians.<sup>35</sup>

Although cost-internalisation, based on polluters-pay principle, is an efficient and equitable means of addressing environmental problems, the Thai public has not responded favourably to privatisation schemes. Based on the experience of privatisation in other sectors such as telephone, banking, natural gases and

<sup>35</sup> The political system in Thailand makes politicians and local government officials very sensitive to the imposition of any additional financial burden on the population for fear of losing popularity, even if this means foregoing good management systems (especially since voters are not well-informed about the foregone benefits and the associated additional costs). Outdated laws pose impediments to rational decision-making.

transportation, many fear that this would lead to downsizing and to an escalation of service charges. Although these fears are not entirely unfounded, as demonstrated in the case of GENCO (see below), it is incorrect to assume that privatization would invariably lead to increased costs for taxpayers. Although the Constitution, other legal instruments, and independent agencies such as the National Anti-corruption Agency (NAA) provide sufficient safeguards against corruption, the distrust in privatization schemes is partly linked to apprehensions about corruption. Several public schemes, including the construction of wastewater-treatment facilities, were perceived as lacking in transparency.

**Box 1**  
**Wastewater Management Authority**

Wastewater Management Authority (WMA), a state-owned enterprise under the Ministry of Science, Technology and Environment, was established in 1995 with the objective of efficient wastewater management in accordance with sound engineering and economic principles.

WMA's functions include:

- the establishment of central wastewater treatment systems in order to provide wastewater treatment services initially in the lower Chao Phraya River and Tha-Chin river Basins which are considered to be the country's most critically polluted areas. In 1999 WMA started operating the wastewater treatment systems in 3 provinces of Chachoensao Province, Ang Thong Province, and Saensuk Municipality of Chonburi Province.

- to provide services related to wastewater management, such as the recycling of wastewater or the production of energy from wastewater.

Private-sector participation is allowed through joint-venture undertakings, with WMA holding shares not exceeding 30 percent. WMA's sources of funding include the Central government, local governments, special funds, other domestic and foreign sources, and private-sector investors.

Source: <http://www.wma.or.th/webdoc/Menu100/The%20duties%20and%20mission%20of%20wma.html>

One should note, however, that “successful” initiatives were not confined to the private sector, and that some local governments succeeded in rationalizing the price of environmental services. Political will, adequate information for decision-making, and public awareness on marginal costs, marginal benefits, and net social gains from different management scenarios are essential conditions for the success of these schemes.

The generation of industrial waste – especially hazardous waste – in comparison to the capacity for waste-management has been alarming (See Table 13; Jesdapipat, 1996; NREP, 1995 and Appendices). Hazardous industrial waste is regulated under the Notification of the Ministry of Industry No. 6 B.E. 2540 (1997). The treatment of hazardous industrial waste in Thailand has a monopolistic structure, with only one private firm, GENCO, being licensed to handle and treat it (Box 2). Since its

inception, GENCO has been commissioned to treat industrial and household wastes shipped from all over the country. However, treatment fees were suddenly increased three-fold in 2002, and after a few months of protest by waste-generating industries, they were lowered again to the initial levels. The incidence, however, soured the relations between the industries and GENCO, and did not reflect well on the viability of private schemes in the supply of environmental services in Thailand.

**Table 13: Industrial Waste Generation in Thailand**

(1,000 tonne/ month)

Region	Total	Sludge	Organic	Acid
Central	877	186	176	168
Eastern	106	26	21	18
South	54	12	12	9

Source: [http://www2.diw.go.th/env/web\\_site/eng/FRAME.HTML](http://www2.diw.go.th/env/web_site/eng/FRAME.HTML)

**Box 2**

**Hazardous-waste Treatment Monopoly in Thailand**

General Environmental Conservation Public Company Limited (GENCO) was established as a monopoly in 1994 by GCN Holding Company Ltd. and the Ministry of Industry. With an estimated annual capacity of 1,000 ton, Waste Management International won the exclusive right to collect the shipment of hazardous waste and manage a landfill site for 25 years. GENCO maintains three sites for industrial waste treatment: Map Ta Phut Industrial Waste Treatment Facility in Rayong Province (1997); Samaedum Industrial Waste Treatment Facility in Bangkok (1996); and Ratchaburi Waste Treatment Facility in Ratchaburi Province (1996). The establishment of the site in Map Taput Industrial Estate occasioned considerable conflict between the company and the local public, which has little trust in the scheme and is apprehensive that their backyards will be polluted.

Source: [www.genco.co.th](http://www.genco.co.th)

**2. Investment Gaps in Environmental Services**

Governments in Thailand have invested heavily on wastewater-treatment facilities over the past two decades. Investments on infrastructure accounted for 72 percent of total investment, according to the estimates of the United States Department of Commerce. This has been necessary since the local administrations did not have sufficient capital on account of the earlier budgeting system, which involved the appropriation of most of the local tax by the central government. This highly centralized system relied heavily on subsidies, and over the years governments and their agencies spent a few billion Baht for wastewater-treatment facilities alone (see Tables 14 and 15). The capacity of the government to lend such support for the

development of environmental infrastructures was exhausted by the financial crisis of 1997 (Table 14).

**Table 14: Capital Expenditures in the Wastewater Treatment Sector, 1995-2000**

(million Baht)

Source	1995	1996	1997	1998	1999	2000	Total
OEPP	121	503	2,894	2,209	1,994	3,559	11,280
PWD	1,738	1,545	1,613	1,439	832	680	7,848
BMA	1,316	2,448	1,538	291	1,214	929	7,735
Environment Fund	32	351	935	3,091	871	555	5,834
BMA Contribution	322	1,482	537	256	726	551	3,874
Total	3,529	6,328	7,517	7,285	5,638	6,274	36,571
%change	NA	79	19	-3	-23	11	-
Total USD	141	253	240	176	149	156	1,115

Source: Tabucanon, 2003: 6 cf. respective sources and the Bureau of Budget, Ministry of Finance

Government has invested less in solid waste, mainly because private investors have operated effectively in the solid-waste sector. Reuse and recycle industries have generated sufficient economic incentives to sustain these activities, and the need for government support in the development of infrastructure has been limited. Investment in infrastructure for solid-waste treatment amounts only to 10 percent of that in the wastewater sector by estimates for 2004 (Table 15).<sup>36</sup>

**Table 15: Investment in Environmental Infrastructure, 2004**

Type of project	Wastewater treatment		Solid waste	
	Number	Cost (million Baht)	Number	Cost (million Baht)
Completed	57	21,142	78	5,114
On-going	28	41,446	43	2,117
Total	85	62,588	121	7,231

Source: Tabucanon, 2003 cf. World Bank, 2002

These figures indicate the need for increased investment in infrastructural development. Table 16 indicates the investment gaps in the wastewater-treatment sector. The figures suggest the need for a doubling of current investment, taking into account municipal systems alone, indicating that the figures will be much bigger if one includes other private and local government schemes as well. In the next decade the investment gaps will be even more pronounced, and over 100 billion Baht will be needed to address adequately the needs of these two critical sectors (Table 17). Given the current budgetary constraints of the government, such investments can come only from the private sector.<sup>37</sup> The crucial question concerns how the private sector can be

<sup>36</sup> These figures might not include infrastructural investments for the treatment of hazardous waste, currently handled by a private monopoly firm, GENCO.

