NATURAL RESOURCES MANAGEMENT IN MAINLAND SOUTHEAST ASIA

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Contents

Tables

1. Introduction

Environmental concern is a relatively new phenomenon in developing countries, where natural resource extraction and other primary activities such as agriculture often form the main basis of the national economy. Nearly 40 percent of the terrestrial biosphere's primary production is devoted for human use (Goodland, 1991; citing Vitousek *et al.*, 1986), and a major portion of this extraction occurs in developing countries where much of the world's population lives. In the pursuit of a quick economic growth and much-needed foreign exchange, most of these countries have paid little attention to the efficiency of resource extraction and use and to resource sustainability. Such economic growth without appropriate institutions to govern the use of open access resources, not only erodes the natural resources on which it is based, but can cause environmental damages that can completely stop or even reverse the very growth process. In a number of developing countries, extensive environmental degradation has occurred and threatens the very base of the economies concerned.

Economic growth and environmental quality are inter-related issues. Although the exact nature of this relationship is still far from clear, there are indications that human activities may have pushed the biosphere's absorptive capacities up to—perhaps even beyond —their limits and that irreversible changes may have already occurred in the natural resource stocks. There is now increasing understanding that development cannot occur without conservation and sustainable use of natural resources.

Economic Liberalization and Sustainable Development

The economic liberalization process has gained rapid momentum in recent years. With the fall of Soviet Union, these winds of change have entered the socialist world as well, whose command economies are rapidly becoming market-based economies.

The change to a market-based economy can exert substantial pressure on a country's natural resources base and environment. At the same time, it may also contribute to a growing environmental awareness in two ways.

First, environmental awareness may increase because liberalization may allow access to newer, environment-friendly technologies and production methods which can increase resource-use efficiency and reduce wastage and pollution. With rising income, there is usually a rising demand for better infrastructure and environmental quality. On the negative side, the change from subsistence to increasingly commercial production would accentuate extractive activities to meet the increased local demand due to rising income, in addition to subsistence demand from population growth, and external demand due to liberalized trade policies (Zarsky, 1993). Without proper resource policies, this may lead to unsustainable exploitation of the environment.

Second, environmental awareness may increase because of direct or indirect pressure from international agencies, such as the World Bank, International Monetary Fund (IMF), and the United Nations Development Program (UNDP), which provide support for the structural adjustments which economic liberalization necessitates. Since the late 1980s, international donor agencies have incorporated environmental components into their financial assistance packages, and they assist the recipient country in developing appropriate legislation, institutional structures and human resource capacities to address environmental and natural resource management issues. Generally, the recipient country is assisted in the preparation of an environmental action plan (see Chapter 4) which sets out the framework of necessary legislative and institutional reforms for natural resources and environment management.[1]

Sustainable Development

In its report "Our Common Future", the World Commission on Environment and Development, created by the United Nations in 1983 (popularly known as the Brundtland Commission), defines sustainable development as that which "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED,

[1] How far these donor agency concerns succeed in achieving the desired targets of sustainable development is a widely debated issue. Donor agencies themselves have acknowledged the failure of their programs to target specific environmental issues (see, e.g., Warford *et al.*, 1992). Despite the debate, environmental impacts of structural adjustment programs remain little studied (Zarsky, 1993).

1987). The definition requires the present generation to safeguard resources so that they may be available to future generations.

Turner (1989) views the investment made by the present generation in improved technology and other means to offset the impact of resource depletion as a compensation payment owed to future generations "for any reduction (due to activities of the current generation) in their access to easily extracted and conveniently located natural resources" (*ibid.*).

Implicit in the concept of sustainable development is the understanding that the economic system is a part of the ecosystem. The global ecosystem, or the biosphere, is a source of all material inputs into the economic system and a sink of all wastes. Natural resources flow from the ecosystem into the economic subsystem and then back to the ecosystem as waste. The regenerative and assimilative capacities of the biosphere's sources and sinks are limited and have come under stress as the economic system has become very large relative to the biosphere (Goodland, 1991).

Zarsky (1993) lists two "first principles" of Sustainable Development:

1) efficient use of resources, and

2) keeping the scale of resource use within regenerative limits of the ecosystem.

Thus, sustainable development places emphasis on the valuation of the ecological aspect of resource utilization, and goes beyond the conventional economic efficiency approach.

Indeed, since resource allocation is a socio-political issue, sustainable development must embrace socio-political realities as well as economic and environmental. Alongside economic efficiency, social equity and environmental, cultural and other considerations are the main elements of sustainable development. The basic aim of sustainable development is to maintain an acceptable rate of growth in per capita consumption without compromising the regenerative capacity of the natural resource stock.

In a market economy, efficient choices of resource use in final goods can be promoted if market prices give correct signals. For this to happen, it is necessary that: first, the prices correctly reflect all the costs; second, substitutes to the resources in question be

priced correctly; and third, the pace of price reforms be controlled so as not to cause social or income conflict which would undermine overall environmental management (Zarsky, 1993).

Economic liberalization may enhance resource use efficiency by increasing access to newer, "cleaner" technologies. However, in the absence of appropriately defined resource policies, the rise in demand, both internal (from income as well as population growth) and external (from liberalized trade policies), can increase the scale of resource use to such an extent that it can swamp the benefits gained from use efficiency, as has been suggested by empirical studies in Southeast Asia, including Thailand (Panayotou and Sussangkarn, 1991).

Environmentally sound economic development is not, however, an automatic process in a market economy. Often an active role of the state is necessary to ensure sustainable development (Kaosa-ard, 1993). Thailand is a clear example of what happens when various economic agents are allowed to act without regard to environmental consideration.

Environmental Awareness and Non-Governmental Organizations

Non-governmental organizations (NGOs) have played a crucial role in raising public awareness on environmental issues on a global scale. Since the 1972 Stockholm Conference on Environment and Development, NGOs, particularly well-funded groups from developed countries, have been at the forefront of developing an international environmental policy, and through their campaigns have been able to put pressure on governments in their home countries as well as international donor agencies to incorporate environmental concerns in policy agendas. During the 1980s, these groups from the developed world were joined by NGOs from developing countries—the so-called "South" NGOs—who are increasingly becoming active in natural resource and environment management issues.

The role of NGOs and local communities in environmental management was further stressed in the 1992 UN Conference on Environment and Development (the "Earth Summit") in Brazil. Economic liberalization, with its stress on decentralization and privatization, may be expected to invoke more private sector and NGO participation in natural resource management and conservation. This may have an important bearing for centrally-planned economies that are now undergoing market reforms, where independent local initiatives or NGOs seldom existed earlier.

Mainland Southeast Asia: Common Issues, Common Concerns

This report focuses on four Mainland Southeast Asian countries (MSEACs)—Cambodia, Lao People's Democratic Republic (the Lao PDR), Thailand and Viet Nam. Among themselves, the MSEACs share not only borders, but as part of a single geographic feature—the Mekong River basin—they have encountered similar natural resource issues and share common environmental concerns. For Cambodia, the Lao PDR and Viet Nam—the three Indochinese countries—some of the environmental and resource degradation issues have their origin in the recent history of war. These three countries are now opening up their centrally-planned economies to market forces and the world outside. As the transition to market-based economies progresses, a hitherto new set of environmental concerns is being felt, including, for example, urban and industrial pollution and water management issues.

During the past decade, environmental concerns have come to the fore in political as well as social circles in the four MSEACs. While governments adopt various environmental management strategies and develop legislative and institutional frameworks, NGOs (locally based as well as foreign) have become increasingly active in the area of natural resources and environment management, usually at the community level. In Thailand, for example, new environmental NGOs have come into being during the past several years at such a rapid rate that there are now over 200 environmental NGOs (TEI, 1994).

This report culminates from a study on "Building NGO Capacities in Natural Resources Management in Mainland Southeast Asia", conducted by the Natural Resources and Environment Program (NRE) of the Thailand Development Research Institute (TDRI) with funding support from the Canadian International Development Agency (CIDA). The aims of the project were:

- to assess the capacities of NGOs as well as other institutions, including state agencies, in the management of natural resources and the environment,
- to suggest approaches to develop their capacities, and
- to identify areas of regional collaboration for research and training.

The rationale behind fostering links with institutions in the sub-region is to share experiences, expertise and links, as well as to facilitate the exchange of information and training in various fields including, for example, the use of economic instruments for environmental management, natural resource accounting methods, and the application of Geographical Information System (GIS) technologies.

This report is based on information collected through interviews with the representatives of various institutions during the NRE/TDRI research missions to Cambodia, the Lao PDR, Viet Nam and Thailand during April-May 1994. Other information comes from research papers and monographs and other published materials.

Organization of the Report

The report is organized into five chapters. The first of the following chapters (Chapter Two) provides background on the status of the economy and the environment in the four MSEACs. Once richly endowed with natural resources, the MSEACs have, during the past two decades, witnessed depletion of their natural wealth either due to rapid economic growth, population pressure or war. Since the mid-1985, they have also undergone marked economic transformations, which may have significant impact on the natural resource use and the environment. Chapter Two highlights recent economic reforms in each country and reviews its human and natural resources. Even though the intensity of resource use and resource degradation varies from country to country, some common issues and resource use trends can be identified at regional, national as well as local scales. These are described later in the chapter.

As part of the structural adjustment process necessary to embrace a market-based economy, each MSEAC is building a comprehensive apparatus of environmental legislation and institutions. For the countries that, like most other developing countries, have treated their natural wealth as open access resources, this task of bringing the various resource users into a single legislative and institutional framework is by no means easy. Traditional systems of resource management often exist in these countries on the community level. Integrating these systems into the national framework, at the same time as the national economy integrates with the rest of the world, is one of the most challenging tasks that would require cultural sensitivity as well as vision to place the concept of economic globalization in its true perspective.

During the past decade, the role of NGOs in natural resources management has increased considerably. Not only are new environmental NGOs being formed but many existing NGOs working in the areas of rural or urban development are incorporating environmental considerations into their activities. Although locally based NGOs are scarce in Indochina (virtually non-existent in the Lao PDR), their emergence cannot be discounted. Indeed, most environmental NGOs in Viet Nam and Cambodia have emerged in the past several years. Chapter Four presents an overview of NGOs in Cambodia, Thailand and Viet Nam.

Finally, Chapter Five summarizes the conclusions and offers recommendations. The commonalities of the natural resource situation in the four countries make it imperative that these countries work together to develop common regional policies and share their experiences and expertise in natural resources management. The chapter also identifies priority areas of common concern where such collaborations could be useful.

2. Mainland Southeast Asia: The Economies and the Environment

Introduction

Population, Economy and Environment

Since demand for environmental goods and services generally rises with per capita consumption, population and economic growth exert a direct impact on the natural resource base, if sustainability of resource use is not ensured through appropriate legislative and institutional arrangements. Population growth leads to increases in subsistence demand, while economic growth impacts the environment through increases in per capita income and external market demand (Zarsky, 1993).

The interplay of the three factors—population, economy and environment—is clearly evident in the four MSEACs. Once richly endowed with natural resources, the MSEACs have undergone varying degrees of resource depletion and degradation, depending on the population size and the level of economic development. Thus, despite the lack of comprehensive resource policies, Cambodia and the Lao PDR could retain much of their natural wealth, particularly the forest resources, due to low population pressures and small scales of economic activities. In Viet Nam, high densities and rapid growth of population have been responsible for the depletion of the country's valuable forests despite a relatively low level of economic development. On the other hand, in Thailand, where population densities are moderate, much of the resource degradation has been the result of the lack of appropriate resource policies, leading to the over-exploitation of resources. Today, Thailand and Viet Nam have only about a quarter of their lands forested, while the Lao PDR and Cambodia have 40-60 percent, though their forests are disappearing rapidly.

Economically, the late-1980s were an important watershed for the Mainland Southeast Asian region. It was the period when Thailand reached its miraculous double-digit growth, marking a definitive shift from an agrarian to an export-driven industrializing economy. During the same period, the Indochinese countries began shedding their command-economy structures to embrace market-oriented economies. Although the population growth was estimated to be moderate during the 1980s, and is projected to slow down steadily (Table 2.1), the combined effect of population growth and rising incomes on the environment could be profound unless appropriate policy measures are not taken to assure sustainability of resource use.

Table 2.1 Population Growth in Mainland Southeast Asia

('000)

Country	Year										
	1980[1]	%	1985[1]	%	1990[1]	%	1995[2]	%	2000[2]	%	2005[2]
Cambodia	6,500		7,330		8,570		9,756		10,879		11,890
% annual growth		2.26		2.89		2.43		2.06		1.70	
Lao PDR	3,200		3,620		4,200		4,774		5,500		6,290
% annual growth		2.32		2.76		2.40		2.64		2.51	
Thailand	46,720		51,580		56,080		60,460		64,543		68,422
% annual growth		1.88		1.60		1.45		1.27		1.13	
Viet Nam	53,720		59,870		66,233		74,109		82,014		89,784
% annual growth		2.05		1.92		2.13		1.93		1.73	
MSEA Region	**110,140**		**122,400**		**135,083**		**149,099**		**162,936**		**176,386**
% annual growth		2.00		1.88		1.88		1.70		1.53	

Source: 1. ESCAP, 1994; 2. World Bank, 1994.

The energy consumption in Thailand provides a good example of how economic growth can fuel resource use. In 1980, per capita commercial energy consumption in Thailand averaged 371 kg of coal equivalent (kgce); by 1992, it had more than doubled to 888 kgce (Table 2.2). During that period Thailand's population rose from 46.72 million to 58.58 million. Consequently, the total commercial energy consumption rose threefold, from about 17 million tons of coal equivalent (mtce) in 1980 to 52 mtce in 1992.

Table 2.2 Commercial Energy Consumption in Mainland Southeast Asia

(kgce/cap)

Country	Year				
	1980	**1985**	**1990**	**1991**	**1992**
Cambodia	22	28	27	27	27
Lao PDR	34	33	33	35	36
Thailand	371	427	765	833	888
Viet Nam	126	128	137	116	120
Total, Indochina	**182**	**189**	**197**	**178**	**183**
Total, MSEA	**553**	**616**	**962**	**1011**	**1071**

Note: Data refer to the aggregate final consumption of coal and other solid fuels, petroleum products, gases and electricity, expressed in kilograms per capita of coal equivalent (kgce/cap).

Source: ESCAP, 1994.

The following sections provide a brief overview of the recent economic reform and the state of the environment in the Mainland Southeast Asian Countries. Each section begins with a short description of the country's geographical settings, and its human resources. Major regional- and national-level issues relating to natural resources and resource use trends are discussed later in the chapter.

Cambodia

Background

Situated between latitudes 10° and 15° North, and longitudes 102° and 108° East in the Southwest of the Indochinese Peninsula, Cambodia covers a total area of 181,155 km^2. It is bordered by Thailand to the north, the Lao PDR to the northeast, and Viet Nam to the east. Topographically, the country resembles a shallow saucer tilted gently toward the southeast. The central and southeastern plains, rising only 10-30 meters above sea level, include the Tonle Sap lake, the flood plains of the Tonle Sap River and the Mekong, and the coastal areas. To the southwest and to the northeast (near the borders with the Lao PDR and Viet Nam), lie the Cardamom and the Annamite mountain ranges, respectively. Nearly 90 percent of the Cambodia's land area is contained within the watershed of the Mekong River.

The Cambodian people and the economy have suffered severely first under the Khmer Rouge regime in the mid-1970s, and later through the civil war and its aftermath. A large number of people, including intellectuals, either died or fled the country during the radical program of social change launched by the Khmer Rouge shortly after taking power in 1975. The intervention by Viet Nam in 1978 ended the Khmer Rouge regime, but ushered the country into a decade of civil war. In 1987, dialogue began between the different warring factions to seek a solution to the civil war, with the People's Republic of Kampuchea (PRK) declaring its policy of National Reconciliation. Successful elections, supervised by the United Nations Transitional Authority on Cambodia (UNTAC), were held in May 1993. A stable coalition government involving the two major parties now appears to be in place. During the transition period up to the elections, the country was led by the Supreme National Council (SNC).

Although the economy did improve following the political settlement, the extent of improvement was limited by the severe domestic imbalances caused by the end of assistance from the Soviet Union, decreasing fiscal revenue and the continued rise in military spending. The fiscal deficit was financed largely by monetary means, which led to liquidity growth, rapid price increases, inflation and exchange rate depreciation.

Human Resources

The most reliable estimate puts Cambodia's population at 9.7 million in 1992 (EIU, 1993a) with a population density of 47 persons/km^2. Majority people (90%) live in rural areas and practice subsistence agriculture. The agricultural sector employs 74 percent of the country's total labor force.

The population, though small, is growing rapidly, and food supply can be expected to become an important issue. War has had a tremendous negative impact on Cambodia's skilled human resources. Training the workforce has become the priority need in the development of institutional capacity to rationally manage the country's natural resources on a sustainable basis.

Economic Reforms

The efforts to reorient the economy began in the mid-1980s and were stepped up in 1989. The main features of these efforts were:

Economic Liberalization: Prices were brought closer to international levels and direct subsidies for commodity purchases were virtually eliminated. Private property ownership was restored in 1989.

Changing Role of the Public and Private Sectors: State enterprises were given greater autonomy and allowed to privatize. Foreign and local private investment were encouraged.

Trade Reform: Foreign trade, which was a state monopoly until 1987, was liberalized; though, despite the reforms, trade in major commodities, such as rubber, timber, rice and fuel, remains in the hands of state-owned trading companies. Cambodia 's low customs duties and their weak enforcement have turned the country into an informal focal point for transit trade in the region, especially with Viet Nam.

Exchange Rate Reform: Market-oriented exchange rate policy has been adopted since the unification of an earlier system of multiple official exchange rates in the 1980s. The official exchange rate now moves within five percent of the market rate.

The Status of the Environment

Forests

Cambodia is one of the few countries in Southeast Asia that still have much of their natural forest cover intact. Estimates of Cambodia's existing forest cover, however, vary, ranging from 62 percent in 1992 by one estimate, to 49 percent in 1993 by another (see Box 2.1).

Logging for export is probably the most prominent cause of deforestation and forest degradation in Cambodia. Illegal logging continues, especially along the borders with Thailand and is reportedly responsible for exporting thousands of cubic meters of logs each day to neighboring countries. According to some estimates, total cutting, including "illegal" and private logging through deals with provincial authorities (860,000 m^3) and in areas controlled by other factions (378,000 m^3), exceeded 1.5 million m^3 in 1992, or seven times the sustainable levels (EIU, 1993a). In the absence of effective policy and management plans, the rate of deforestation and degradation will increase primarily due to unsustainable use.

Box 2.1 Estimating Cambodia's Forests

In 1965, Cambodia's forest cover was estimated at 13.2 million ha or 73 percent of the country's land area (White, 1991, p.20; citing Hun, 1969). Over half of this was classified as suitable for commercial exploitation. Extensive, uncontrolled cutting during the 1970-80s led to a decline in the forest cover. Between 1981 and 1991 about 0.8 million ha may have been converted to agriculture (Mareth, 1994; citing Mekong Secretariat, 1991). Remote-sensing data collected and interpreted by the Mekong Secretariat in 1993 indicate that in 1992 Cambodia's forest cover occupied 112,000 km^2, or 62 percent of the country's land area (Thung, 1993). Earlier that year (1993), however, the Mekong Secretariat had indicated the forest cover to be 49 percent, the figure which had been widely quoted (see for example, Sadoff, 1993; EIU 1993a), Even Cambodia's Ministry of Environment admits that less than 50 percent of the national territory is forested (Ministry of Environment, Cambodia, 1994, p.3). Massive deforestation occurred during the 1970s and the 1980s, when average annual loss of forest was estimated at 300,000 ha (EIU, 1993a), while during 1989-92, the deforestation rate reached almost 3 percent per year (World Bank, 1994 a, p. 127).

Obviously, there is a need for rational forest resource management, protection, and conservation, along with the application of modern or indigenous alternative techniques in addressing the existing problems. The mandate of the Ministry of Environment (formerly, State Secretariat of Environment) is to do just that, but since this ministry is in its infancy, it will require help from international organizations, particularly from its neighbors whose situation in natural resources and environmental issues is similar to that of Cambodia. Areas of interest would be forestry or watershed management, community forestry and conservation measures for protected areas.

Arable Land

Interpretation of satellite images indicates that 3.8 million ha of Cambodia's land are being cultivated and 630,000 ha are used for pasture (Mareth, 1994; citing Mekong Secretariat, 1991). Rice and rubber are the dominant crops. Agricultural production, however, is constrained by the predominance of acid soils and relative shortage of labor to land, and of draft power for land preparation, as well as by limited arable areas—about 40 percent of the total cultivable land is sown with land mines. Climate is also a key factor, as most crops, particularly rice, are sometimes severely affected by floods and droughts. Less than 15 percent of the rice lands are under irrigation. Soil erosion, land degradation, deforestation, inadequate infrastructure support (irrigation, agrochemical sources, agricultural techniques) and inappropriate land policies, are other major limiting factors (Mareth, 1994).

As access to potentially arable land is limited by the presence of landmines and the lack of physical infrastructure, the need to increase food production to meet the demand from the rising population, will eventually lead to intensification of agriculture, which, if not properly managed and regulated, may bring about environmental, health, and economic

problems. Excessive use of agro-chemicals such as fertilizers and pesticides damages the surrounding ecosystem and reduces soil fertility in a long run. Laws and regulations on the use of these chemicals must be established before the problem becomes serious and uncontrollable. At the same time, emphasis must be placed on education about the hazards posed by the excessive use of these chemicals, and on alternative technologies such as the use of organic fertilizers and the employment of an integrated pest management system (IPM).

Biodiversity and Protected Areas

Cambodia's remaining undisturbed forests, extensive wetlands and savannas, fresh water and marine resources, together serve as a sanctuary to a wide range of floral and faunal species, including an estimated 900 species of birds, 265 mammal species, 300 reptiles and 600 marine species (Dennis and Woodsworth, 1992, p.17). Its forests are home to the region's significant population of tigers, elephants, rhinoceros and other endemic species (Mareth, 1994), including the endangered Kouprey (wild ox). More than 850 species of fishes have been recorded from the lower Mekong river and Tonle Sap Lake alone (Dennis and Woodsworth, *ibid.*). Migratory birds shelter on the wetlands and savannas.

Cambodia had a system of protected areas, conceived under the French colonial system, covering an area of 2,200,000 ha (22,000 km^2). During the years of civil war, this protected area system remained only on paper. In 1993, King Norodom Sihanouk decreed a new National Protected Area System, giving the then newly formed State Secretariat for Environment (SSE; now Ministry of Environment) authority to supervise, develop and manage an area of 3,327,200 ha (33,272 km^2) in cooperation with the Ministry of Agriculture and Cultural/Religious Affairs. The new system designates seven national parks, nine wildlife sanctuaries, three protected landscapes and three multiple-use management areas (World Bank, 1994a). The capacity to inventory, demarcate, monitor or control these areas is still inadequate. Moreover, Cambodia, in dire need of foreign exchange, has given logging concessions to foreign firms within the protected zones.

Water Resources

Cambodia's unique hydrological system revolves around the Mekong River, the Tonle Sap River and the Tonle Sap Lake, and supports fisheries, agriculture and transportation, in addition to being a source of drinking water. During the rainy season, the flooding of the Mekong reverses the current of the Tonle Sap river which then flows backward into the lake, inundating an area three times larger its dry season size, and bringing

into the lake organic material, fish fry and adult fish, on which Cambodia's fishery depends (Mareth, 1994). Fish migrations from the Tonle Sap into the Mekong River help restock fisheries as far upstream as Yunnan province in China and many tributary rivers along the way (Dennis and Woodsworth, 1992). Flooding of the agricultural lands also renews the basin's soil fertility. Extensive irrigation networks provide supplementary water for wet and dry season crops. Access to clean water is provided by installing simple line wells and by boiling water (*ibid.*).

The management of this ecosystem has, however, been poor. Heavy siltation, caused by deforestation and destructive gem mining, is reducing the capacity of the Tonle Sap Lake as a buffer to the wet season flooding and as a major source of fish. It is estimated that the sedimentation ratio has increased from 2 cm/year in 1960 to 4 cm/year in 1990, with a resultant reduction in the lake's depth in the dry season by 0.3 to 0.5 meters (Mareth, 1994). With continued siltation, the Mekong Secretariat fears, the Tonle Sap would eventually end up being a series of small lakes, adversely affecting migratory fish who enter the lake for spawning. In stabilizing the lake's ecosystem, reforestation of the inundated forest has been indicated a top priority by several studies. This forest is progressively being destroyed for fuelwood and for land for agriculture and aquaculture. Compounding the problem is the lack of national water management policies. Insufficient water for irrigation and domestic use is a problem in many areas. The Water Management Authority is commissioned to coordinate water management activities. A comprehensive management plan is needed to rationalize water to various sectors.

Coastal/Marine Resources

Cambodia's extremely rich coastal zones, with excellent beaches and clean air, possess a great tourism potential. They also have remarkable mangrove forests covering nearly 60,000 ha, including rear mangroves in wetlands, that are invaluable for wood and non-wood resources and as fish habitats. They also act as buffers, shoreline stabilizers, and storm breakers. Unsustainable fuel wood harvesting and land reclamation for shrimp farming are threatening Cambodia's mangroves and their dependent ecosystem.

The fish resources in the Cambodian territorial waters in the Gulf of Thailand remain relatively less exploited, due to Cambodia's small fishing fleet and inadequate storage and processing facilities. However, as Cambodia lacks the ability to supervise and patrol its territorial waters, illegal fishing continues, and may compromise the fish stock(Dennis and Woodsworth, 1992).

Pollution

The major concern at present is solid waste and wastewater management in densely populated urban areas, particularly Phnom Penh. This capital city with the population of over a million, produces a total of 1,300 cubic meters of domestic waste per day—about half a ton per capita per year (Mareth, 1994). Although infrastructure supports are present, these are poorly managed and maintained. The sewage system, for instance, is in complete disrepair, and wastewater often contaminates drinking water. Rehabilitation of existing treatment facilities and installation of new ones are badly needed. Equally important is education to inform the public and thereby influence their habits towards solving the problems related to pollution and hygiene.

Industrial pollution is not significant as industries are few and small-scale. Yet, it is important that environmental guidelines, laws, regulations and standards are formulated now, since once the political climate normalizes, Cambodia can expect a growth in the small and medium-scale industries sector.

Conclusion

Unlike its two neighbors, Thailand and Viet Nam, Cambodia's environment is not yet severely damaged. Ironically, years of internal political conflicts (and the presence of land mines) has helped save Cambodia's natural resources from massive over-exploitation. However, the current rate of deforestation and uncoordinated resource use present a worrisome picture. Deforestation is particularly alarming in the border provinces where illegal logging for timber export continues unabated, but also poses a threat to the flooded forests of the Tonle Sap Lake, which serve as natural breeding grounds for the lake's fish resources. The Tonle Sap ecosystem is important not only to the Cambodian fisheries but also to that of the upstream parts of the Mekong River system. Preserving the Tonle Sap ecosystem should, therefore, be considered a regional priority, not just national.

Given the national priority to reduce poverty through economic growth and social rehabilitation, natural resource management is likely to be an even more challenging task. However, unless a balance between environment and development is achieved at an early stage, economic growth will soon exert a destructive impact on the natural resources.

The Lao People's Democratic Republic (LAO PDR)

Background

A small, land-locked country in the center of the Indochinese Peninsula, the Lao People's Democratic Republic (the Lao PDR) is bordered by China in the north, Viet Nam in the east, Cambodia in the south, and Thailand and Myanmar (Burma) in the west, and occupies an area of 236,800 km^2. Dense sub-tropical forests cover some 40 percent of the country, much of which is hilly and mountainous. Its abundant rivers emerge in the high mountains that rise towards the northern and eastern borders. The westward bound rivers then slice across the country to join the Mekong River which defines much of the Thai-Lao border.

Human Resources

With only 4.36 million people (1992) and a density of 18.4 persons/km^2, the Lao PDR has one of the smallest population and the lowest population density in Southeast Asia. Though small, the population exhibits remarkable ethnic diversity. As many as 48 ethnic groups have been identified. Majority (between 48-60 percent) are ethnic Lao. Other major groups are Mon-Khmer, Tai, H'mong and Yao.

During the 1980s, the Lao PDR's population grew at an average annual rate of 2.5 percent. Recent projections suggest average annual growth rates of 2.4-2.6 percent over the next decade (Table 2.1). The population is unevenly distributed, largely due to the mountainous topography of the country. Though generally low, population densities in cultivated croplands are as high as 350 persons/km^2, compared to 257 and 1,012 in Thailand and Viet Nam, respectively. Agriculture employs 80 percent of the Lao PDR's workforce. Another 15 percent are employed in the service and industry sector. Public sector employment is estimated to have declined by 20 percent from 1989-92 because the former employees either found private sector work or made their second job a full-time employment.

The Lao PDR's human resource base is limited both in terms of number and skills, despite the country's remarkable achievements since 1975 in developing this resource. Primary schooling became largely universal in the early 1980s, compared with 53 percent in 1970. Yet, secondary-level enrollment was only 26 percent in 1990, though it has risen from just under 3 percent in 1970. Enrollment rate for tertiary level education was only about one percent in 1991.

A 1986 census revealed that only 0.3 percent of the total workforce of 254,000 were university graduates, with some 500 engineers and another 1,500 technicians, while about 2,500 had received some technical training. Around 60 percent of the workforce in the urban areas (Vientiane, Savannaket, Champassak and Luang Prabang) have no schooling or only primary education. About eight percent have attended a technical institution but the education quality is low.

Low productivity and limited incomes are two major constraints of the Lao PDR 's employment pattern, both of which are linked with the vicious circle of socio-economic poverty and environmental degradation (Lam, 1994).

Economic Reforms

The economic reform program called the New Economic Mechanism (NEM) was adopted in 1986 to replace the "subsistence at the village level" strategy that had been the basis for survival and development of the country since the mid-1970s. The objective of the new reform package is to transform the economy from a central command system to a market-based one, with decentralized economic decision-making and an active role for the private sector. The new market-based approach to economic development was included in the constitution adopted in 1991. Liberalization efforts consist of:

- decontrol of prices and distribution of goods and services, elimination of subsidies, and establishment of a market determined exchange rate;
- reform of the tax and tariff systems;
- financial and managerial autonomy to state enterprises, and increased privatization;
- enactment of a new Central Bank law;
- refinements in money and credit management and in the foreign investment law; and
- restructuring of the financial sector, separation of central and commercial banking functions of the State Bank.

The structural and policy changes following the adoption of NEM have led to a positive overall growth of the economy. The main contributing factor has been the emergence

of the private sector which has spurred the growth of the industrial and service sectors. In 1993, the two sectors grew 10.3 and 7.7 percent, respectively, contributing 17.3 percent and 24.3 percent to GDP, slightly better than in 1992. The agricultural sector, on the other hand, has contributed less and less to overall growth in the recent years, although it still remains the major contributor. It grew 2.7 percent from 1992 to 1993 and contributed 56 percent to total GDP as against 59 percent in 1992 (World Bank, 1994b).