<sup>37</sup> See also, ODI Briefing Paper 2002.

induced to play a role that harmonizes its own interest with government budgeting constraints and environmental efficacy. The liberalization of environmental services may be a ‘necessary’ condition for this, but what are the ‘sufficient’ conditions, given, for instance, human development goals? What would be the inductive policies? These considerations need to be effectively integrated into the negotiations on environmental services.

**Table 16: Additional Investment Needs for New Municipal Wastewater and Collection Systems**

Region	Investment costs (million Baht)		
	Treatment	Collection	Total
North	3,285	12,491	15,775
Northeast	5,371	20,091	25,463
Central	3,713	11,139	14,852
South	2,038	7,836	9,874
Eastern	416	1,247	1,663
BMA	269	19,556	19,826
Total	15,092	72,360	87,453

Source: Tabucanon, 2003 cf. World Bank, 2002

**Table 17: Investment Needs over the Next Decade**

(million Baht)

Solid waste		Wastewater	
Recycling	1,700	Treatment	15,000
Treatment and disposal	28,000	Collection	72,000
Collection	2,900	Rehabilitation	9,000
Total	32,600	Total	96,000

Source: Tabucanon, 2003 cf. World Bank, 2002

### III. THE LINKAGES BETWEEN ENVIRONMENTAL SERVICES AND HUMAN DEVELOPMENT

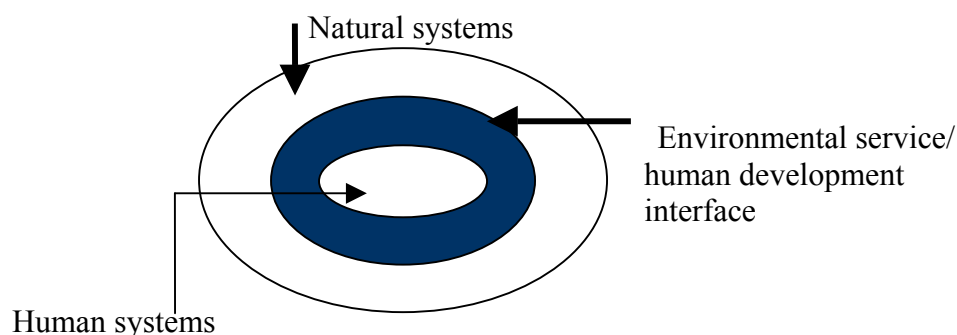
Human development components, which can be directly related to trade, are empowerment; productivity; equity and sustainability. These “pillars” of human development can be understood as incorporating the assurance of:

- basic human rights,<sup>38</sup>
- basic needs (i.e. food, shelter, clothing, medicine and education),
- employment and income equity, and
- environmental quality.

Chart 1 depicts the interface between environmental services and human development. While governments in Thailand continue to be important, the private sector has increasingly taken on a prominent role in providing such services, as we saw earlier.

Chart 1

The Linkages between Environmental Services and Human Development



Negotiations in the context of the General Agreement on Trade in Services (GATS) have a key role to play in determining the impact of environmental services on human development. It must be noted that although GATS contains general and security exceptions similar to articles XX and XXI of the General Agreement on Tariffs and Trade (GATT), current negotiations envisage the development of stricter disciplines on trade-distorting subsidies in the service sector. This would be a matter of crucial importance for developing countries who may employ subsidies for the attainment of their human-development objectives.

This section discusses some criteria considered crucial for promoting human development. These criteria can be used for assessing the potential impact of trade in environmental services, from a human-development perspective:

- *Fair and equitable access to vulnerable groups:* Access to environmental services, especially for marginal groups, should be considered a key consideration to gauge if freer trade in environmental services meets basic

<sup>38</sup> Not to be dealt directly with here, although it certainly is an important issue. See, for example, Economic and Social Council, 2002.

human development criteria. In Thailand, basic access to municipal fresh water supply is quite adequate through a number of channels, including local government finance and special budget from the central agencies such as the Ministry of Public Health and Ministry of Science and Technology (Table 18). Most of these services are therefore partly subsidized. The subsidy for wastewater treatment is even bigger for most areas, as most projects cannot internalize the operating cost, let alone the full costs. When trade in environmental services is liberalized, adequate and fair access in terms of outreach and fee should continue to be assured. One might call this the “equity criterion” for human development, which assures minimum access to basic environmental services.

**Table 18: Water Supply and Sanitation Coverage in Thailand**

Year	% urban water supply coverage	% rural water supply coverage	% total water supply coverage	% urban sanitation coverage	% rural sanitation coverage	% total sanitation coverage
1990	83	68	97	97	83	86
2000	89	77	97	97	96	96

Source : Global Water Supply and Sanitation Assessment 2000 Report cf. <http://www.pwa.thaigov.net>

- *Streamlining a pro-poor strategy into environmental service provision:* Pro-poor strategies and targets in host countries, such as employment generation and proper compensation by projects for their social impact on the poor, should be assured, and used as a criterion in project screening. This might involve the requirement that a social impact assessment (SIA) be made for all large projects that may have a significant adverse social impact.
- *Fiscal performance:* While parties are normally obliged not to restrict international transfers and payments for current transactions relating to commitments under the agreement, there are provisions in GATS that allow limited restrictions in the event of balance-of-payments difficulties. However, where such restrictions are imposed they would be subject to conditions such as (a) they are non-discriminatory, (b) they avoid unnecessary commercial damage to other parties, and (c) they are of a temporary nature. This would be an important area for negotiations for Thailand. Domestic regulations would need to alleviate public apprehensions concerning profit transfers or transfer pricing, and exceptions would need to be invoked in such cases. Fiscal implications would need to be considered while assuring that rents from environmental services are used for reinvestments in promoting greater access for marginal groups. Fiscal implications also imply, for instance, an improved distribution of income as a result of the project.
- *Economic efficiency:* Economic efficiency should be used as a criterion, and one needs to ensure that service providers do not exploit local resources without considering their full costs. It would be necessary to internalize these costs in most cases, perhaps with the exception of using cross subsidies for poor consumers to ensure equitable access.

- *Environmental efficiency or performance*: Environmental quality and integrity is one of the major criteria that should be applied so that intended environmental problems are solved, as a result of greater participation by foreign firms. This might be called “environmental efficiency” for human development. Compliance to local standards is a necessary condition.
- *Technical sustainability*: Capacity and institution-building (or “technical sustainability”) must be seen as an important criterion in the regulation of environmental services. This must be tailored to be a component in investment packages. Projects that can induce positive technical change in the host country should be encouraged.
- *Technology transfer*: Technology transfer is an important part of domestic regulation for the liberalization of environmental services, especially when domestic technological capacity is low or lacking. Hence, a project that brings innovation or transfers new technology into a host country should be reviewed favourably.