The government is striving toward a stable macro-economic environment by stabilizing domestic prices and the exchange rate, and is trying to reduce the fiscal deficit, increase and mobilize savings, strengthen financial markets, strengthen mother and child health care as a measure to reduce population pressure, further implement privatization, and bring about reforms in the civil service. However, these efforts are hindered by chronic shortages of trained workforce and inadequate institutional, legal and policy frameworks.

The rural producers have diverted more and more land to the production of cash crops, such as cabbages, tobacco, coffee, cotton, sesame, cannabis and some root crops, and pig rearing, as these activities are more profitable than rice cultivation. As rice is produced increasingly on a subsistence basis, dependence on food aid and imports has increased.

The Status of the Environment

Like Cambodia, the Lao PDR's natural resources base has remained relatively unexploited due to its low population density, a subsistence economy and difficulty of accessing the resources due to inadequate communication networks. About 47 percent of the Lao PDR's area is still forested. Two thirds of the country has a mountainous topography, which together with the abundance of rivers provides a vast potential for hydroelectric power generation. Like Cambodia, the Lao PDR's soils are deficient in phosphate and therefore low in fertility. Yet, due to low population densities and shortages of infrastructure and market facilities, much of the country's agricultural potential remains unexploited. Like Cambodia, the Lao PDR's human resources are inadequate, both in numbers and in skills.

The government of the Lao PDR has stated its commitment to achieve a balance between environmental protection and economic growth. The country has taken a rather cautious approach while transforming its economy, in order not to affect the country's cultural and natural heritage. Yet, many environmental issues, particularly those relating to environmental impacts of hydropower generation, need to be given proper attention, not only from the national perspective, but also with respect to downstream impacts.

Forests

Although the Lao PDR retains considerable portion of forest cover compared to its neighbors, there has been a significant decline during the past two decades. Indicative estimates suggest total forested area to be around 70 percent in 1970. More reliable estimates for 1982 and 1988, using remotely sensed data (aerial photos and satellite imageries) show forest cover[1] having dwindled to 49.1 percent, or 11.6 million ha, in 1982, and further reduced to 47.2 percent, or 11.2 million ha, in 1989. An estimated 300,000 ha of forest are lost annually, largely due to shifting cultivation, unsustainable and illegal logging activities, and forest fires. Deforestation is more serious in the North, where it is blamed on shifting cultivation (see Box 2.2), than in the South and the Central region. Forest cover ranges from 65-70 percent in the southern-most provinces to about 25 percent in some northern provinces.

Arable Land

Mountainous topography and inadequate road infrastructure have forced the predominantly agrarian Laotians to concentrate on patches of low-lying plains along the Mekong river. With growing population, agricultural margins are being pushed to hillslopes and highlands, competing with the traditional shifting agriculture, and causing further damage to soils and forests.

Yet, the agricultural potential remains underutilized. Of the total potential arable land of 5 million ha, only 800,000 ha (16%) are cultivated for rice or secondary food crop production. Around 750,000 ha are used as pasture land and another 50,000 ha of ponds are exploited for raising freshwater fish.

Climate, topography and geology together make the Lao PDR's vast land resource susceptible to degradation. As in Cambodia, the soils are phosphate deficient, a fact seldom taken into consideration when applying nitrogenous fertilizers, which are generally recommended for tropical soils.[2] For an agrarian country like the Lao PDR, this is an important issue. Unfortunately the country's Environmental Action Plan, prepared with

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[1] Estimates from the National Reconnaissance Survey of Land Use and Forest Cover (NRS), carried out by the National Office of Forest Inventory and Planning. The "current forest" cover as defined in the NRS is forest with crown density of over 20 percent. High density forest cover has a crown density above 40 percent and the diameter of dominant trees is over 30 cm. Potential forest areas are those where crown cover has been reduced below 20 percent for some reason (logging, shifting agriculture); this also includes areas where hill rice and other crops are grown temporarily.

[2] From interviews, May 1994.

assistance from the World Bank, does not adequately address such problems. Extension of agriculture on hillslopes and highlands continues due to poor soil fertility as well as inadequate support to farmers for agricultural intensification. The development of irrigation systems, for instance, is far below its potential. Some foreign NGOs have been assisting local communities in small-scale irrigation projects with funding from abroad, but their efforts meet only a fraction of the total need.

In an attempt to upgrade its agricultural database, the Lao government is now preparing soil maps, while the FAO has undertaken a land use mapping project.

Box 2.2 Shifting Cultivation in the Lao PDR

Land degradation and forest loss are generally blamed on unsustainable shifting cultivation practices. Rising populations have been forcing traditional shifting cultivators either to move into new areas by clearing forests, or to reduce the fallow period. In recent years, the fallow period has reduced from 15 years to about five—in some cases only three years. In addition, traditional shifting cultivators are increasingly competing for land with lowland marginal farmers, the "shifted cultivators" (Myers, 1991), who have been moving upland. The farming practices of the lowland farmers are more damaging to the land when used on hillslopes.

The National Reconnaissance Survey identified 626,000 ha as the area under shifting cultivation in 1989, indicating that a little over 300,000 ha (including 85,000 ha of virgin forest) are estimated to be cleared and planted annually under shifting cultivation. About half of the area under shifting cultivation is the North, about one quarter in the Central region and less than a fifth in the South (STENO, 1993). Most of the estimated 270,000 families of shifting cultivators grow rice, though some in the north produce maize and cassava as food and feed crops. Cash crops like garlic are produced in places with market access, such as those bordering China.

With the help of the Swedish government, the Lao PDR launched a Shifting Cultivation Stabilization Program (SCSP) in the Department of Forestry under the Lao-Swedish Forestry Programme. The Muong Paksane Regional Development Study undertaken in 1981 to assess the impact of shifting cultivation showed that practices of shifting cultivation were more widespread than had been previously thought. In 1988, IUCN was invited to formulate an operation plan which would incorporate all aspects relevant to the stabilization of shifting cultivation and identify possible sites for project activities. Accordingly, a pilot shifting cultivation project was set up in 1989, at Ban Thong Khang in Luang Phrabang province. The project is funded by the Swedish International Development Agency (SIDA) and implemented by IUCN through the SCSP. Settlement has been slow, as only about 20,000 families have been settled. Comparatively, in Thailand, 70,000 of the 230,000 shifting cultivator families have been settled. The SCSP is also conducting research on the use of plantation crops (mainly teak) and improved upland cropping systems for soil and water conservation.

Decreasing the fallow period and consequent soil degradation remain serious problems. Traditionally, patches of land would be kept fallow for as many as 10-15 years. In recent years, Some NGOs, together with government agencies, are working on developing alternative techniques to help reduce damage to soils when practicing shifting cultivation with shorter fallow periods.

Some critics argue that the present patterns of shifting cultivation may be attributed, at least partly, to the large-scale displacement of population during the war years of the 1970s. The migratory patterns have not yet stabilized as people are slowly moving back to the places they originally belonged to. According to these critics, the blame on shifting cultivation is rather exaggerated as it does not take into consideration the transitional nature of the current migratory changes.

Biodiversity and Protected Areas

The Lao PDR's primary forest provides a substantial natural habitat for a wide variety of flora and fauna. Some 9,000 to 10,000 species of mammals, reptiles, amphibians, birds, freshwater fish, butterflies and vascular plants are believed to inhabit in the forested areas. According to IUCN, in Southeast Asia, the Lao PDR is second to Cambodia in species density, and ranks fourth, after Thailand, Myanmar (Burma) and Viet Nam in species endemism. There are unconfirmed reports of at least four endemic species (one mammal and three bird species). In addition, the Lao PDR has been identified as home to 25 species of endangered mammals and birds. The Kouprey and the Javan Rhinoceros, both among the most seriously threatened large mammals in the world, are thought to survive in the southern part of the country. Recently conducted wetlands reconnaissance surveys revealed that some of the country's more than 25 wetland areas support populations of endangered species such as the Siamese Crocodile (*Crocodylus siamensis)*, and the eastern form of the Sarus Crane, *Grus antigone* (Claridge, 1993). Recently, a team of Lao officials from the Department of Forestry, IUCN officials and a Cambridge University team conducting wildlife surveys in a number of protected areas in the southern part of the country discovered a new species of deer.[3]

The existence of large areas of natural vegetation and associated wildlife and sparse population give the Lao PDR excellent opportunity to conserve a number of wildlife species that have been exterminated elsewhere in Southeast Asia (Claridge, 1993, p. III-6).

To conserve biological diversity, the Lao government has identified, with the help of IUCN and SIDA, 71 potential protected areas, including five wetlands and four historical/cultural sites. Eighteen of these were recently declared National Biodiversity Conservation Areas (NBCAs).[4] The IUCN is also assisting the Department of Forestry in developing a Protected Area Systems and Management Plan which will bring all the 18 areas under active management by the year 2000; at present, five are under active management. Active participation of local communities is being sought in the collection of information and protection of forests and wildlife in these areas. The Protected Areas and Wildlife Management Division of the National Office for Nature Conservation and Watershed Management, Department of Forestry, is now conducting a socio-economic survey to study

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[3] Interviews with officials from the Department of Forestry and IUCN

[4] Under the Lao Government Decree on Protected Areas Management (Decree No. 164) issued in November 1993.

the interaction of villagers with forest. Community forestry is considered important in the protection of the remaining forests. The Department of Forestry is working closely with several NGOs on projects related to the development of community forestry, non-timber forest products, etc.

Mineral Resources

The Lao PDR's mineral wealth is largely untapped, but holds a good future potential. Commercial mining accounts for only about one percent of GDP, and has been restricted to small quantities of tin, gypsum, coal, gemstones and cement (STENO, 1993). Lack of systematic surveying and exploration and inadequate communications, including the lack of a seaport, have hindered the development of this industry.

No environmental standards currently exist for the mining sector, whose environmental impact is marginal due to the small size and localized nature of mining operations. The Lao government has expressed commitment to develop adequate environmental guidelines and water quality standards, as well as the need to set up an environmental assessment system for mining projects and operations. While these national standards are designed and adopted, interim standards for water quality, runoff, and drainage from surface mining and for land reclamation also need to be developed (STENO, 1993).

Water Resources

Water resource: The Lao PDR has Asia's largest per capita volume of renewable water—at 66,000 m^3/person it is 20 times the regional average. Current use of 228 m^3/person is only a small fraction of the supply. Agriculture is estimated to consume 82 percent of the total withdrawal, followed by domestic use (10%) and the industrial sector (8%) (STENO, 1993; quoting World Resources Institute). Access to clean water and waste water treatment, however, remains limited. Less than half of the urban population has access to piped water as against 10-15 percent rural. Only seven of the 17 provinces have urban water supply systems, while none have organized sanitation systems. Groundwater contamination from waste water is a serious issue in Vientiane and other urban areas.

Development of a national rural water supply and sanitation strategy is one of the priority areas identified by the Lao government. Community participation is stressed in the development and maintenance of rural water supply systems. A review of the water pricing

system to recover cost and generate funding for the maintenance of the system has also been suggested. At present, community-based water allocation is being tested.

Hydropower: The Lao PDR's hydropower potential is estimated at over 18,000 MW (Government of the Lao PDR, 1994) that can be generated on 54 dams, in addition to 15 run-of-the-river projects. Of this, only about 200 MW is harnessed from three major dams: the Nam Ngum Dam (installed capacity 150 MW), the Xeset Dam (45 MW) and the Selabam Dam (1.4 MW). The Lao PDR's own electricity consumption is the lowest in Asia; only 17 percent of the villages are electrified. Nearly 70 percent of the hydropower produced is exported to Thailand, earning the Lao PDR 25 percent of its foreign exchange. This export, however, contributes less than one percent of Thailand's current demand of about 10,000 MW. Obviously, given Thailand's projected demand of 16,500 MW by the end of this century, Lao government is anxious to sell its hydropower, and has set a goal of generating 1,500 MW annually by 2000. Twenty more projects, worth US$7.5 billion, and with a total installed capacity of 7,044 MW, are being envisaged for completion by the year 2009 (Government of the Lao PDR, 1994).

In its hydroelectric developments, the Lao PDR may face problems similar to Thailand's, viz., displacement of local population and issues of compensation, and loss of biodiversity, as well as other ecological aspects of dam construction. Consecutive droughts and changes in the land use have affected the capacity of the Nam Ngum and the Xeset dams. Water quality of the Nam Ngum reservoir is deteriorating due to a submerged forest land which was not cleared before the dam was constructed. Currently under-water logging is practiced in this area.

Conclusion

In terms of its economic and political situation, the Lao PDR has been more fortunate than its two Indochinese neighbors in a number of respects (Lam, 1994). Unlike Cambodia it has not suffered from drastic economic and social dislocations and disruptions caused by prolonged internal strife and warfare, nor did it suffer from the burden of a trade and economic embargo by the United States and other countries, as Viet Nam did for nearly two decades. At the same time, however, the small population, scarcity of experienced and skilled human resources, high population density on agricultural land, and virtually undiversified economy, together impose comparatively more wide ranging and severe structural constraints on the Lao PDR (*ibid.*).

Yet, the Lao PDR shares many similarities with Cambodia. Like Cambodia, its forest resource is still largely intact, but being depleted at a rapid rate. Like Cambodia, its faces the human resources constraints in managing its natural resources sustainably. Both countries, forest and water resources are among the priority natural resources. Water resource issues in both countries are of regional concern. In Cambodia, the regional concern would be the conservation of the Tonle Sap ecosystem; in the Lao PDR, it is the environmental impacts of hydropower development on the Mekong River System, particularly its downstream areas. However, the water issues in the two countries differ in one respect, and that is, while conservation of the Tonle Sap ecosystem has direct economic benefits to Cambodia in terms of fisheries resources, incorporating environmental considerations in hydropower development would exert economic costs to the Lao PDR.

Thailand

Background

With a total land area of 513,115 km^2, Thailand covers much of the central, southern and western part of Mainland Southeast Asia. The country is bordered to the north and west by Myanmar (Burma), to the north and east by Laos and Cambodia, and to the south by Malaysia and the Gulf of Thailand.

Thailand contrasts with the rest of the three MSEA countries both politically and economically. With more than 700 years of independence, Thailand is the only country in Southeast Asia that was never colonized by Western powers. While the Indochinese countries suffered the traumas of wars during the 1960s and the 1970s, Thailand has enjoyed relative political stability, despite the repeated coups and coup attempts that have occurred since the country's political system changed from an absolute to a constitutional monarchy in 1932. Thailand's economic diversification began much earlier—in the early 1960s—so that by the 1980s, when Indochinese economies began opening up, Thailand had already moved into export-oriented manufacturing.

Human Resources

In 1993, Thailand's population was estimated at 58.5 million, with a slowdown in the growth rate to 1.3 percent a year, from 1.7 percent annually in the 1980s, and 2.7 percent the decade before (Warr, 1993). Partly, this was a result of a successful family planning

program. The World Bank projects the total population of Thailand to reach 68 million by 2005 and 82 million by 2025.

Some 23 percent of the population is urban, 60 percent of which—around nine million—lives in a single urban conglomeration: Bangkok and its adjacent areas.

Total labor force numbered 33.1 million or 56 percent of the population in 1993, while the unemployed totaled 1.06 million or 3.2 percent of the workforce (Bank of Thailand, 1993). In 1991, 32 percent of the population was under 15 years of age, and only four percent over 65 years, indicating a high proportion of youth in the workforce.

Agriculture still employs the largest (though declining) proportion of workforce: 57.3 percent in dry season and 66.4 percent in wet season (NSO, 1989). Such a high employment in the sector whose share in national income has been steadily declining, may explain the persistence of rural poverty in Thailand despite high economic growth (Warr, 1993).

Scarcity of skilled workers and mid- to high-management level professionals is a persistent problem of the Thai labor market. The dropout rate at secondary schools is very high, with only 28 percent enrolling as against 86 percent in primary. Enrollment in higher education was 16 percent in 1989. In 1965, these proportions were 78, 14 and 2 percent, respectively.

Economic Performance

Among the world's poorest countries in the 1950s, Thailand became in the late 1980s one of the fastest growing economies in the world, close to becoming another Newly Industrializing Country (NIC). In 1988, GDP growth reached a record 13.2 percent, making Thailand the world's fastest growing economy. In 1993, Thailand's GDP was Bt3,128 billion, or approximately US$124 billion (Bank of Thailand, 1993), though the growth had slowed down to 7.8 percent. Lower inflation rate and the continued decline in the current account deficit vis-à-vis GDP indicate Thailand's economic stability.

Between 1960 to 1980, the average GDP growth rate was higher than 7 percent a year. Per capita income also increased dramatically: from US$130 in 1965 to US$2,113 in 1993 (ESCAP, 1994).

Agriculture was the main engine of Thailand's economic growth in the 1970s, its success hinging on buoyant foreign markets and the availability of surplus land for expansion

(Siamwalla *et al.*, 1993). Since the 1970s, the share of agriculture in GDP has steadily declined from 27 percent in 1970 to the current level of about 10 percent. At the same time, the share of industry has increased from 25 percent of GDP in 1970 to the current figure of 39 percent and is expected to exceed 40 percent by the year 2000 (World Bank, 1994c).

The impressive growth of Thailand since 1985 has been widely believed to be a result of prudent macroeconomic management and stable foreign exchange rates. Exports of manufactured goods were increasing at 30-40 percent during the late 1980s. Three sectors, preserved and canned seafood, textiles, garments and leather products, and electrical goods, together accounted for 75 percent of the growth.

With rising incomes and competition from lower cost countries such as China, Indonesia and Viet Nam, the labor-intensive manufactured exports began declining in the early 1990s, with the growth rate down to 10 percent a year. This decline, however, has been more than compensated by the more recent growth in medium-high technology manufactured exports. This change from labor-intensive manufactured exports to medium-high technology exports marks the second transition of the Thai economy that is expected to continue for the rest of the 1990s (TDRI, 1994).

Despite the rapid growth in GDP, however, income distribution among the rural and urban population in Thailand has remained largely uneven. Per capita income of the rural population was ten times less than that of urban residents in 1990. Urban workers earned more than twice the national average, while rural workers earned only two-thirds. Bangkokians earned the highest per capita income while those in the Northeast region the lowest. This income gap is likely to worsen as Thailand pursues its industrial development and as agriculture takes a back seat.

The Status of the Environment

Once a resource-rich country, Thailand has witnessed a rapid depletion and degradation of its natural resources and the environment in the past thirty years without adequate environmental policy. In the three decades since 1960, the country's forests have dwindled by half, unleashing problems of irregular flood regimes, dry-season water shortages, soil erosion and loss of biodiversity. Industrialization and rapid urban growth in recent years have created new sets of problems: air, water and industrial pollution and their effects on human health and the economy. Water pollution, carried into the Gulf of Thailand by the

country's major river, the Chao Phraya, has severely affected marine resources on which Thailand's seafood industry depends.

The environment came on the government's policy agenda only in the 1980s, largely due to the rising environmental problems listed above. The awareness that the current pattern of Thailand's economic growth is unsustainable is now arising, as can be seen in increasing public debates on environmental issues. Efforts are being made to restore the balance between the economy and the environment. So far, however, these efforts have not made any significant impact on the continued environmental degradation. Nevertheless, they are gaining momentum as reflected in the growing public participation in various environmental conservation activities, and the actions of the government in the recent years. Major changes in the recent years include: (1) ban on commercial logging, implemented since 1989, (2) an excise tax cut to encourage the use of unleaded gasoline to alleviate urban pollution; (3) a major increase in public investment in wastewater and hazardous waste treatment plants; and (4) enactment of new environmental laws and institutional reorganization to address the various environmental issues (Patmasiriwat, 1994).

Forests

Thailand's forests can be classified into two broad categories: evergreen forests and deciduous forests. Evergreen forests cover some 46 percent of the total forested area and can be subdivided into four categories: tropical evergreen (also known as tropical rainforest), coniferous or pine forest, mangrove forest and swamp forest. Deciduous forests can be divided into three types: mixed deciduous with and without teak (*Tectona grandis Linn.*), dry dipterocarp forests, and savannas (Charuppat, 1994a).

Between 1960 and 1993, Thailand's forest cover diminished from 50 percent of the total land area to about 26 percent. The most rapid destruction was observed during the mid- to late-1970s and early 1980s. Between 1976 and 1982, the annual deforestation rate reached 3.85 percent, one of the highest in the tropical countries worldwide (RFD, 1992).

Indeed, the scale of deforestation has increased steadily since the end of the last century when the Royal Forest Department (RFD), soon after its establishment in 1896, began granting concessions to foreign firms to exploit the country's vast teak forests, first in the Upper North (around 1892), later in the lower North and the Central Plain (around 1899), and much later, around 1973, in the Northeast and the South. In the 1960s and the 1970s, however, deforestation gained momentum as the growing economy, driven by export-oriented

agriculture, encouraged agricultural expansion. With the perceived threat from the then active communist insurgency groups, who had made forested remote areas their hide-outs, security was also one of the reasons behind the deforestation in the 1970s (Kultanan, 1994).

The devastating floods in Southern Thailand in 1988, blamed on deforestation, and pressure from non-governmental organizations forced the government to impose in 1989 a nationwide ban on logging activities and revoke all logging concessions. Despite the ban, however, deforestation has continued illegally, especially in the North, where the country's golden teak forests exist. According to a recent RFD report, the overall rate of deforestation after the logging ban has been only slightly smaller than the rate before the ban (see Table 2.3).

Table 2.3 Forest Cover in Thailand (1961-1993)

Year	Forested Area (km^2)	Percent
1961	273,628.5	53.33
1973	221,725.0	43.21
1976	198,417.0	38.67
1978	175,224.0	34.15
1982	165,600.0	30.52
1985	150,866.0	29.40
1988	143,803.0	28.03
1989	143,417.0	27.95
1991	136,698.0	26.64
1993	133,521.0	26.02

Source: Charuppat, 1994b.

When the First National Economic Development Plan was drafted, RFD had reserved, relying on an old law of 1897, 50 percent (161 million *rai* or 25.76 million ha) of the country as forest land; but this proportion fell to 40 percent in the subsequent Plans (Arbhabhirama *et al.*, 1988, p.154). Of this, natural forests were to cover 15 percent and were meant for purely ecological purposes, while the remaining 25 percent were to be exploited as economic forests. No environmental consideration was involved in the decision to devote 25 percent of the land to economic forest; instead, these policies were motivated by the RFD's attempt to regain control over the lands encroached upon by farmers (Siamwalla *et al.* 1993, p.109-110). Since nearly all the cultivable land is now under occupation, such large reforestation schemes would require evacuation of the people who have occupied forest reserves, and moving them to lands unsuitable for reforestation and therefore also for agriculture.

Such government policies drew heavy criticism from environmentalists and NGOs. RFD has now drafted a new Forestry Sector Master Plan with the help of a Finnish consultancy firm and the Finnish aid agency FINNIDA. This plan too has drawn criticism from various conservationist groups who have labeled it as a commercial forestry plan, since, according to these groups, the commercial forestry schemes espoused in the plan would bring few, if ever, benefits to local populations living in areas designated for commercial forest plantations.

Arable Land

Thailand has been well endowed with cultivable land, which represents about 65 percent of the country's total area (Arbhabhirama *et al.*, 1988). Of this, 13.5 million ha are suitable for paddy, 10.8 million ha for upland crops such as maize, cassava and sugarcane and kenaf, and some 2.6 million for perennial crops, while another 8 million ha of otherwise unsuitable land can be brought under cultivation if appropriate measures are taken (AIT, 1983). By 1985 most of the land suitable for paddy had already been put to use.

Land and forest issues are closely interrelated, and this relationship is clearly apparent in the case of Thailand where the land-man ratio (cultivated land per agricultural worker) had been increasing until the mid-1970s at the expense of the forests. Improvements in road infrastructure, primarily for security reasons, enabled easier access to markets, while the increasing use of tractors in place of draught animals facilitated easier clearing of land and increased farmers' capability to cultivate more acreage.

A TDRI study suggested that by mid-1980s about half of the country was already permanently occupied by private individuals (TDRI, 1986). Between 1960 and 1990, Thailand's agricultural population increased by 14 million, while deforestation continued at a rate of 3 million rai (480,000 ha) per year, or 6.4 rai (1.02 ha) for each person added to the agricultural population (Kaosa-ard, 1993).

As well as the extension of agriculture, the unique problems of Thai land titling system contributed to land degradation. Despite the land abundance, land ownership is a difficult proposition for many farmers. As many as a million farm households, or a fifth of the total, are technically squatters on forest reserves (Siamwalla *et al.*, 1993, p.100) as their farms are located on lands belonging to RFD. Even outside the reserve area, at least 30 percent farmers have not been able to get sufficiently clear land titles to use these lands as collateral. The implications are two-fold. First, with such a large number of people occupying forest

reserve land, RFD is unable to draw any acceptable set of policies on forestry and conservation. Secondly, because they cannot use the land as collateral, the farmers are unable to make investments in the land or equipment, in turn affecting the productivity, and further degrading the land.

Biodiversity and Protected Areas

Thailand's relatively large size and latitudinal spread has bestowed it with a relatively wide range of geographical and climatic conditions. As a result, the country is rich in ecosystems/habitats, and in genetic diversity. There are 17 different ecosystems, including mountain forests, limestone forests, peat swamps, teak forests, bamboo forests and beach forests. An Asian Wetland Bureau study (Scott and Poole, 1989) has identified 42 wetland areas covering not less than 2.5 million ha. Together, these habitats contain approximately 7 percent of all the species of plants and animals in the world, including between 15,000-25,000 species of vascular plants, and 600-800 species of fish.

This diversity has been compromised by the massive destruction of forest and wetlands. Already 40 of the 282 mammal species have been classified as rare or endangered, while 190 of 916 species of birds and 37 of 405 species of reptiles and amphibians are threatened with extinction (Suwana-adth, 1991, p. 29). The Royal Forest Department (RFD) has taken measures to conserve the wildlife by assigning certain areas as protected.

The two acts that have formed the basis of Thailand's conservation strategy are the Wild Animals Reservation and Protection Act (WARPA) of 1960, and the National Park Act, 1961. Thailand has been a signatory of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). However, until 1991 it had enacted no laws to implement the provisions of this international convention. In 1991, a new law, the Wildlife Conservation Act, was promulgated, which now brings Thailand into legal compliance with the CITES through new controls on the import, export and possession of endangered species.

Thailand's first national park, Khao Yai National Park, was established in 1962 under the National Park Act, 1961. Since then a number of parks have been established. Between 1987 and 1992 alone, their number increased from 54 to 77 and the area covered increased by 40 percent—from 28,156 km^2 to 39,283 km^2. The establishment of the Salawin National Park in November 1994 brought the total number of national parks in Thailand to 78. The new park covers 700 km^2 in Mae Hong Son province in the North.

Some of these protected areas have assumed ecological importance for their biodiversity. The Thung Yai wildlife sanctuary, for instance, lies at the intersection of three vegetation zones—the Indochinese, the Himalayan and the Sundaic—making it uniquely diverse in plant and animal life. It is also covers Thailand's best and largest remaining contiguous forests of approximately 6,000 km^2. Khao Yai National Park, Thailand's first and most popular, is internationally reputed as a site for scientific studies on elephants, hornbills and gibbons. It is the only known area in the world where pileated and white handed gibbons have overlapping habitats and produce hybrid offspring (Dixon and Sherman, 1990, p. 102).

Water Resources

With an annual average rainfall of about 1,500 mm, Thailand receives about 800 billion m^3 of water annually. A large part of this, however, is lost as evaporation and infiltration, leaving about 171.2 billion m^3 as surface runoff (Arbhabhirama *et al.*, 1988, p.92-3), that can be potentially used by the various sectors. The total water use, however, forms only a small part of this abundance. Estimates of water use in Thailand for the period 1991-2000 (Tingsanchali, 1991) showed that in 1991 less than 35 billion m^3 of water was used, most of it (30.89 billion m^3) for irrigation, followed by industrial (1.611 billion m^3), urban (1.608 billion m^3) and rural users (0.062 billion m^3). The same report projected total water use in the year 2000 to rise to slightly less than 45 billion m^3, leaving enormous surplus.

It should be noted that the above water surplus figures are deceptive for three reasons. First, the above estimates were made on the basis of geographical regions rather than the basic hydrological unit—the river basin. Second, given the sharp flood regimes of most of Thailand's rivers, much of the surplus runoff flows during the wet season, ending up straight into the sea before being consumed. Third, since the total runoff amount is much smaller when compared to the total precipitation and evaporation, a small change in precipitation can create large fluctuations in the surface runoff amount.

Despite Thailand's relative abundance of water, rapid industrialization, rise in water-intensive land uses such as irrigated agriculture, and urban growth have created problems of competing uses and dry-season allocation, pollution and groundwater depletion.

Water Use and Dry Season Shortages: Traditionally, rice cultivation has been Thailand's major water-intensive activity, concentrated in the lower Chao Phraya basin and exploiting the natural flooding of the region during the rainy season. During the past few decades, however, rising demand for water from the Bangkok Metropolitan Region near the

mouth of the Chao Phraya and the industrial sector surrounding it, and increased water use near the headwaters of the river have created an upstream-downstream competition for water (Alford, 1994).

Another land use competing with traditional agriculture for both land and water use is golf courses. By early 1993 there were 166 golf courses in Thailand, with another 35 under construction (Matichon newspaper, 19 May 1993, cited in Kaosa-ard, 1994). A standard golf course occupying about 215 ha uses about 6,500 m^3 of water a day or 2.37 million m^3 per year—comparable to a paddy field of a similar size that requires 2.4 million m^3 per season (*ibid.*). The total water consumed by all the 201 golf courses when those under construction are completed, would be 476.9 million m^3, about half of the surface water used by urban communities in 1991 (*ibid.*). In addition to consuming large amounts of water, golf courses also pollute waterways by the excessive use of fertilizers.

Water shortages during the dry season has become an acute problem in the past few years. In 1993, when the water levels behind the major dams reached an all-time low, the government asked rice farmers in the Central Plain not to grow the second dry season crop so that water could be allocated to meet the urban demand.

Institutional Weaknesses: Water resource issues in Thailand are essentially a problem of ineffective management. Thai water institutions at all levels have been unable to cope with the rapid rise in water consumption during the past few decades (e.g., Charoenmuang, 1994). Numerous studies in recent years on water allocation problems, institutions and management (see for example, Wongbandit, 1994; Pongskudhirak, 1994; Christensen and Boon-long, 1993; Tingsanchali, 1991; Sethaputra *et al.*, 1990) point to such problems as too many water agencies marked by overlapping mandates and market failures stemming from a management approach which treats water as an "open access" resource (Christensen and Boon-long, 1993).