This set of criteria should be applied as a cluster and not individually. Each criterion might be accorded a weightage to form an index from the human-development perspective for use in the screening of projects.

#### IV. ENVIRONMENTAL SERVICES UNDER GATS

The “service sector,” classified in GATS into 12 categories, covers a wide range of economic activities including telecommunications, transport, health and educational services, environmental services, and tourism (see Box 3). The broad scope of GATS has given rise to fears regarding its implications for domestic policy, especially with social and environmental objectives (see for example Fuchs and Tuerk, 2001).

##### Box 3

##### Classification of Environmental Services in GATS

1. Business services (including professionals and computer)
2. Communication services
3. Construction and related engineering services
4. Distribution services
5. Educational services
6. Environmental services
7. Financial services, i.e. insurance and banking
8. Health-related and social services
9. Tourism and travel-related services
10. Recreational, cultural and sporting services
11. Transport services and
12. Others, not included elsewhere.

Source: [www.wto.org](http://www.wto.org)

GATS comprises six parts: (a) scope and definition, (b) general obligations and disciplines, which apply to all member countries of GATS, (c) national schedules of specific commitments, (d) future negotiations of specific commitments through

successive rounds of multilateral negotiations (Article XIX (4)), (e) institutional provisions, such as dispute-settlement mechanisms and the Council for Trade in Services, and (f) additional definitions including that of the service of another member. It is important to note that as far as GATS is concerned, sales by a foreign-owned or controlled company established in Thailand to Thai consumers are considered as "exports" of services from the home country (e.g. France or United States) to Thailand.

Part I of GATS defines the modes of supply used in services trade (see Box 4). The most difficult point of negotiation between developed and developing country parties is Mode 4, under which members can make commitments relating to the temporary movement of persons, but not covering persons seeking employment, citizenship, residence or employment on a permanent basis.

The general obligations and disciplines are used as the basis of negotiations. There are two obligations that nations would have to abide by: most-favored-nation (MFN) and transparency. The MFN obligation states that each party "shall accord immediately and unconditionally to services and service providers of any other Party, treatment no less favourable than that it accords to like services and service providers of any other country". However, it is recognized that MFN treatment may not be possible for every service activity and, therefore, it is envisaged that parties may indicate specific MFN exemptions.<sup>39</sup>

Transparency requirements include the publication of all relevant laws and regulations, and since domestic regulations are likely to have the most significant impact on services trade, all such measures of general application should be administered in a reasonable, objective and impartial manner. There is a requirement that parties establish the means for prompt reviews of administrative decisions relating to the supply of services. Parties are required to ensure that monopolies and exclusive service providers in host countries would not abuse their position. Such restrictive practices should be subject to consultation between parties, with a view to eliminating them.<sup>40</sup>

The provisions on market access and national treatment are not general obligations, but are subject to negotiations, with the resulting commitments incorporated in the national schedules. Thus, in the case of market access, each party "shall accord services *and* service providers of other Parties treatment no less favourable than that provided for under the terms, limitations and conditions agreed and specified in its schedule". The intention of the market-access provision is to progressively eliminate the following types of measures: limitations on numbers of service providers, on the total value of service transactions or on the total number of service operations or people employed. Equally, restrictions on the kind of legal entity or joint venture through which a service is provided or any foreign capital limitations relating to maximum levels of foreign participation are to be progressively eliminated through successive rounds of negotiation.

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<sup>39</sup> Conditions for such exemptions are included as an annex, with the provision for a review after five years. Once concluded and agreed upon, they will have a limitation of 10 years on their duration.

<sup>40</sup> With the exception of state monopolies.

The national treatment provision contains the obligation to treat foreign service suppliers and domestic service suppliers in the same manner. However, it does provide for differential treatment if such provisions are incorporated in the national schedules. However, in such cases the conditions of competition should not, as a result, be modified in favour of the domestic service providers.

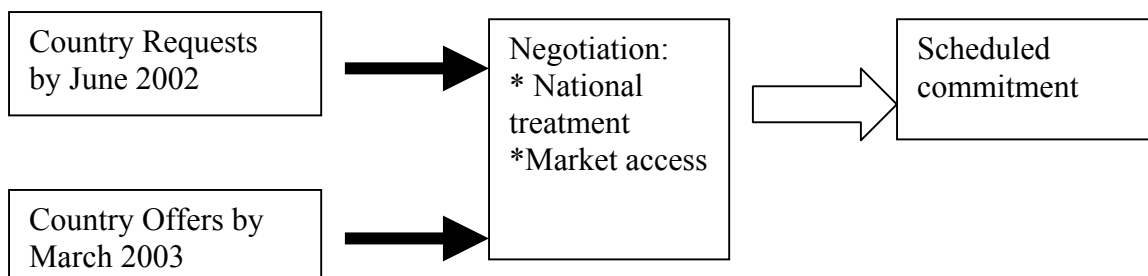
**Box 4**  
**Modes of Trade in Services**

- Mode 1: Cross-border trade: i.e. services cross national boundaries
- Mode 2: Consumption abroad: i.e. supply of services in a country to customers from the other
- Mode 3: Commercial presence: i.e. foreign suppliers make presence in the other country
- Mode 4: Presence of natural persons: i.e. admission of a foreign national to provide services

Source: [www.wto.org](http://www.wto.org)

Part IV of the agreement establishes the bases for progressive liberalization in services through successive rounds of negotiations and the development of national schedules (see Chart 2 below). Parties are allowed to withdraw or modify commitments made in their schedules only after a period of three years. Once the commitments are modified or withdrawn, negotiations should be undertaken with interested parties to agree on compensatory adjustments, if any. Where an agreement cannot be reached, the affected member has recourse to arbitration. "Injured" parties are allowed to consider withdrawing their commitments in calculated equivalent amount (Article XXIII (3)).

**Chart 2**  
**Negotiating Procedures in the Current GATS Round**



The excess capacity in the provision of environmental services have led private industries in developed countries to explore commercial presence beyond their national boundaries (Ferrier, n.d.). The operations of the private sector in foreign countries immediately lead us to questions concerning ownership and control in foreign lands.

In developed countries the private sector has played a prominent role in the provision of services, although state presence in these industries is no less prevalent than in developing economies. However, privatization has become a topic of heated debate in GATS for a number of reasons. Firstly, there are critical sectors over which governments wish to maintain their control for “security” reasons.<sup>41</sup> Secondly, apprehensions regarding the consequences of privatisation, such as price rationalization, control and downsizing, as well as fears arising from nationalist sentiments are often voiced against privatization. Apprehensions are also expressed about possible transfer pricing<sup>42</sup> and profit transfer. Profits, instead of being reinvested in order to improve efficiency and to enhance equity for access, can be channelled from host country back to home country.