Groundwater Depletion: More than half of Thailand's factory establishments are located in the BMR, and in 1990, of the estimated amount of water they consume (1.4-2.1 billion m^3), only about 0.5 percent came from piped sources, while most of the rest (95%) came from groundwater sources. In addition, the Metropolitan Waterworks Authority (MWA) pumped about 4 percent of its total production, or about 43.8 million m^3, from groundwater wells (Sethaputra *et al.*, 1990). The industrial sector's heavy reliance on groundwater sources is alleged to be due to lack of access to pipe water, the unreliability or

insufficiency of the pipe water supply, and the lower cost of ground water compared to that of pipe water (*ibid.*).

In the industrial provinces of Samut Prakarn and the BMA, excessive groundwater depletion has led to land subsidence of 5-10 centimeters per year, affecting an area of 4,550 km^2 and contributing to flood damages equal to billions of baht.

Water Pollution: In 1989, of Thailand's 43 major rivers, 18 were found to be contaminated with heavy metals. A new study in 1991, recorded 25 rivers to be contaminated. Dissolved oxygen (DO) levels were found to be zero in the 20-km stretch starting from the mouth of the country's most important river, the Chao Phraya.

Wastewater discharges from industries and urban areas have increased rapidly in the past few decades, but the building up of sewage and wastewater treatment management facilities has begun only recently, and is still woefully inadequate. The first wastewater treatment project at Sri Phraya in Bangkok was completed in 1993 with a daily capacity of only 30,000 m^3. Five more plants are planned over the period 1994-97, all the six costing about Bt19 billion (Patmasiriwat, 1994). The operating cost of wastewater treatment, (excluding labor and maintenance costs) is about 4 baht per cubic meter. To date there is no wastewater charge in Bangkok, and it is unknown if the Bangkok Metropolitan Authority would push for such charges to finance the projects (Patmasiriwat, *ibid.*).

Outside Bangkok, wastewater problem is severe in tourist towns, particularly Phuket and Pattaya.

Coastal/Marine Resources

With over 2,705 km long coastline, Thailand has a high coastline to land mass ratio. The seacoast bordering the Gulf of Thailand is 1,840 km long, while that lining the Andaman Sea runs 865 km. Twenty-three of Thailand's 76 provinces touch the coastline, offering the country an excellent access to sea.

Among Thailand's important coastal resources are the mangroves, marine fisheries, coral reefs and the coasts themselves. During the past few decades all of these have come under increasing threat of degradation or depletion.

Mangroves: Besides their ecological and environmental significance as habitats for fish and other marine fauna, and protectors of the shoreline from storms and

waves, mangrove forests have a number of productive uses. Mangroves can provide charcoal, wood products, tannin, medicinal compounds and a host of other products. In Thailand, 90 percent of mangrove wood is exploited for making charcoal. Traditionally, these uses have made mangroves an important resource for the livelihood of local coastal communities.

Table 2.4 Mangroves in Thailand

Year of Estimate	Mangrove Area (ha)	Degraded Area (ha)	Degradation Rate (ha/yr)	%
1961	367,900[1]	--	--	--
1975	312,700[1]	55,200	3,943	1.07
1979	287,308[1]	25,392	6,348	2.03
1986-7	196,429[2]	90,879	11,359	3.5
1991	180,559[3]	15,870	3,969	2.0

Sources: 1. Klankamsorn and Charuppat, 1982;
2. RFD, 1991;
3. cited in Aksornkoae, 1993, p.6.

In the last three decades, however, Thailand's mangrove forests have dwindled to less than half (Table 2.4), largely due to conversion of mangrove areas for other purposes, such as aquaculture, mining, settlement sites and salt ponds.

Marine Fisheries: Over 80 percent of Thailand's total marine fish catch comes from the Gulf of Thailand, while a small percentage from the Andaman Sea. The Gulf of Thailand is one of the most productive areas in the world, owing to its shallow depth and complex circulation patterns that create numerous localized areas of upwelling and submergence. The marine plankton productivity in the Gulf ranges from 200 to 1,000 ml per thousand m^3 (Arbhabhirama et al., 1988, p.331). Both the Gulf of Thailand and the Andaman Sea coastal area are abundant in the typically Indo-Pacific marine flora and fauna. This marine wealth consists of marine flora such as seaweed and algae, and a diverse types of fauna including sponges; corals and jelly fish; sea urchins and sea cucumbers; mollusks; chitin and tusk shells; monovalves and bivalves (mussels, cockles, clams and oysters); a variety of cephalopods such as octopus, squids, cuttlefish and chambered nautilus; crustaceans, which include shrimps and crabs; fishes; reptiles, such as sea turtles and crocodiles; and marine mammals, including whales, dolphins and sirens or dugongs (for more details on each type, see Arbhabhirama et al., 1988, p.333-342).

The Gulf of Thailand is relatively rich in marine fish fauna, pelagic and demersal. However, this rich resource has been overexploited since 1977, when catches reported were greater than the recommended maximum yields (Tokrisna, 1994, p.8). The

maximum sustainable yields for pelagic fish were estimated at 400,000 tons and 50,000 tons for the Gulf of Thailand and the Thai fishing grounds in the Andaman Sea, respectively (Tokrisna, 1994; citing Southeast Asian Fishery Development Center, 1987). For demersal fish, the maximum sustainable yields estimates have been 750,000 tons (Tokrisna, *ibid.*; citing Boonyubol, 1982) and 200,000 tons (Tokrisna, *ibid.*, citing Hongskul, 1985), respectively, for the two areas. Actual landings, however, were two to three times larger than the estimated sustainable yields (Table 2.5).

Table 2.5 Sustainable and Actual Fish Yields in Thai Waters

(Unit: tons)

Area	Fish Category	Sustainable Yields[1]	Actual Yields[2]
Gulf of Thailand	Pelagic	400,000	559,502
	Demersal	750,000	1,261,185
Andaman Sea	Pelagic	50,000	166,628
	Demersal	200,000	491,292

Note: 1. Various sources; 2. 1991 figures.

Source: Tokrisna, 1994.

Industrial Pollution

Rapid export-oriented industrialization in Thailand has had its cost on the environment through pollution of various types. The problem of hazardous waste has become particularly serious and has been drawing public and media attention in recent years due to its consequences on health and lives of workers and communities living near industrial areas or waste storage sites. In 1991, a major explosion at the Bangkok's Klong Toey port caused by hazardous materials stored there, killed 10 people and caused many acute and chronic health problems to thousands of people in the vicinity, claiming even more lives later.

Of the total hazardous waste of 1.16 million tons generated by Thai industries in 1986, heavy metal sludge and solids accounted for 832,870 tons, or 72 percent. These estimates were later revised, based on new definitions, by the Department of Industrial Works (DIW) of the Ministry of Industry (MOI), down to 0.53 million tons in 1993, or less than half the 1986 figures.

Two separate pre-feasibility studies, one for the construction of industrial waste treatment plant and the other for a combined industrial wastewater and hazardous waste treatment facility, were conducted in 1983 and 1986, with the funding from the Canadian International Development Agency (CIDA) and the Asian Development Bank (ADB), respectively. On the basis of these studies, the first, pilot-scale industrial hazardous waste

treatment plant was built by DIW in 1988 at Sa-Mae Dam, Bang Khun Tien, a western suburb of Bangkok, at a cost of Bt31.5 million. The DIW has planned to build four more plants, each in the provinces of Chonburi, Rayong, Ratchaburi, and Saraburi, but these plans have met with strong resistance from local communities, due to which construction was delayed at Chonburi and Rayong (Eamsakulrat et al., 1994).

Conclusion

Deforestation and degradation of watersheds, depletion and degradation of marine and coastal resources such as fisheries, mangroves and coral reefs, dry-season water shortages and water pollution, urban environmental deterioration (air quality, noise levels and solid waste), and industrial pollution are among Thailand's major environmental problems. This wide range signifies Thailand's transition from an agrarian to an industrializing economy, and indicates the price it has paid for its rapid but unsustainable economic growth.

As these problems reach critical levels, the awareness of the unsustainability of the present path to economic growth is rising, as can be seen from the initiatives taken by the government in recent years. As Patmasiriwat (1994) observes, however, Thailand "has put greater emphasis to stop further environmental degradation, rather than correcting the past failures" (p.10). This is perhaps also due to the massive costs that would be involved when repairing the damage caused earlier.

Thailand's example can be a good lesson for the rest of the MSEACs for avoiding the costly mistakes, since their development path, at least in the initial stages, is likely to be similar to Thailand's, one which is based on the use of natural resources and labor-intensive industrialization.

Viet Nam

Background

Viet Nam, situated on the east coast of the Indochinese Peninsula, covers a total area of 330,363 km^2. It is bordered by the People's Republic of China to the north, the Lao PDR to the west and Cambodia to the south-west. It is a long narrow country dominated by semi-arid plateaus and barren mountains with some stretches of tropical rain forest. Although its economic base is mainly agricultural, on which some 80 percent of its population depends,

only 20-30 percent of the total area is arable. This includes the densely populated Red River valley in the northeast, the narrow coastal plains in the Central region, and the wide, marshy Mekong River delta in the South.

Human Resources

Viet Nam is among the most densely populated countries in the world with an estimated population of 72 million, which is growing at an annual rate of 2.1 percent. Much of the population concentrates along the fertile coastal plains and in the deltas of the Red River in the Northeast and the Mekong in the South, where densities average between 300-500 persons/km^2. The hilly regions along the western border are relatively sparsely populated, mainly by ethnic minorities, with densities lower than 50 persons/km^2. About 22 percent of the population is urban, over two-fifths of which lives in the two largest cities, Ho Chi Minh City (4.1 million) and Hanoi (2.1 million).

High population density and uneven distribution exerts tremendous pressure on the environmental capacity of the country. Agricultural production, for instance, is constrained by limited land resources and high population pressure. The present growth rate, which will double the population in 30 years, will require some portion of the arable land to be converted into settlements, further reducing the area for food production.

The quality of life, in both urban and rural areas, is jeopardized as imbalances between population, natural resources and development widen. Problems of health, food and water supply, waste management, energy, and housing, among others, need to be addressed holistically. Lack of access to essential amenities and services, and persistent, widespread impoverishment have led a large number of people to over-exploit their limited natural resources. In central Hanoi, for example, the quality of life has deteriorated owing to high population density, causing severe environmental stress. A reinforcement of the population policy to stabilize the population is necessary.

Yet, for a low-income economy with a per capita GNP below US$200, Viet Nam scores good marks on its human resource development. The UNDP Human Development Report of 1993 records an adult literacy rate of 88 percent for Viet Nam in 1990, compared with 45 percent for all least developed countries. Some 93 percent males and 84 percent females are literate (compared to 96% males and 90% females in Thailand). Average life expectancy of a Vietnamese is 62.7 years—well above the 51-year average for all least developed countries and close to the developing country average of 62.8 years.

Among the Indochinese countries, Viet Nam's workforce is the most developed. Enrollment in primary schools is generally very high. Every village in Viet Nam is supposed to have a primary or a combined primary and secondary school. In 1991, there were 14,300 such schools, while upper secondary schools numbered 1,100. A comprehensive network of some 105 higher education institutions, based on the Soviet model, also exists throughout the country, though enrollment for higher education is rather low, at 4.5 percent, compared to 16 percent in Thailand (World Bank, 1993).

Of the total workforce of 31.8 million in 1992, nearly 23 million (72%) were employed in the agricultural sector. By contrast, industrial employment was only 11 percent or 3.4 million. Nearly all of the agricultural employment is through state-controlled cooperatives.

In terms of its human and natural resources, Viet Nam's comparative advantages over other low-income countries can be summed up as follows:

1. A relatively educated and well trained workforce;

2. A relative abundance of natural resources, particularly land and marine and coastal resources; and,

3. A strategic location among some of Asia's fast-growing economies.

Economic Reforms

Following reunification, the political structure of Viet Nam followed orthodox Soviet lines, with the Communist Party maintaining control over all areas of the political system. The major shift towards a more market-oriented system in recent years did not contribute to dramatic changes in the political structure.

The Constitution, approved in April 1992, recognizes the Communist Party of Viet Nam as the leading force of the State and society, but also stipulates that the Party should operate within the framework of the Constitution and the laws of the country.

The physical infrastructure on which Viet Nam's mainly agricultural economy depends is quite weak. The transport infrastructure has never been well developed in the North, while in the South it is poorly maintained. The situation with irrigation facilities is the reverse. There are large regional imbalances. Compared to the North, the South has more agricultural

land per capita, more of the capital stock in light manufacturing, greater entrepreneurial tradition, easier access to capital from overseas Vietnamese, and better infrastructure.

In the mid-1980s Viet Nam's economy was growing very poorly despite large amounts of Soviet assistance. Per capita GNP stagnated, and hyper-inflation and chronic balance of payment problems characterized the macro-economy. In the face of these problems the leadership initiated some dramatic changes, both in foreign policy and in domestic economic management. Viet Nam's ambitious program of renovation (*Doi Moi*) began in 1986 and accelerated in 1989 with a shift toward a market-oriented economy. The main features of this effort to reorient the economic system were:

Price Liberalization: Sweeping liberalization of prices removed virtually all controls.

Devaluation: The exchange rate was unified and sharply devalued.

Interest Rate Reform: To counter inflation, interest rates were raised to positive real rates.

Fiscal Reforms: More than 500,000 soldiers were released from the military. In addition, budgetary subsidies to state enterprises were curtailed. The overall streamlining of the public sector in Viet Nam was remarkable. At the same time, tax reform enabled the government to increase its revenue.

Promotion of the Private Sector: After years of discrimination against it, the government now encourages the private sector. Laws for companies and private enterprises give the once-informal sector official sanction.

Openness to Direct Foreign Investment: The country has been fairly successful in attracting direct foreign investment in recent years. A new investment law and subsequent revisions demonstrate the government's openness to the participation of the foreign private sector.

Reform of Foreign Trade:. Viet Nam partially reformed its highly restricted trade regime, so that firms—both state and private—now have easier access to imports and better incentives to export.

Viet Nam showed strong economic growth after following the structural adjustment program. Reforms in 1989 brought an initial surge in output, especially in agriculture and services, and GDP increased 8.05% in 1989. Foreign savings from the former Soviet Union flowing into Viet Nam dropped precipitously between 1989 and 1991, slowing the growth rate. The recession was moderate with GDP growth declining to only 5.1 percent in 1990 and rising to 6.0 percent in 1991. In 1993, the recovery from the drop of Soviet assistance and foreign savings was evidenced in the 8.3 percent growth in GDP.

The Status of the Environment

Viet Nam has had a relative abundance of natural resources, particularly land, minerals and coastal and marine resources. However, years of war, over-exploitation and pressure from a rapidly increasing population have threatened this abundance.

Forests

Viet Nam's forests have largely been over-exploited. In 1943, about 43 percent (14 million ha) of Viet Nam's land was forested, but by 1991, forest cover had declined to 27 percent (9 million ha). The loss was primarily due to agricultural, industrial, and rapid population growth and the effects of several years of war. In the past 25 years forest cover has declined at an estimated 350,000 ha/year. Shifting cultivation is blamed for much of this clearance, particularly in upper watershed areas. Some 125,000 ha are estimated to be under "swidden" shifting cultivation each year. Logging for timber and for fuelwood and forest fires are other major causes of deforestation. An estimated 100,000-150,000 ha are logged annually. However, silvicultural practices are of relatively high standard, as logs are harvested by selective felling supported by enrichment and post-logging operations (World Bank, 1993).