Countries have been required to privatize many business sectors by multilateral financial institutions such as the World Bank, IMF and ADB in exchange for economic-rescue packages. Efficiency gains and increased government revenues are normally expected from these measures. This would enable countries to generate “quick” revenues to repay their loans and to restructure their economies by building long-term capacity to generate incomes. If the private sector is then liberalized under GATS, this has a “lock-in effect” which makes it very difficult to reverse the privatization process. To what extent does the worldwide move towards privatization go hand in hand with process of service trade liberalization in GATS? It should be noted here that the WTO negotiations in general, including GATS, are conducted on the basis of reciprocity, and that if Thailand makes liberalization commitments in any sector, it can expect reciprocal commitments from its trading partners who benefit from these commitments in other sectors, including agriculture.

Privatization, if carried out with appropriate policies, can have a positive effect on human development and basic human rights. However, under improper policies privatisation can adversely affect human rights – for instance, when new fees are introduced for primary education, fewer children go to school and those who are better off would effectively enjoy “more” rights to education than poor children.<sup>43</sup> Similarly, if the full cost of medication were reflected in the pricing, poorer sections of the population would be deprived of a basic service. In the case of toxic waste, the ability to pay for treatment might encourage illegal dumping, which could have the consequence of hurting the poor more than the rich.

Environmental services are one of the twelve service categories currently being negotiated in GATS. Requests were to have been made by June 2002 and offers by the end of March 2003, but many countries have not met this schedule. Thailand has been a negotiating member of GATS. This part of the report touches upon four major points, namely:

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<sup>41</sup> An example of this is a banner in front of the Metropolitan Electrical Authority which said: “Selling of a state enterprise is a sale of national security”.

<sup>42</sup> This is a distortion of import prices to hide profit. In several countries, including Ecuador or Bangladesh, the government guarantees returns and benefits such as tax exemptions to the new, often foreign, companies. This is a policy distortion practiced by the State, normally to attract foreign investment at the expense of efficiency that might be gained via open competition.

<sup>43</sup> The Sub-Commission's 2001 resolution on trade in services has described GATS in the context of the right to education.

- Definition/coverage of sectors in environmental services, and the state of play in request/offer process;
- Analysis of potential impacts of environmental service liberalization on human development: assured minimum access, assured fair access, technology transfer, employment generation, economic efficiency, environmental efficiency, technical sustainability, and financial accountability;
- (Potential) strategic responses of Thailand to requests and commitments (if any) through domestic legislation/ regulatory framework: consumer protection, social safety nets and safeguards; and, finally,
- Offers which explicitly determine sub-sectors that the country is ready to liberalize, under conditions or exceptions.

### **A. Description of Trade in Environmental Services**

The definition of “environmental services” in GATS covers a wide range of activities. The broad definition of the types of services to be negotiated has made it difficult for small delegations from developing economies, and economies in transition, to participate in the negotiations effectively.<sup>44</sup>

Traditionally, governments regulate the provision of many “basic” services to populations, often at subsidized rates in order to ensure equitable access. For instance, basic education, energy, and healthcare are important for ensuring the basic rights of citizens, and they are normally provided on a universal basis. Whether such provision is inconsistent with GATS is of immediate concern of many developing countries. Some of the services, such as waterworks or energy services, are considered “strategic”, and are directly controlled by the state.<sup>45</sup> Monopolistic intervention by the state in these sectors implies strict levels of protection, constituting barriers to services trade.

In the context of GATS negotiations, there has been considerable debate on the question of “legitimate regulatory objectives”. In principle, countries do have flexibility in deciding the sectors they wish to liberalize under GATS – the “bottom-up” approach adopted in GATS means that it is for countries to determine which sectors they wish to open for international competition. In reality, however, member countries may not be aware of the extent of this flexibility.<sup>46</sup> In some cases, as in Thailand, the general public has even been misled into believing that countries are being compelled to open their markets to foreign competition without reservation, and without receiving reciprocity.

In Thailand, the term “environmental services” has been used by and large to denote “clean-up” services. No official definition of environmental services is found in the

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44 This makes it difficult for them to formulate their negotiating positions. It is also worth noticing that negotiations on GATS took place at the same time as those on TRIPs, which made it difficult for delegations of small and developing countries to adequately follow both.

45 If concessions are granted, private firms are normally tightly controlled or are forced to subcontract some key services to state enterprises.

46 This is a multilateral process, carried out on the assumption that collective negotiations would lead to “optimal” win-win outcomes for all parties. In reality, however, parties do have different negotiating capacities and hence outcomes might not be as predicted theoretically.

official environmental database either (see DEQP, 1998). The traditional identification of environmental management with end-of-pipe treatment in Thailand may have given rise to this notion.

#### **Box 5**

##### **The Classification of Environmental Technology by the United States Department of Commerce**

In 1998 the United States Department of Commerce classified "sector priorities" for environmental technology in Thailand into six categories: namely,

- water supply and wastewater treatment,
- air pollution control,
- municipal solid waste,
- hazardous and industrial waste,
- environmental services, and
- cleaner energy.

Source: United States Department of Commerce, 1998

Specifically, in addition to the above-mentioned sectors, environmental services described in that report focused on EIA, pollution prevention, and ISO 14000 and services for a few other sub-sectors, as appears in Box 6 below.

#### **Box 6**

##### **United States Environmental Services Classification for Thailand**

- Environmental impact assessment (EIA)
- Pollution prevention and ISO 14000
- Services for:
  1. Corporate environmental strategy
  2. Environmental impact assessment
  3. Environmental management systems
  4. Environmental auditing
  5. Energy efficiency consulting

Source: United States Department of Commerce, 1998

WTO's initial classification includes the following sectors under environmental services: (1) sewage services, (2) refuse disposal, (3) sanitation and similar services, and (4) others. New classification schemes have been tabled. Table 19 shows the WTO/CPC classification and the OECD/Eurostat classification. An interview with government officials conducted for this study indicated that Thai officials tended to favour the use of OECD classification of environmental services. This cannot be taken as Thai Government's official position, however.

**Table 19: Two Classification Systems in Environmental Services**

1) WTO/CPC*	2) OECD/Eurostat
A. Sewage services (CPC 9401) B. Refuse disposal services (CPC 9402) C. Sanitation & similar services (CPC 9403) D. Other services ➤ Cleaning services of exhaust gases (CPC 9404) ➤ Noise abatements services (CPC 9405) ➤ Nature and landscape protection services (CPC 9406) ➤ Other environmental protection services n.e.c. (CPC 9409)	A. Wastewater management B. Solid waste management C. Air pollution control D. Noise and vibration abatement E. Remediation and cleanup of soil, surface water and groundwater F. Analytical services, data collection, analysis and assessment G. Environmental R&D H. Education, training, information

Source: \*WTO, MTN.GNS/W/120, 10 July 1991

### **B. Assessing the Potential Impact of Trade in Environmental Services on Human Development in Thailand**

The objective of this section is to make a preliminary assessment as to whether (and, if so, how) the General Agreement on Trade in Services (GATS) could make access to basic services difficult, and thus result in a negative impact on human development for Thailand.

Developed countries (see Ferrier, n.d. and Zarrilli, 1998) have argued that liberalization would enable developing countries to build their domestic capacity and export their environmental services.<sup>47</sup> Developing countries have, on the other hand, expressed the apprehension that, given their inadequate capacity in environmental services, they would be clients of hungry exporters from developed countries who possess an excess capacity in environmental services (Ferrier, n.d.). A few developing countries are competitive in high-tech and financial services sectors, while others have focused on sectors such as tourism, construction services (construction workers), and health services (i.e. nurses and health care personnel working abroad).<sup>48</sup> Several developing countries also fear that the service sectors which they would like to develop locally will be forced out of business by strong competition from bigger and stronger multinationals from abroad. The expected reciprocal flows of service businesses from South to North would be very difficult to obtain because of the strong

<sup>47</sup> In this context, the 'technical capacity' laid out in the criteria above is very relevant and important.

<sup>48</sup> The movement of natural persons is one of the ways (mode 4) of trading services recognized by GATS, and movement of natural persons is the mode thought to be of most interest to developing countries. However, little progress has been made in negotiations in this area. Industrialized countries have been reluctant to liberalize mode 4 and open their markets to service providers from abroad. Labour laws, such as the one in Japan and some European countries, exploit unskilled labor that moves on a temporary basis to keep home industries alive and competitive. On the contrary, brain drain from South to North, enabled by the selective labour and immigration policies of the North, brings about negative economic and social consequences for the services-exporting developing countries, especially on human development.

presence of domestic firms in developed countries, even if liberalization in their markets were to be fully guaranteed.

Since negotiations on several critical issues are under way, the opportunity still remains open for shaping GATS into an effective multilateral instrument that is responsive to the needs of developing countries. Assessing the potential impact of service trade liberalization and strengthening the domestic capacity for negotiations are crucial for developing countries, in order for them to make the best use of this opportunity.

Table 20 shows the felt impact of liberalized trade in environmental services on human development in Thailand under three subjective scenarios. There are variations in the outcomes for the wastewater and hazardous-waste sectors. These data seem to suggest that Thailand would benefit more from full liberalization of its industrial hazardous-waste sector than from liberalizing its wastewater sector. There were slight differences that need to be further quantified under the fully liberalized and partially liberalized scenarios of the wastewater. More precise information from this sector is needed for a clearer assessment.

**Table 20: Environmental Services and Human Development Matrix**

Sector*	Human Development Criteria						
	Access	Pro-poor target	Fiscal implications	Economic efficiency	Environmental quality	Technical sustainability	Technology transfer
<b>Wastewater</b>							
BAU	W	W	0	S	S	W	0
FLS	0-W	W-S	S	S	S	W-S	M
PLS	W	0-W	M	S	M	W-S	W
<b>Hazardous waste</b>							
BAU	W	W	S	W	W	W	M
FLS	S	S	S	M	S	M	S
PLS	M	M	S	M	M	M	M

Note: \*BAU = business-as-usual; FLS = Full liberalization scenario; PLS = Partial conditional liberalization scenario

S = strong; M = moderate; W = weak and 0 = no change.

Source: Target group assessment<sup>49</sup>

### C. Strategic Responses

<sup>49</sup> Participants to a workshop, "Environmental Services and Human Development in Thailand" organized by the Centre for Ecological Economics on April 30, 2003, in the Faculty of Economics, Chulalongkorn University, assisted in making this assessment.

Adequate information has not provided to the general public about the negotiations on GATS. Little is widely known on definitions, issues, priorities and Thailand's negotiating positions. Even the newspaper coverage of issues is often general, partial or fragmented, and inadequate, considering that the GATS negotiations cover a wide range of issues and sectors that Thailand has very high stakes in. The implications of GATS for certain sectors such as retail distribution are relatively better known.

There is a need to improve and strengthen Thailand's capacity in negotiating GATS and in ensuring the smooth implementation of its future commitments. The following paragraphs identify some potential areas for action in this respect.

- *Establish a comprehensive environmental services database*

At the time of writing this report, APEC is preparing a survey, with assistance from the Thai Ministry of Commerce, to collect information on environmental services in Thailand. This survey targets at building up a basic database on environmental services and the current government position on GATS negotiations. There are major gaps in the data available on several important issues, such as domestic demand for and supply of environmental services, and projected trends in several sub-sectors of environmental services. Neither the government nor other sources in Thailand possess comprehensive data on many of these issues. This underscores the urgency of building a database as an essential part of Thailand's preparation for negotiations on trade in environmental services. Such a database can be established through the concerted effort of key stakeholders, including National Environment Board, National Economic and Social Development Board (NESDB), Ministry of Natural Resources and Environment (MONRE), Ministry of Commerce, Environmental Engineering Association of Thailand (EEAT) and National Research Center for Environmental and Hazardous Waste Management (NRCEHWM). Networking, high-level meetings between the bodies to identify priorities, raise common funds and distribute resources, and periodic review of the systems would be essential for this project. As the database management systems in the country are already very advanced, there should not be any technical difficulty in launching this initiative.

- *Reform domestic laws and regulations to facilitate environmental services trade in Thailand's priority sub-sectors*

The economic crisis of 1997 forced Thailand to resort to a rescue package from the International Monetary Fund (IMF). This, as well as additional rescue packages from the Asian Development Bank (ADB), have demanded the rationalization of prices of natural resources (i.e. water) and public utilities, with the aim of enabling the economy to repay these loans. The packages demand a reform of existing legislation and the promulgation of new laws. Eleven new laws were passed to broaden foreign participation in many key economic sectors (see Box 7).

Trade in environmental services would benefit from these laws. These and other laws would need to be carefully examined in the light of Thailand's specific commitments and exceptions in the context of GATS.

**Box 7**  
**Eleven New Laws Resulting from the IMF Rescue Package for Thailand**

- Establishment of Bankruptcy Court
  - Bankruptcy Law (No.5)
  - State Enterprises Capital
  - Amendment of Civil Court Procedure (No. 17)
  - Amendment of Civil Court Procedure (No. 18)
  - Amendment of Civil Court Procedure (No. 19)
  - Foreigners' Business
  - Social Security (No. 3)
  - Property rental for Commercial Purposes Law
  - Amendment to Land Law (No. 8)
  - Commercial Building Law (No. 3)
- Source: [www.mechaithailand.com](http://www.mechaithailand.com)

- *Create and institutionalize windows for public consultation*

There is a need to disseminate information on negotiations and the issues involved among the general public, including core stakeholders through public consultations. The Thai Constitution, as mentioned earlier, stipulates the participation of the public in major decision-making, and commitments undertaken by Thailand in WTO can indeed be viewed as an issue that merits this exercise.