The rapid deforestation has left some 13.4 million of uplands and hills denuded (the so-called "barren hills"). As forest land is degraded, its economic value is also reduced. Additional costs are incurred through extra soil and water conservation measures, loss of invaluable genetic resources, and increased incidence of floods and droughts, soil erosion, and sedimentation. The soil erosion rate, for example, was observed to be quite high (about 200-300 tons/ha/year), especially in denuded areas. The Red River carries about 120 million tons of sediment, while the Mekong River moves 90 million tons annually.

Among the priorities listed to mitigate problems mentioned above, are (1) the development of an integrated forest and watershed management and conservation program

that includes, among others, reforestation and afforestation projects and measures to control forest fires, (2) promotion of agro-forestry and stabilization of shifting agriculture, (3) ban on large scale commercial logging, and (4) review of all forest policies and laws.

Arable Land

The agricultural sector accounts for 49 percent of Viet Nam's national income, and employs 72 percent of its labor force. About 7 million ha are arable, mostly situated in the river valleys, deltas and along coastal plains. Because of high population density and limited land area suited for cultivation, people are forced to cultivate less productive lands which yield less and degrade rapidly. Clearing of forest land for crop cultivation has also led to further environmental degradation.

Biodiversity

The richness of Viet Nam's genetic diversity is at stake and is declining rapidly due to continuous deforestation, over-exploitation and mismanagement. Viet Nam's protected areas are relatively small. Like its neighboring countries, Viet Nam hosts a wide range of endemic floral and faunal species. However, these resources are distributed over small geographical units, particularly the undisturbed forest, wetland and coastal areas. There are over a thousand plant and timber species and over a hundred species of animals and fish. These genetic pools are in danger of extinction unless proper management and protection are extended.

Maintaining these genetic resources needs the development and implementation of sound management plan for forests, watersheds, wetlands and marine areas. The creation of national parks and protected areas as well as the regulation of hunting and trade of endangered species can also serve to preserve and maintain biodiversity.

Water Resources

The supply and quality of fresh water are dependent on the status of the watershed and underground sources. Present water use and management are inefficient, such that the reliability of the water supply and the quality of water are at risk. Some of the problem areas include: the degradation of watersheds, inappropriate agricultural practices and water pollution caused by sewage, industrial, and agrochemical discharge in waterways.

Because of poor catchment management, ongoing deforestation, and destructive agricultural practices, a significant increase in soil erosion and flooding has been observed, especially during the wet season. Increasing sedimentation is eroding the efficiency of irrigation canals, dams, and reservoirs in transporting and storing water for agricultural, industrial and domestic use. On the other hand, a low water supply is the main problem during the dry season.

Water pollution is another main issue. Without adequate sewage infrastructure, the ever increasing population poses a serious threat to human health, particularly in cities. In Hanoi, thousands of cubic meters of untreated sewage are directly dumped into ponds and canals. While the shift towards intensive agriculture has helped achieve food self-sufficiency, the excessive use of chemical fertilizers and pesticides has resulted in groundwater contamination.

Priority has been placed on an integrated watershed management program to ensure availability of a fresh water supply. Emphasis must be placed on a multi-purpose utilization of water resources, soil erosion control, forest rehabilitation, land use and human settlement planning, waste disposal, and flood control. The quality of potable water is guaranteed through the promotion of standards and controls. Levels of pollutants can be minimized by establishing proper treatment facilities for sewage and industrial waste, and by reducing chemical use in the agricultural sector.

Coastal/Marine Resources

Viet Nam's coastline to land ratio is very high due to the country's narrow shape. Three major coastal resources are coral reefs, mangrove forests and estuaries, and marine ecosystems. The extent of Viet Nam's coral reef resource has not been extensively studied, although it is estimated that the coral resource extends, on the average, 100-200 meters from the coastline. Most are fringe reefs along the central coastline and around the southern coast. The significance of coral reefs is not widely acknowledged, resulting in the neglect of this valuable ecosystem resource. Coral reefs serve as important feeding, breeding, and nursery grounds for fish and other marine organisms, and support a diverse ecosystem. About 70 genera and 200 species of marine organisms have been so far identified in Viet Nam 's coastal waters. The problem is that little is known about the coral and the effect of land-based environmental problems like sedimentation and pollution on the reefs.

Mangrove forests grow around the southern coast of Viet Nam. The importance of the mangrove is invaluable for coastal protection, as it acts as a buffer against storm surges and typhoons, minimizes coastal erosion, and controls floods. Like coral reefs, mangroves also serve as a breeding, feeding, and nursery ground for marine organisms. Parts of the mangrove areas are over-exploited and degenerated due to commercial logging, pollution, sedimentation, fruit harvesting, hunting, and the after-effects of napalm bombing during the war, and more recently from aquaculture (e.g., shrimp farming).

Estuaries are formed where a mixing of sea and fresh water occurs along the coastline. This mixing of waters and nutrient cycling make these areas important spawning and breeding grounds for marine organisms. These are the areas that are rich in mangrove forests, a wide array of fish, birds, and terrestrial animals. However, these are also the areas where man-made structures are usually located, e.g., large cities, sea ports and industrial zones.

A sustainable coastal zone management program must be given priority. Protection, conservation and rehabilitation of mangroves, estuaries, lagoons and coral reefs must be emphasized together with pollution control, rational utilization of aquatic resources, and coastal land use zoning. The development of a National Wetlands Conservation Program is being promoted within the coastal zone management framework to deal with sustainable utilization and rehabilitation of critical wetland ecosystems.

Mineral Resources

Viet Nam is rich in mineral resources. More than 80 types of minerals have been evaluated and classified. Of special importance are those that are used for energy, metal, construction, and gems. Coal, for example, is in abundance, with vast reserves of hundred million tons situated in the Red River basin. Up till now, 300 deposits of more than 30 mineral types have been exploited. Extraction methods are, however, inefficient, and during exploration, exploitation, processing and consumption, a great amount of loss has been incurred. For instance, losses in tin extraction range from 22-44 percent, and for iron from 16-24 percent. Further, rare and precious minerals such as gold, are being mined illegally and/or wastefully. The inefficiency in mining and processing also leads to creation of waste and consequently pollutes and degrades the environment.

In mining the foremost priority is to develop and promulgate a Mining Law to regulate mining activities. Selection and application of appropriate mining technology involved in the exploration, exploitation, and processing process must be given due attention to

rationally utilize the mineral resource, and minimize wastage and degradation of the environment.

Conclusion

Viet Nam's major environmental problems, deforestation, land degradation and sedimentation, coastal resource degradation, as well as air and water quality deterioration in urban areas, are principally the problems of high population pressures. As the economic reforms continue, some of these problems may worsen, unless appropriate control measures are taken. Viet Nam's position as the world's third largest rice exporter, together with its population growth, will exert substantial pressure on the land resource. By the year 2000, an additional one million ha land will be converted to agriculture, with another 750,000 for plantations (coffee, tea and rubber).

Viet Nam's comparative advantage for labor-intensive industries may create new employment patterns that may trigger rural-urban migration and subsequent crowding and further worsening of the environmental quality in urban areas.

Viet Nam has, however, expressed its strong commitment for sustainable development in its National Plan for Environment and Sustainable Development (see Chapter 3), which aims to "achieve a population level and distribution that is in balance with natural sustainable productivity at a dignified standard of living," (SCS, et al., 1991).

NRE Trends and Issues to the Year 2000

Striking a balance between the economy and the environment is the primary—yet formidable—task of sustainable development. For MSEACs, given the dependence of their economies on natural resources, it would be unwise to pursue economic growth without taking into consideration its impact on the sustainability of the natural resource base and the quality of the environment. Neglecting the environment for the sake of economic growth can be costly in the long run, since the cost of repairing the damage done to the environment is usually far greater than an early investment in environmental protection, as can be seen in the case of Thailand. That economic liberalization intensifies resource use has been empirically shown in Thailand (Panayotou and Sussangkarn, 1991) and is becoming apparent in the other three MSEACs with their transitional economies.

Major Issues and Concerns

Although the level of economic growth and industrialization differ among the four MSEACs, a number of environmental issues are common to all or some of them. Critical among these are issues related to the use of water resources, land degradation and deforestation and coastal resources management.

Environmental issues can be important on different geographical and geopolitical scales: local, national and sub-regional. As part of an international river basin, the MSEACs share some of the resource concerns that, being transborder in nature, can be geopolitically sensitive.

On the sub-regional scale, utilization of water resources of the Mekong River would probably become the dominant issue during the 1990s. The Lao PDR, whose total hydroelectric potential is over 12,000 MW, has planned 54 dams on the Mekong tributaries within its national boundaries. Further upstream, China has planned ten. Hydro-power generation today earns the Lao PDR nearly a quarter of its total foreign exchange revenues through the sale of electricity to Thailand. Given the Lao PDR's low potential for export-oriented industry due to the small size of its labor force and scarcity of skilled human resources, the lack of economy of scale for commercial manufacturing, and the lack of communication infrastructure (including a seaport), hydropower is likely to remain an inevitable option for this country for export revenue earning.

While the Lao PDR and China exploit the hydroelectric potential of the Mekong river system, damming of the river in upstream areas will eventually effect the ecology, and hence river dependent economic activities—in the downstream regions, notably in Cambodia and Viet Nam. Particularly vulnerable to changes in the flood regime of the Mekong are the ecology of the Tonle Sap Lake in Cambodia and agriculture in Southern Viet Nam.

If not tackled effectively by all the Mekong riparian states including China and Myanmar (Burma), the Mekong water issue could lead to serious disputes sub-regionally. So far the indications are that it would be resolved peacefully. The four MSEACs have already expressed willingness to discuss this issue together. In April 1995 the four nations signed an Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin. Although the agreement stresses the spirit of cooperation in the development of the river resources for the benefit of all riparian countries (Chapter III, Article 2 of the Agreement),

water use related issues cannot be expected to settle within just a few years. Indeed, it may take several years before the possible impacts of water resource development activities can be satisfactorily quantified so as to provide a basis for cooperative actions to mitigate adverse effects.

The threat of air pollution becoming a transborder issue may look small at present, but it could become another major international concern if countries such as Thailand and the Lao PDR, in addition to China, decide to use lignite for power generation without adopting clean coal technology. The energy demand in the sub-region will rise rapidly with the economic growth. Thailand, for example, maintaining the economic growth requires an increase of 1,000 MW each year.

On the national scale, land and forest issues are likely to remain high on each country's political agenda, since in all the four countries majority of population depends on agriculture, and the loss of forest has either crossed critical limits, as in Thailand and Viet Nam, or is progressing rapidly, as in Cambodia and the Lao PDR. The agricultural land frontier is nearly exhausted in Thailand and Viet Nam, while in Cambodia and the Lao PDR the scarcity of road networks (and the presence of land mines in Cambodia), has made access to land with agricultural potential difficult, causing pressure on existing agricultural lands.

The problem of land degradation and deforestation has been further exacerbated in the absence of a comprehensive system of land titling or ownership in the MSEACs. In Thailand, land property right issues have been causing great debates and confrontation between the government and the people. Although this problem is far less critical in the Lao PDR at present, it may assume significant proportion when the country begins to implement its remaining 51 dam projects. Fortunately, the Laotian authorities seem to be concerned about local communities and are incorporating community-based watershed management approaches in their water resources development and conservation strategies.

Water resource issues may also feature on a national scale, as they have in Thailand during the past few years. Increasing demand from growing urban and industrial sectors on the one hand, and irrigated agriculture on the other, may cause water use conflicts if appropriate water use policies are not laid out early enough. Water management is generally spread among various agencies. Comprehensive water management policies therefore call for a close cooperation among the agencies concerned. Water has traditionally been considered a free good. However, as increasing demand would make this resource scarce, options such as water pricing should be tried out. Strengthening traditional community-based water

management systems is an option worth considering, since these are time-tested methods, and since majority of population in all the four countries is rural.

Coastal zone management will also become a significant area of concern for the MSEACs except the Lao PDR. With the unleashing of market forces shrimp farming business has boomed in coastal areas, causing further degradation of coastal resources, particularly mangroves. Although short-term profits per unit area from shrimp farming are far higher than rice farming (see Box 2.3), ecological damages caused by salinization, water logging and increased acidity of soils (due to the presence of acid sulfides) make the land unsuitable for any use for at least 20 to 30 years.

Box 2.3 Shrimp Farming in Thailand

In Thailand, average output from a shrimp farm of about 10 to 15 tons/ha/year are considered quite common, though crops as high as 25 tons/ha have been reported (Asian Shrimp News, 1989, 4th Quarter issue, p. e 4). In 1989, at the price of 125 Baht (US$5) per kilo, the average crop would yield a revenue of 1,250,000 to 1,875,000 Baht (US$50,000-75,000) per ha per year.

In the above case of 25 tons/ha harvest, only about 30 percent of the income paid for the seed and feed costs, leaving a huge gross profit. However, the productivity would last only for about 3 to 4 years, after which the saline, water-logged, acidic soil would remain unsuitable for any use for more than two or three decades, turning the financial success into an environmental disaster for the area. Also, during the years of operation, the discharge from the shrimp ponds may adversely affect the surrounding natural ecosystems.

(personal communication with Dr. M. Zakir Hussain, IUCN Wetlands Programme, Bangkok).

Natural Resource Utilization Trends

Livelihood concerns take priority over environmental issues in Cambodia, and this situation is not likely to change for some time from now. Although the presence of land mines, and continuation of civil war in pockets of Cambodia have restricted the access to natural resources, in recent years, economic reforms have accentuated the exploitation of forest and fishery resources around the Tonle Sap Lake. Once the current threats to political stability and security are removed, communications and other infrastructure development is expected to gain momentum, reaching remote areas. In the absence of institutional and human resource capacities for effective legal structure and enforcement, opening up of remote areas would only accentuate unsustainable natural resource use.

The situation in Cambodia and the Lao PDR is more or less similar to that of Thailand three decades ago when forest resources were plentiful, except that Thailand has

been integrated in the world trading system for more than a century. Thailand exploited its comparative advantage in rice cultivation for the basis of its economic growth at the initial stage. The rapid export growth led, in the absence of appropriate land policies, to agricultural expansion and subsequent forest loss until the land frontier was nearly exhausted in the late 1970s. Fortunately, since Thailand had started its industrialization earlier, it was able to switch from agrarian to an industrializing economy. Even then, agriculture still remains one of the major sector of the economy and a source of livelihood for the majority population. Also, industrialization in Thailand has not been without dependence on local natural resources as in the case of the seafood industry.

The experience of Thailand would be useful for the remaining MSEACs in avoiding the former's mistakes. Being late in the process of economic transformation and industrialization accrues certain advantages for these countries. As latecomers, they face reduced uncertainty about absolute and relative magnitudes of environmental risks, which would help in prioritizing problems, and access to a wider range of low-cost technology options to match their environmental objectives (O'Conner, no date). The ability to make best of these advantages will, however, be greatly compromised by the scarcity of skilled human resources. In these context, it is advisable that these countries follow their liberalization programs cautiously, perhaps in a phased manner, so that adverse impacts on the environment and the society are kept to a minimum. At the same time, attention will have to be paid to human resources development.

All three countries have begun their reform process on a low GNP base and with a number of serious problems in many sectors, including education, health, and physical infrastructure as well as institutional and legal framework. Therefore, despite the remarkable progress made by Viet Nam, and to some extent the Lao PDR, in launching the reform process and having exhibited tremendous potential for growth, an economic miracle cannot be expected to happen in just a matter of a few years, nor is it advisable. Indeed, to spare these countries of the possible shocks of rapid liberalization, it is also necessary that donor agencies allow these countries enough time to restructure their economies at a pace compatible with their socio-economic situations.