- *Improve and sustain interactive communication*

The sheer existence of information might not be of any use, if relevant stakeholders do not receive and use it, and become strategic dialogue partners for the environmental service trade negotiators. As a result of the inadequate availability of information, non-governmental organizations that work on environmental issues and on multilateral trade have been inactive in relation to GATS negotiations. NGOs could be a strategic partner for the Government in formulating its position in negotiations on environmental services. The exchange of information and communication needs to be a two-way, interactive process. The following modalities could be considered:

- focused groups and occasional briefing;
- press and media briefing and the dissemination of information on GATS, including environmental services;
- GATS clearing-house, with “hotline” services;
- public website, providing free access; and
- provision of a public forum for environmental services.

- *Promote focused research and assessment to provide support for GATS negotiations*

It is critically important that the potential impacts of trade in environmental services be assessed *before* an offer is made, or at the latest, parallel to the negotiations *before* a commitment is *scheduled*. This assessment is also needed in order to generate information for devising negotiating strategies and responding effectively to requests from its negotiating partners. This in fact was mandated by Article XIX (3) in GATS, which states:

[f]or each round, negotiating guidelines and procedures shall be established. For the purposes of establishing such guidelines,

the Council for Trade in Services shall carry out an assessment of trade in services in overall terms and on a sectoral basis with reference to the objectives of this Agreement, including those set out in paragraph 1 of Article IV<sup>50</sup>.

Although this call is not new (see also Fuchs and Tuerk, 2001 and Andrew, 2000), the assessment could be made in the context of human development. This would involve assigning different priorities to the proposed criteria, and would be a relatively new initiative, given the very strong relations between GATS (especially environmental services in the current context) and human development. A cost-benefit analysis of individual sub-sectors within the environmental services sector could be conducted as well.

- *Establish expert panels comprising the representatives of major stakeholders, including civil society*

Two types of sub-committees would need to be established either under the National Committee on Trade and Environment (in the Ministry of Commerce) or National Committee on Environmental Economics (in the Ministry of Natural Resources and Environment): (a) a technical expert sub-committee, and (b) a policy sub-committee. These sub-committees could provide technical and policy recommendations to the government, provide advise on areas for further research, and supervise research projects.

- *Enhance the capacity of negotiators through a structured capacity-building programme*

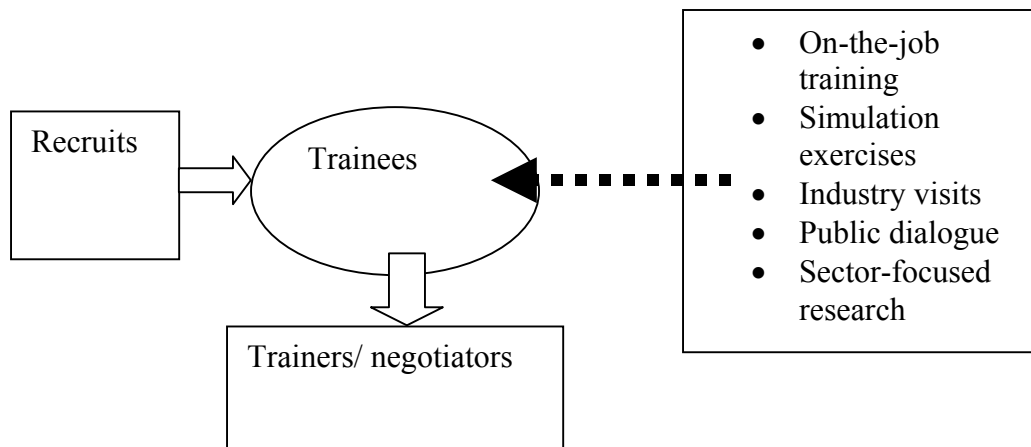
It is important that Thailand initiates a specific capacity-building programme for key stakeholders, especially environmental-service trade negotiators. This initiative should aim to enhance the understanding of environmental services as well as negotiating skills. One strategy of the capacity-building project could be on-the-job training, by engaging trainees in long-term, interactive, hand-on exercise, as outlined in Chart 3. These trainees would in turn become future trainers and experts who would provide necessary services to their associated organizations and the government. The strategy of training modules should emphasize and support the following steps of learning and sharing:

- Learn to do, meaning regular intensive training exercises;
- Do to learn, including on-the-job training series; and
- Learn to share, providing trainees opportunities to share knowledge and data/information.

### **Chart 3** **Conceptual Framework for Environmental Services Capacity Building**

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<sup>50</sup> I.e., facilitating participating of developing countries.



- *Improve investment policies to integrate concerns of environmental protection and sustainable development*

Environmental impact assessment (EIA) has been found necessary in Thailand, but it was felt that EIA was an inadequate tool for environmental management. On the other hand, present investment policies do not give much importance to environmental considerations (see Box 8). Negotiations on environmental services trade can be viewed as providing Thailand with a good opportunity to reformulate its investment policies, in order to provide a better balance between commercial and societal (i.e. environmental) benefits.

#### **Box 8**

##### **Board of Investment Promotion Law**

Established to lure foreign investment in exchange for hefty benefits, the Board of Investment (BOI) has recently changed its investment promotion strategy. Now, BOI aims at investment that promotes enhanced productivity; economies of scale and customized investment packages. These goals will be realized through seven strategies—none of which touches on how environmental concerns will be addressed.

Source: [www.boi.or.th](http://www.boi.or.th)

#### **D. Thailand's Offers**

In March 2003, the official perception of the debate on GATS – and environmental services trade – in the country was that Thailand was not yet ready to make any offer at this point. It was felt that considerable preparation of the public through consultations was still needed. To date, Thailand has made no offer to its negotiating

partners in any of the service categories. It hopes to submit an initial offer, by sector, before July 2003.<sup>51</sup>

Thailand has, however, placed some requests in sectors related to food and traditional knowledge areas, such as Thai food and Thai massage, where the officials perceive market opportunities. This is consistent with the current government policies to “export” these services, as they also help strengthen the demand for agricultural produce and labour.<sup>52</sup>

## **V. FUTURE POLICY IMPLICATIONS FROM A HUMAN DEVELOPMENT PERSPECTIVE**

Historically, Thailand has maintained open international policies, including in the area of investment. Although the country’s early investment policies did not give priority to environmental benefits, subsequent modifications in policy have attempted to incorporate them. With the expansion of investment flows, the demand for the management of wastewater and industrial hazardous waste (including household hazardous waste) have increased, and the gap between domestic capacity and environmental needs in Thailand has widened.

The Thai government has adopted measures that facilitate cleaner production technologies and internalize wastewater-treatment costs, and has suggested that local governments introduce fees at calculated full costs, except for capital investment, which is supported by the government’s environmental fund.<sup>53</sup> It appears that there is little room for foreign participation in wastewater treatment, and that most local governments are capable of running such projects, if their capacity is enhanced and funding allocated to hire competent plant managers. However, at present, the capacity to execute wastewater-treatment projects built with government funds is extremely low in most localities, with many such projects lying idle. No local financial architecture has been in place to handle financing in the wastewater sector, or even to meet operations and maintenance costs. Lack of political will regarding the imposition of appropriate fees and the difficulty in inter-agency cooperation provide the perfect conditions for the private-sector penetration in these markets. The question for foreign firms would concern whether their profit margins would be sufficient as incentives for investment.

Larger opportunities for private investment exist in the development of infrastructure. Subsidies from the central government in support of capital investment will be low in future, according to the financial decentralization policy adopted as part of the current devolution of governance.

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<sup>51</sup> Informed by an internal source from the Ministry of Commerce, which is Thailand’s key negotiating agency on June 16, 2003.

<sup>52</sup> There certainly is a need to link this request to TRIPS in order to provide sufficient protection for authentic Thai services. However, the official interviewed admitted that this issue is not currently being considered by the government.

<sup>53</sup> This is similar to the Super Fund of the United States. The fund can normally be used for clean-up purposes, which includes capital investment for wastewater treatment.

Nevertheless, the penetration of Thailand's environmental services market should not be considered problem-free. Private-sector enterprises that wish to enter the Thai market must take into its consideration the following factors:

1. Local administration has the full authority to grant project contracts, upon advice by central government agencies. Joint ventures, with their better access to local community resources, appear to be the most viable strategy to win projects.
2. Many provinces already have waste-treatment facilities that belong to the local administration. However, not all the industrial estates in the country have central treatment facilities, which would provide an opportunity for market penetration for the private sector.
3. Although local financing schemes favour the internalization of environmental costs, local tax systems are well in place only in a small number of communities. A major hurdle seems to be the lacunae in the implementation of calculated fee in some major communities, including in some areas of Bangkok. The dissemination of information and consultation with the public are measures that both the government and the private investor will have to adopt before wastewater-treatment systems are privatized.
4. Since access to wastewater-treatment facilities is not equitable at present, a long-term grid connection could be planned as part of investment schemes. A part of the profit and tax revenue could be used for establishing a central fund, which can be used to match any external funding in order to expand the system and service marginal groups.

Human development issues merit close attention in the context of wastewater management since most of the management schemes require that wastewater-treatment costs be borne a condition for access to fresh water supply. Since only a small number of marginal groups have no access to fresh water supply at present, it might be useful be rationalize treatment costs into fresh water service costs, and to extend the services of the municipality water works to underprivileged sections of the population.

The present coverage of fresh water supply services (Table 18) might include underground water users as well. If that is the case, the access data in Table 18 overestimate fresh water supply. The ground water use has worsened the subsiding of the ground in many areas of Bangkok and other cities in the Central region of Thailand. Therefore the government has planned to stop the use of ground water by the end of 2003. If present ground water users are to use surface water as proposed, the issue of access to fresh water by marginal groups could become very critical. This might indeed be an opportunity for enhancing the wastewater-treatment industry by linking the supply of freshwater to wastewater services, and imposing the average incremental treatment costs to freshwater users. Investors can be encouraged to expand grids to cover marginal areas, now that shared revenues increase. Local administrations could be advised to enter into joint ventures to operate wastewater-treatment facilities or to take part in the full project cycle from conceptualization to implementation, monitoring and reporting. The linkage between freshwater-supply services and wastewater-treatment schemes remains crucial if human development issues are to be adequately addressed.

The case of hazardous waste is quite different from that of wastewater because domestic capacity (financial, technical and technological) for its treatment is weak in Thailand at present. Local firms do not have sufficient experience to handle hazardous industrial waste; nor do they possess the in-house capacity to treat the waste that they generate. The current monopoly does not possess the capacity to face long-term challenges or to ensure efficient handling. Nor does it encourage the adoption of new handling and treatment technologies. Therefore, Thailand's present policies with respect to enforcement mechanisms and investment promotion need some strengthening in this sector, especially in enforcing existing rules, and in providing additional incentives to foster competition. Private-sector investment in waste handling (i.e. the collection, shipping and treatment of waste) merits strong encouragement. One means for this would be the full liberalization of this sub-sector – with terms and conditions specifically tailored to meet the human-development criteria proposed earlier in this study.

The experience of GENCO provides useful lessons for foreign private-sector enterprises that wish to enter the Thai market. As we saw earlier, the present Constitution of Thailand has sought to strengthen environmental governance by mandating a broadening of stakeholder participation. The private sector would need to assume the responsibility for ensuring the environmental integrity of its projects. Good environmental governance implies that project cycles are transparent, accountable and predictable, and that their negative impact on ecosystems and the people are minimized.

Future initiatives should also cover the “Other” category of environmental services. Biodiversity and ecological services, considered “sensitive” to Thailand, are of particular interest here. This category of environmental services can be linked directly to the livelihoods of people, and thus to human development.

Finally, Thailand could resort to a regional approach in the environmental services negotiations. ASEAN could be a good place to start this, focusing on (a) intra-ASEAN liberalization of environmental services, and (b) the exchange of information on national environmental services. The development of intra-ASEAN environmental trade would help in reducing the transaction costs for negotiations on environmental services trade and for the implementation of Thailand's commitments.

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Information on GENCO: [www.GENCO.co.th](http://www.GENCO.co.th)

Information on the Ministry of Natural Resources and Environment, including Office of Environmental Policy and Planning (OEPP): <http://www.monre.go.th>

Information on Wastewater Management Authority:  
<http://www.wma.or.th/webdoc/Menu100/The%20duties%20and%20mission%20of%20wma.html>

Information on WTO: [www.wto.org](http://www.wto.org)

## APPENDICES

**Table A: Hazardous Waste Generation in Thailand, Selected Years\***

	(ton/year)		
Type	1986	1996	2001
Oils	106,372	332,779	589,503
Liquid organic residues	187	522	876
Organic sludge and solids	3,737	11,951	21,533
Inorganic sludge and solids	11,655	31,858	53,696
Heavy metal sludge and solids	302,316	946,565	1,658,192
Solvents	19,783	58,532	124,306
Acid wastes	18,505	53,793	46,105
Alkaline wastes	5,769	16,846	29,019
Off-spec products	12	52	107
Aqueous organic residues	116	499	1,037
Photo wastes	8,820	30,398	57,809
Municipal wastes	7,231	19,090	31,093
Infectious wastes	45,674	123,219	200,699
<b>Total</b>	<b>530,177</b>	<b>1,626,104</b>	<b>2,813,975</b>

\*assuming no imports of PCB in Thailand after 1975

Source: See United States Department of Commerce, 1998. These are revised figures by PCD halving earlier estimate of Engineering Science, Thai DCI, Co., Ltd. and System Engineering Co., Ltd. 1989.