The primary objective of liberalization policies is "to increase economic capacities, that is, to stimulate growth, by changing the structure of price incentives and unleashing market forces" (Zarsky, 1993). If these prices do not reflect the real resource costs, including the environmental and social costs, they do not encourage efficient use of resources, leading to wastage and degradation. Effects of market liberalization on the

environment is most apparent in the case of Thailand, where the rapid resource depletion and environmental degradation resulted because resources were treated largely as "open access" resources.

Although countries like Viet Nam and the Lao PDR have shown keen interest in the use of market instruments, they lack the experience and capacity in resource valuation and the use of the price mechanism. In addition to learning to use various market instruments, the MSEACs must also learn to adapt these instruments to suit the local situations. The NGO criticism of the use of market instruments and privatization has been that while these concepts may work in theory, in practice they benefit only those with economic resources (Rambo, 1994). The option of community-ownership of a resource at a local level should also be considered against the use of market mechanisms or the state control (see for example, Ostrom, 1994).

Donor agencies have successfully began the process of putting the necessary environmental institutional and legislative structures in place in these countries (see Chapter 3). Equally important, however, is the need to build human resource capacities to manage these structures and monitor environmental changes as the economies develop. Since developing human resources usually takes longer than building legal and institutional framework, the effectiveness of the latter would remain questionable. Even in relatively advanced Thailand, effectiveness of certain policies remain doubtful, as exemplified in the case of logging ban. The three transitional MSEACs have, however, shown remarkable political will to move towards a market economy, and this may speed up human resource development —even dramatically—if proper external support is provided where necessary.

Industrialization: Being late-comers in the liberalization and industrialization process, the three transitional MSEACs enjoy the advantage of accessing the best suitable technology. Since existing industrialization is at a low level and on a small scale in these countries, the developing industrial sector, particularly in the Lao PDR and Cambodia, will suffer little from "grandfathering" attitudes; that is, there is little need to "level the field" by allowing existing industries that cannot afford new, environment-friendly technology to continue to use old one.

Industrialization in the Lao PDR and Cambodia, however, is less likely to be as spectacular as in Viet Nam due to the severely limited human resources. The Lao PDR suffers an additional constraint of the lack of a seaport due to its landlocked nature. Market

liberalization will increase its dependence on the neighboring countries of Thailand and Viet Nam.

The industrialization of Viet Nam is likely to proceed on the similar line as Thailand's, based on the pattern of natural resource-based and low-skill, light industries, and small- and medium-scale textile manufacturing. Together with rising population pressure, particularly on urban and industrial areas, pollution problems are likely to become serious in Viet Nam in coming years.

Compared to Cambodia and the Lao PDR, Viet Nam is more fortunate on the situation of human resources, though not on the health of its natural resource base except minerals. Viet Nam's forests are nearly as badly damaged as Thailand's. The issue of sustainable management of highland agriculture is perhaps more severe than in Thailand. Problems of urban and industrial pollution and mangrove destruction are less severe than Thailand's, but there are signs that these too can become serious problems in the coming years unless properly addressed using adequate policy measures.

Environmental impact of agricultural intensification is also expected to feature high on Viet Nam's environmental agenda. Viet Nam today ranks among the world's leading exporters of rice. As its economy is more integrated in the world trade system, increased use of agrochemicals to improve agricultural yields is beginning to have adverse ecological impacts.

Thailand leads the four countries in terms of economic growth and development. Integrated into the world trading system for more than a century, The seafood processing industry, one of Thailand's leading foreign exchange earners, initially thrived on locally-procured raw materials, such as fish, shrimps, clams, and oysters, but unsustainable exploitation led to rapid decline of these resources, and now the industry needs to look for raw materials from Cambodia and Viet Nam.

Despite heavy dependence of its economy on natural resources, Thailand's institutions managing them did not keep pace with the rapid economic growth. Only recently, with the passage of a comprehensive environmental law (see Chapter 4), has there been a serious effort to rebuild the country's environmental institutions.

It could be expected that as the institutional and legal infrastructure comes into place, the "past failures", too may get resolved over time. Judging from the ongoing trends,

some of the more controversial issues such as land property rights and delineation of forest areas, will settle slowly towards the end of the century.

Potential Local and International Conflicts

For countries launching market reforms with a relatively undiversified, natural resource-based economy, transition to market-economy usually intensifies resource-extractive activities. If not carefully planned and monitored, such intensified resource use as well as the impact of transition itself may lead to conflict situations. In Mainland Southeast Asia, given the transboundary nature of some of the resources, particularly the water resources of the Mekong, intensified natural resource extraction and environmental degradation may generate conflicts at both transnational as well as local levels.

Barring minerals, much of Indochina's natural resource wealth revolves around the Mekong river. The river system together with its tributaries and lakes is a source of water, hydropower, fisheries and a means of communication, but it is the hydropower potential of the river that has much attraction for its riparian states. However, the impacts of hydropower construction could be quite significant on the annual flood regime of the Mekong, and in turn on the ecology of the downstream countries, viz., Viet Nam and Cambodia. This is a major cause of concern for Cambodia's Tonle Sap lake the unique ecology of which help renew fisheries stocks not only for Cambodia, but many tributaries as far upstream as Yunnan province of China.

Since the use of the Mekong river is an international water issue, it is possible that the riparian states would collaborate to work out a common strategy that would satisfy all parties and cause minimum environmental damage. Efforts in this direction have already begun with international dialogues on this issue in which China is also being invited.

Commercialization of resource-based extractive activities, such as forestry, may cause conflict among rural communities dependent on these resources for subsistence and commercial interests from outside. In Thailand this issue has come to the forefront due mainly to the initiatives taken by NGOs. This problem may be less severe in the Lao PDR because of its low population densities in remote areas. However, in the absence of community resistance, policing illegal extractive activities will become solely the responsibility of the State, which already finds this difficult due to lack of human resources.

Another potential conflict of a local scale, but common to virtually all countries is the issue of shifting cultivation. Traditional shifting cultivators have tilled the lands on hillslopes for centuries without affecting the environmental balance. Increasing population pressure has changed that situation in two ways. One, increases in population in the traditional shifting cultivators themselves have forced them to reduce fallow period and use the land more often, affecting soil fertility, which forces them to clear new forest patches. Secondly, rising population pressures in lowlands have forced marginal lowland farmers to move on to lower hillslopes for agriculture. Their lowland farming methods are, however, unsuitable on slopes, and can cause extensive soil erosion, forcing the farmers to move to a new plot in a few years' time. Traditional shifting cultivators usually allowed sufficient fallow period—ranging from 7 to 15 years—to allow natural regeneration of soil fertility. Both due to pressure on land and due to unsustainable methods, fallow period is often reduced to only three or five years.

Conflicts between traditional shifting cultivators and new entrants may begin if these practices are allowed to continue. Countries like the Lao PDR, Thailand and Viet Nam have launched programs to stabilize shifting cultivation by encouraging farmers toward sedentary farming practices. The focus of these programs should be, however, on weaning the lowland farmers from practicing shifting cultivation, and finding ways to make traditional shifting agriculture sustainable. Some NGOs in the Lao PDR are working on projects to make intensive use of land with a short fallow period, thereby making agriculture sustainable even with shorter fallow period.

Natural resources are often intricately linked to each other and extraction of one resource can damage others. Destruction of mangrove forests due to shrimp farming is one example, where loss of habitats for fish and other marine life has severely affected incomes and threatened livelihood of small fishermen in Thailand and this is now beginning to happen in Viet Nam.

Experience of economic liberalization could be traumatic for rapidly restructuring economies. As income structures change suddenly, income gaps between rich and poor, urban and rural, population widens, causing social conflicts (e.g. Zarsky, 1993). In the three transitional MSEACs, rapid economic changes can trigger such conflicts, since in the absence of sufficient communication infrastructure, benefits of adjustment will remain limited to more accessible urban areas, causing inequitable income distribution.

Liberalizing the economy in phases, and assessing the impact during each phase before going on to the next, could be one possible alternative. This will also help restore the environmental imbalance caused by economic development. The objective of economic liberalization should be sustainable development for all, and not a rapid income growth that benefits only a small percentage of the population. Since liberalization programs in the three MSEACs are supported by international organizations, controlling the pace of these programs may not always be in the hands of these countries' governments, since most loans are tied to economic performance expected of the country in a specified time frame.

Table 2.6 Mainland Southeast Asian Economies: Basic Comparisons*

	Thailand[1]	Viet Nam[2]	Cambodia[3]	Lao PDR[4]
Total land Area (km^2)	513,115	330,363	181,040	236,800
Population (million)	57.79	69.3	9.7	4.31
Population Growth Rate (%)	1.9	2.1	4.9	2.6
Adult Literacy Rate (%)	93 (1993)	88	35 (1990)	n.a.
Exchange Rate: 1US$=	25.40 Baht	10,500 Dong	3,200 Riel	719 Kip
Inflation (consumer price index %)	3.3 (1993)	5 (1993)	148	70 (1989)
GDP growth rate (%)	7.6	8.3	7-8 (1992-93)	7
GDP (million US$)	110,337	17,568	2,000	1,195
Sectoral share (% of GDP):				
- Agriculture	13,240	8,784 (50%)	960 (48%)	684.74
- Industry	(12%)	4,216 (24%)	340 (17%)	(57.3%)
- Manufacturing	43,031	n.a.	700 (35%)	212.71
- Services, etc.	(39%)	n.a.	n.a.	(17.8%)
	30,894			n.a.
	(28%)			297.56
	54,065			(24.9%)
	(49%)			
GNP per capita (US$)	1,840	220	200	250 (1993)
Exports (million US$)	32,473	2,470	65	147 (1993)
Imports (million US$)	40,466	2,510	494	320 (1993)
Total External Debt (million US$)	39,424	14,370	n.a.	1,952

Note: * Unless stated otherwise, the figures are for 1992.

Sources: [1]Bank of Thailand, 1993; World Bank, 1994b.
[2] EIU, 1993a; UNDP, 1993.
[3] EIU, 1993a; World Bank, 1994a; The World Bank 1994b.
[4] EIU, 1993a; World Bank 1994b.

3. Institutional and Legal Framework

Introduction

Institutions and legislation provide basic infrastructure for the implementation of environmental policy and carrying out environmental planning and management. It is therefore imperative for a country to design and implement both institutions and laws to suit its own socio-political and economic context (ESCAP, 1992).

Environmental Legislation

The first hierarchical legislative level of any country is the constitution. The constitution may or may not express concerns for the national environment. Especially in those countries that have drawn their constitutions prior to the popular rise in environmental awareness, specific environmental concern may be lacking, or not explicitly expressed.

Irrespective of the constitution, a country may adopt a set of legislation which would provide it with legal instruments to manage its natural resources and the environment. Tolentino (1991) defines environmental law as a set of legal rules addressed specifically to activities that have the power to affect the quality of the environment, whether natural or man-made. However, he distinguishes between environmental laws and natural resources laws. The latter, which have been in existence in many countries even before the popular rise in environmental awareness, are "use-oriented", designed for exploitation of natural resources. Environmental laws, on the other hand, are "resource-oriented", and may be defined as a set of legal rules addressed specifically to activities that have the power to affect the quality of the environment, whether natural or man-made.

Environmental legislation may take a number of forms which differ from country to country, reflecting the country's socio-political and economic milieu. Basic environmental legislation is generally of two types: a) general framework legislation for environmental administration, and b) comprehensive but subject-specific laws on specific matters, for example, water code, clean air act, etc.

Environmental framework legislation sets out the scope and direction for the management of natural resources and the environment, and reflects the country's priorities in the use and conservation of its natural resources and protection of the environment. Such legislation is a set of goal-oriented "umbrella" environmental laws that touch on nearly every imaginable issue, and although they have great value in terms of signaling a general national policy orientation, they fail to set workable near-term goals and priorities (Gibson and Halter, 1994). Generally, therefore, once environmental priorities are identified, some aspects of the broad goals in framework legislation should be further developed through subject-specific laws and regulations. In the case of environmental laws, however, specific environment-related legislation have preceded the adoption of general or organic laws (Tolentino, 1991).

Ideally, a government should review thoroughly its existing legal structure to identify the most effective way to integrate new requirements into the existing system (Gibson and Halter, 1994). In most countries, however, legislation dealing with specific environmental issues was developed gradually or with the amendment of existing laws to include environmental dimensions, either in response to an environmental crisis or to conform with the regulations of the donor community. Law-making in the developing world often reflects a reactive rather than a proactive approach, as governments respond incrementally to environmental and natural resource issues (Gibson and Halter, 1994).

In the Asia-Pacific region, most countries have laws to cover areas of traditional environmental concern, such as forest, land, water resource management, and wildlife protection. In many countries, however, environmental legislation is yet to extend to more recent environmental concerns such as those related to air and water pollution control, disposal of hazardous substances, coastal resource management, and integrated ecosystem management (ESCAP, 1992).

As in most developing countries, environment-related institutional and legal infrastructure in the Mainland Southeast Asian countries was, until recently, generally geared

to economic extraction rather than ecological management of resources, with the exception of the laws and institutions pertaining to wildlife conservation and creation and maintenance of national parks. These latter however did not exist in all the countries.

In recent years, some of these new environmental concerns are being taken into consideration when reforming the legislative infrastructure. There is, for instance, a definite trend to complement the conventional command-and-control type measures with the use of economic instruments. The Polluter-Pays-Principle is generally accepted in many countries. Among the Mainland Southeast Asian countries, this shift was apparent in the environmental laws passed in Thailand in 1992 and in Viet Nam in 1994. Similarly in the Lao PDR, where a comprehensive framework legislation is in the process of being drafted, the recently passed decrees on protected areas management and on forest management and land use reflect a concern towards integrated ecosystem management, while recent institutional reforms have emphasized the use of a mix of policy instruments and incentives and a legal and regulatory framework, instead of command-and-control type interventions.

The United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil, in 1992, was an impetus for many developing countries to adopt "resource-oriented" environmental legislation. In Thailand, for example, the six environment-related laws (see the following section), including the framework legislation, were all passed in 1992 prior to the Rio Conference, though political factors and the foresight of the leaders also played a major part. In the Lao PDR and Viet Nam, international organizations such as UNDP and the World Bank were instrumental in assisting the governments to draw environmental action plans, which set out environmental policies based on which environmental framework legislation were to be passed. Accordingly, Viet Nam adopted its new environmental legislation in January 1994, while the Lao PDR is expected to pass similar legislation in the near future. In Cambodia, environmental legislation is not a priority, given the necessity of more radical legal reforms in other areas including citizenship and property rights. The new government is, however, concerned about the environment and is working with the Expert Advisory Team of UNDP and IDRC to draft comprehensive environmental legislation.

Institutional framework

Even the most comprehensive legislation would become ineffective if there are no appropriate institutions to implement the laws. One of the important functions of the

framework legislation is to define the mandate for environmental agencies in relation to other governmental bodies. This is necessary because most environmental issues cut across a wide range of sectors, and may cause inter-institutional conflicts due to different priorities. The water resource management in Thailand is a case in point. Some 30 government departments in eight ministries deal with various aspects of water resource management: from electricity generation to irrigation, and from domestic and industrial water supply to pollution control (Christensen and Boon-long, 1993).