**Table B: Hazardous Waste Generation, 1995**

Type of waste	1,000 Ton/ year
Industrial waste	1,100
Commercial and services	126
Medical waste	122
Marine and shipping	122
Household	19
Agriculture	10

Source: Confer US Department of Commerce, 1998

**Table C: Thailand's Commitments in Environmental Services during the Uruguay Round**

Environmental services Sub-sector	Limitations on Market Access*	Limitations on National Treatment*
A. Environmental consultancy on sewage system, refuse disposal; hazardous waste management, air pollution and noise management, sanitation and other environmental management services (CPC 9401)	<ol style="list-style-type: none"> <li>1. none</li> <li>2. none</li> <li>3. none other than that indicated in the horizontal section</li> <li>4. as indicated in the horizontal section</li> </ol>	<ol style="list-style-type: none"> <li>1. none</li> <li>2. none</li> <li>3. no limitation as long as foreign equity participation does not exceed 49 percent</li> <li>4. none</li> </ol>
A. Environmental protection and environmental abatement services (CPC 9401)	<ol style="list-style-type: none"> <li>1. none</li> <li>2. none</li> <li>3. none other than that indicated in the horizontal section</li> <li>4. as indicated in the horizontal section</li> </ol>	<ol style="list-style-type: none"> <li>1. none</li> <li>2. none</li> <li>3. no limitation as long as foreign equity participation does not exceed 49 percent</li> <li>4. none</li> </ol>
A. Sewage services (including industrial waste water treatment system) (CPC 9401)	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. none other than that indicated in the horizontal section</li> <li>4. as indicated in the horizontal section</li> </ol>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. no limitation as long as foreign equity participation does not exceed 49 percent</li> <li>4. none</li> </ol>
B. Refuse disposal services (including hazardous waste management and incinerator) (CPC 9402)	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. none other than that indicated in the horizontal section</li> <li>4. as indicated in the horizontal section</li> </ol>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. no limitation as long as foreign equity participation does not exceed 49 percent</li> <li>4. none</li> </ol>
C. Sanitation and similar services (CPC 9403)	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. none other than that indicated in the horizontal section</li> <li>4. as indicated in the horizontal section</li> </ol>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. no limitation as long as foreign equity participation does not exceed 49 percent</li> <li>4. none</li> </ol>

<p>E. Other</p> <ul style="list-style-type: none"> <li>• Cleaning services of exhausted gases (including industrial emission abatement) (CPC 9404)</li> </ul>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. none other than that indicated in the horizontal section</li> <li>4. as indicated in the horizontal section</li> </ol>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. no limitation as long as foreign equity participation does not exceed 49 percent</li> <li>4. none</li> </ol>
<ul style="list-style-type: none"> <li>• Noise abatement services (CPC 9405)</li> </ul>	<ol style="list-style-type: none"> <li>5. unbound</li> <li>6. none</li> <li>7. none other than that indicated in the horizontal section</li> <li>8. as indicated in the horizontal section</li> </ol>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. no limitation as long as foreign equity participation does not exceed 49 percent</li> <li>4. none</li> </ol>
<ul style="list-style-type: none"> <li>• Nature and landscape protection services (CPC 9506)</li> </ul>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. none other than that indicated in the horizontal section</li> <li>4. as indicated in the horizontal section</li> </ol>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. no limitation as long as foreign equity participation does not exceed 49 percent</li> <li>4. none</li> </ol>
<ul style="list-style-type: none"> <li>• Other environmental protection services (CPC 9409)</li> </ul>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. none other than that indicated in the horizontal section</li> <li>4. as indicated in the horizontal section</li> </ol>	<ol style="list-style-type: none"> <li>1. unbound</li> <li>2. none</li> <li>3. no limitation as long as foreign equity participation does not exceed 49 percent</li> <li>4. none</li> </ol>

Source: [www.wto.org](http://www.wto.org)

Note: \* Mode of supply: 1. cross-border; 2. consumption abroad; 3. commercial presence and 4. presence of natural persons

## Defining Human Development

The premise that people are the real wealth of nations, and the real end of development, led UNDP to define human development as a "process of enlarging people's choices". The three essential choices: to lead a long and healthy life, to acquire knowledge, and have access to resources needed for a decent standard of living. Additional choices range from socio-economic and political freedoms to opportunities for being creative and productive, and enjoying personal self-respect and guaranteed human rights (HDR 1990, p.10). The paradigm of human development views poverty as a deprivation not only of incomes, but of choices and opportunities to lead the kind of life that people have reason to choose and value. The notion of human capabilities thus focuses on what people are actually able to do and what people are able to be. Higher income is seen as necessary for its 'instrumental' role in expanding opportunities for achieving many of these broader goals. Haq (1995) sees the following four components being essential to human development:

**Empowerment** -- This is an all-encompassing notion that addresses the people's capability to shape the processes and events that affect their lives, not just on the economic front, but also the socio-political-cultural. Going beyond the notions of 'basic needs' for the poor, often with an accent just on commodity possession, the human development paradigm downplays this as being paternalistic. The paradigm attaches importance to issues of dignity and self-respect, which has a serious bearing on how people engage in processes that lead to higher incomes and capabilities, and political voice.

**Productivity** -- Investments in enhancing human potentials so that greater productivity that lends itself to higher growth is an important subset of the paradigm. Human development is a means to higher productivity -- a well nourished, educated, and alert labour force is an important productive asset. But rather than viewing humans as mere inputs into the production process, this paradigm views them broadly as ends of development itself. This thus implies that there is a crucial distinction between human resource development and human development, with the former just being one aspect of the latter.

**Equity** -- Enlargement of people's choices requires that they can access opportunities equitably. This often implies that the prevailing power structures have to improve, such as better distribution of assets like land and credit, transfer of public incomes through fiscal measures, and socio-political reforms that enhance opportunities for participation of certain groups, ethnicity and gender.

**Sustainability** -- Not to be confused with the renewal of natural resources only, sustainability in human development terms means that the physical, human, financial and environmental resources are governed by the current generation in a way that does not prevent the next generation from improving its own welfare. It also implies that international commitments made by governments do not impede the economic and social development and cultural integrity of future generations.

The challenge facing the Asia Trade Initiative is, thus, to relate these concepts to trade issues and policies.

## Take the Initiative

The Asia Trade Initiative aims at promoting debate on trade and human development issues. We would therefore welcome your comments on our studies. Our web page, [www.asiatradeinitiative.org](http://www.asiatradeinitiative.org) provides further information about the programme and its activities. In case you want to participate in them, please contact us. You will also find a complete downloadable copy of all the Technical Support Documents.

Furthermore, we would like to receive your opinion on our studies. Once you have read them, we would appreciate your feedback to the following questions:

How useful was this paper to you?

Are you aware of the existence of similar studies in your country or region?

How do you think the ideas and issues contained herein can be disseminated more widely in your country or region in order to advance the debate from a human development perspective?

Are you interested in joining our effort, as well as network of scholars, practitioners, and officials to promote the debate and understanding on this subject in Asia?

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