In the developing countries that have begun their liberalization with external assistance, the process to identify priority areas in natural resources and environment management begins with a National Environmental Action Plan, usually drawn with support from organizations lending financial or advisory assistance, such as the World Bank, UNDP and UNEP. A National Environmental Action Plan has been defined as a national governmental, demand-driven, participatory process that provides a comprehensive institutional framework for integrating environmental considerations into national economic and social development. The recommendations in the Plan document may then be adopted by the government after deliberations and amendments, where required. The Plan identifies major issues and makes recommendations with regards to legislative and institutional reforms, after taking into consideration the country's existing capacities, deficiencies and budget constraints.

Among the MSEA countries, the Lao PDR and Viet Nam have prepared their national environment plans with support from the World Bank and UNDP respectively. Cambodia does not yet have such a plan. Thailand does not a comprehensive national environmental plan, but these matters are have been incorporated into the country's National Economic and Social Development Plan since the Fourth Plan (1977-1981).

Institutional arrangements in the Indochinese countries for addressing environment-related issues have been largely inadequate. Since the early 1990s, however, progress has been made in establishing a ministry or a cabinet-level coordinating organization to address natural resources and environment management issues. Thus, Viet Nam now has, as in Thailand, a Ministry of Science, Technology and Environment (MOSTE), while Cambodia has established a Ministry of Environment (formerly the Secretariat of State for Environment [SSE]). In the Lao PDR, the Organization of Science, Technology and Environment (STENO), a cabinet-level executive institution, acts as the coordinating agency on all environment-related issues.

Cambodia

The legal and institutional infrastructure in Cambodia is the least developed among the Mainland Southeast Asian countries. Since 1979 Cambodia has had to begin a complete rebuilding of its legal system, and the process is still far from complete. Current efforts are concentrated in what the government considers priority areas, such as development of civil, penal and commercial codes, laws on private property, citizenship, naturalization and residency and a code on civil procedure.

Legislative Framework

The development of environmental legislation has not been one of the top priorities for Cambodia, and at present there is no overall legislative framework to cover policy, goals, objectives or priorities in environmental management. In the absence of such a framework, there is thus no comprehensive regulation on the use of specific resources (fishing, forestry, and mining). What exists is a patchwork system of protection drawn from French colonial legislation, provisions in the contractual agreements between the government and business interests, statements of intent within the mandates of individual ministries, and in some cases decree laws (Dennis and Woodsworth 1992).

In the absence of proper environmental legislation and standards as well as enforcement capabilities, Cambodia's natural resources, mainly forests and fisheries, are being exploited on an unsustainable basis. The existing laws are grossly inadequate to address environmental issues. These laws include the following:

1. Decree Law 33 on fisheries management: Passed in 1987, which contains general governance that provides a framework for managing fresh water fisheries in Tonle Sap lake. It demarcates over 300 fishing lots in the lake, and includes regulations on fishing equipment, mesh size, the use of explosives, etc. It also prohibits further deforestation in the inundated forest around Tonle Sap. The law, however, is inadequate with regards to regulating the catch size, and protecting species and breeding areas. Moreover, the capacity of the Department of Fisheries to enforce the law is minimal.

2. The Law Decree on Forestry Administration, adopted in 1988, deals with the use and management of the forests and wildlife. It is rather general, designed as an interim

measure before more appropriate legislation can be drafted. Once again, institutional capacity to enforce the law is weak.

The new government which came to power after the 1993 election, has, however, shown that it is committed to protect the country's environment. Thus in November 1993, King Norodom Sihanouk issued the National Protected Area System decree, which gives the newly formed State Secretariat for Environment authority to supervise and develop an area covering 3,327,200 ha and manage it in cooperation with the Ministries of Agriculture and Cultural/Religious Affairs (World Bank, 1994a). The area covered under this decree is much larger than the protected area system in place before 1970. However, there is no capacity to inventory, demarcate, monitor or control these areas. Moreover, Cambodia, in dire need of foreign exchange, has given logging concessions to foreign firms. A request was made to international agencies to set up a fund which could be used to abrogate these concessions and save the forests.

Currently, the Environment Advisory Team of IDRC and UNDP is working closely with the Secretariat to formulate draft legislation on the following:

- Pollution standards and controls,
- Occupational safety and health,
- Manufacture and trade in hazardous waste, and
- Environmental impact assessment procedures.

Institutions

The Ministry of Environment is currently Cambodia's highest institution dealing comprehensively with environmental issues. The Ministry was first established on 2nd July 1993, but its status was changed to a State Secretariat for the Environment (SSE) in November 1993, and enhanced again to a full-fledged ministry in 1994. The Ministry—Cambodia's first government body devoted to the environment—was created on the premise of safeguarding the country's natural resources and highlighting the need for environmental management as the country paves the way to national recovery. It reports directly to the Council of Ministers. In addition to establishing environmental legislation and making it

operational, its responsibilities include public education, environmental planning, environmental impact assessment, environmental standards, and environmental monitoring and protection (World Bank, 1994a). By mid-1994, as SSE, this institution had 500 personnel on its payroll, 220 of whom held either a university or a technical degree.

Like STENO in the Lao PDR (see below), SSE was created to meet the expectations of the international donor community. The SSE had requested assistance of Thai technocrats in setting up policies and plans. With the re-enhancement of its status as a ministry, this institution can now be expected to be more effective in exercising its mandate outlined above.

In addition to the Ministry of Environment, other institutions dealing with natural resources issues include the Ministry of Agriculture which also oversees fisheries and forestry, and the Ministry of Industry which deals with the mineral resources.

The Lao PDR

Lack of effective environmental institutions and framework legislation to translate environmental concerns into economic and social activities is one of the major deficiencies in the area of natural resources and environment management in the Lao PDR. In addition, lack of indigenous capacity to absorb external funding and inadequacy of trained people, lack of well-established procedures and standards for implementation and the monitoring of environmental programs, and the lack of a reliable database on a nationwide basis are the major drawbacks. Most of these problems are now being systematically addressed with the help of external agencies, and it can be hoped that in the coming decade the Lao PDR will have a well-designed environmental management policy.

Legislative Framework

In the absence of a framework law, a number of decrees have been issued to encourage environmental protection. These include:

- General principles for protecting forest land,
- Prohibition on the cutting of certain tree species,

- General rules for hunting, fishing, and the use of fire during the dry season,
- Regulations for the trade in wild animals and birds,
- Regulations for the management and protection of forest and forest land and right of the people to such land,
- Regulations for the management and protection of wildlife and fish,
- Protected Areas Management (No. 164), and
- Forest Management and Land Use (No. 169).

Prior to the issuance of Decree No. 169 on forest and land use, earlier legislation had turned the Lao PDR's forests into an open access resource, and encouraged exploitation. The new decree attempts to redress this situation by establishing well-identified forest categories, and providing forest-dwelling communities with enforceable use and access rights to the areas they have traditionally controlled. Under the Protected Areas Management decree issued in November 1993, the Lao PDR has now identified 18 sites as protected areas.

The Lao PDR's Environmental Action Plan, prepared with support from the World Bank, recognizes the need for a more comprehensive framework law on the environment.

Institutional Framework

Institutional Reforms

As a part of its shift toward market economy, the Lao PDR is now reforming its institutional apparatus by reorganizing existing institutions and creating new ones and by clearly demarcating the roles of executive agencies and line ministries (STENO, 1993). Some of the various reforms conducted so far include the following:

1. Administrative recentralization: Provincial and district-level agencies were recently integrated with the national government in a single system with centralized budget allocation, and given the responsibility of executing national programs at local levels.

2. Establishment of clear distinction of roles and functions between agencies responsible for overall executive government functions and line technical agencies. The latter are responsible for sectoral technical programs, while the former are responsible for macro-level policy formulation and implementation, and integration of sector-level programs and overall resource allocation. Thus, the Ministry of Agriculture and Forestry is a line technical ministry while the Organization of Science, Technology and Environment (OSTE, popularly known as STENO) is an executive government agency.

3. Shift from command-and-control type interventions to the use of a mix of policy instruments and incentives and a legal and regulatory framework.

Executive Government level Reforms

Major institutional reforms at the Executive Government level include the following:

1. Replacement of the Council of Ministers as the highest level government decision-making body by Cabinet of Ministers supported by the Prime Minister's Office (PMO). The latter also acts as a technical secretariat for the Cabinet, with support from the State Committee for Planning and Development (SCPD) (see below).

2. Creation of Ministry of Finance (MOF) and the SCPD: The financial administration functions of what was formerly the Ministry of Economy Planning and Finance (MEPF) were transferred to the newly created MOF, and the remaining departments of the MEPF were merged with the Ministry of External Economic Relations to create the SCPD. The SCPD is now responsible for national economic planning, public investment, macro-management, trade and private investment facilitation and external economic relations within the PMO.

3. The Department of Environment was detached from the Ministry of Agriculture, Forestry and Environment (now Ministry of Agriculture and Forestry, MOF), and added to the Ministry of Science and Technology, which became Ministry of Science, Technology and Environment. Its ministerial status was later changed to an organization (STENO) under the PMO, apparently to boost its effectiveness. STENO is thus a national

environmental management agency operating in parallel with the SCPD at Executive Government level.

Line Agencies

Some line technical agencies have also undergone reorganization recently. The Ministry of Agriculture and Forestry (MAF), for example, was reorganized in 1992, with the number of departments reduced from 14 to six and planning functions elevated to the cabinet level.

Constraints

Despite these broad reforms, several institutional and infrastructure constraints still remain. The line agencies, as well as the newly created STENO, lack a clear mandate (see STENO below). Implementation of various regulatory mechanisms fails because of the lack of environmental standards and guidelines as well as inadequate capacities of the line agencies to incorporate environmental planning and monitoring.

Inadequate communications infrastructure is another major drawback to the implementation of national programs at local levels. Although the vertical integration of provincial and district-level agencies with the central government has been achieved, virtual isolation of the former, especially during the rainy season, in addition to political factors, help the provincial authorities retain their autonomy as before.

Research Capacity

The lack of research capacity to absorb external funds is a chronic problem in the Lao PDR. In a recent discussion among NGOs, government and international organizations, organized by the UNDP in preparation to the Lao PDR Roundtable in Geneva in June, an IMF representative observed that funds worth nearly US$60-80 million go unutilized each year for the lack of absorptive capacity on part of the Lao government. Only some US$10 million are utilized every year. In one upland agriculture project, for example, of the allocated budget of US$20 million, only US$3 million were used.

The issue of lack of indigenous absorptive capacity came in the discussions with the people met during TDRI's mission visit to the Lao PDR, with particular reference to

two large projects, one funded by the World Bank and FINNIDA, a Finnish development agency, and the other by the ADB. The World Bank conservation project—criticized by a number of NGO workers as a "blueprint for commercial logging"—will bring in a large sum of money in loans and grants, to absorb which there is not adequate local capacity. Some external agencies were also worried that it may duplicate and harm the work already being done by other agencies in the field of protected areas management. NGO workers were critical about the role of FINNIDA and Jacko Poyri Oy—the Finnish pulp and paper industry giant which also ranks the largest of its kind in the world—in the World Bank project. FINNIDA is to bring another several million US$ in this project, and their interest is in commercial plantation.

Database

The Lao PDR's database related to natural resources and the environment is inadequately small and preliminary for a country with abundant forest and water resources. Some progress has, however, been made in this respect in recent years. The National Office of Forest Inventory and Planning in the Department of Forestry, Ministry of Agriculture and Forestry, recently conducted a National Reconnaissance Survey of Land Use and Forest Cover (NRS) using remotely sensed data (aerial photos and satellite imageries) to estimate forest cover for the years 1982 and 1988. Also, a digitized watershed map for the entire country is now available at a scale of 1:500,000. In addition, the Nam Ngum watershed, where the country's biggest and first dam is located, has been digitized at a 1:50,000 scale. Socio-economic surveys across the country are also being conducted, one such with the assistance of a Thai consultant.

Institutions

STENO

The Organization of Science, Technology and Environment, commonly known as STENO, is charged with the duty of developing a national environmental policy framework and the necessary legal and regulatory processes, including formulation of environmental laws where required, in addition to its similar functions related to science and technology. STENO does not, however, seem to have a clear mandate and lacks the authority and recognition from other line ministries, which has made its task of coordinating among various ministries for

overall environmental management framework difficult. The Ministry of Finance and the State Committee for Planning and Development (SCPD) are the two powerful agencies, before which both STENO and the MAF seem to have little power. STENO appears to have been set up mainly to meet the demands of international organizations.

Some of the activities STENO has currently engaged itself in could have easily been delegated to the concerned line technical agencies. STENO has recently acquired a GIS system with the assistance of the Mekong Committee, and is currently preparing slope and landform maps from 1:50,000 topographic maps. However, the GIS technology is being used quite effectively by the Watershed Management Division of the Department of Forestry. Also, while the Department of Forestry, which is the key agency in the area of natural resources management, has a division for Protected Areas and Wildlife Conservation (under the Office for Nature Conservation and Watershed Management), STENO is involved in the setting up of a Biodiversity Study Center with the help of the Carnivore Protection Trust.

STENO's capacity in terms of human resources is also very limited. Currently its total staff strength is about 100. Of the 15-20 staff members in the Department of Environment, only five have a university degree. There is no economist and the economics of environmental issues is not considered. Recognizing STENO's current drawbacks, UNDP has undertaken a two-year project called Capacity 2001 with the help of SIDA to assist STENO in building its capacity in database and training in environmental projects assessment.

Department of Forestry

The Department of Forestry under the Ministry of Agriculture and Forestry is the key line agency working in areas related to forestry, protected area management, watershed management, and shifting cultivation. The government in general, and the Department of Forestry in particular, shows much willingness to adopt community participation (for example, the policy on land and forest allocation for the people) in decision-making related to forest resource management. Stress is given, where possible, on community-based forestry and protection programs, and the department has a very good working relationships with NGOs active in these areas.

In terms of research and planning for watersheds, the Watershed Management Division under the National Office for Nature Conservation and Watershed Management

within the Department of Forestry is more advanced, but its activities currently focus only on mapping, although it is not yet clear how the maps would be used to aid the day-to-day operation as well as policy-making decisions.

Given the overall absence of a good inventory data on the country's natural resources, mapping and inventory building is likely to remain an important and useful activity for at least a few more years until a satisfactory and reliable database is prepared. For example, even though the Lao PDR is believed to be rich in a number of minerals, the country 's mining industry is small scale and highly localized, a fact attributed to the lack of systematic surveying and exploration. Inadequate communications, including the lack of a seaport, are also major hindrances to the development of the mining industry.

Thailand

Institutional Framework

Among the four countries, Thailand is perhaps the most developed in terms of institutional and legal infrastructure for NRE management. This by no means implies that the present measures in this regard are adequate in Thailand. In fact, one of the major problems has been effective implementation of the existing policies. Existing institutional organization is far from efficient, as the above example of water resources shows. Inter-agency conflict is common, and bringing transparency in the working of the government in the matters related to natural resources and the environment, remains a formidable task. Fortunately, the process has now begun, and there is increasing awareness among the public, NGOs and media about environmental problems and their effects on the society.

Since the 1960s Thailand has pursued a path of economic development. A series of National Economic and Social Development Plans (NESDP), each for a five-year period, have been drawn since 1961. These plans have, until recently, paid little attention to the country's environmental issues. It was the Sixth Plan (1986-91) that first defined the objective of integrating the economy with sustainable development, placing emphasis on the system of natural resources and environment management (Chancharaswat, 1991). The

Seventh Plan made much more progress in identifying environmental issues and areas of action, and this trend is further strengthened in the Eighth Plan (1992-96) which is being drafted.

Legislation

A study by a local law firm, Tilleke and Gibbins, showed that by 1991, Thailand had no less than 70 environment-related laws[1]. None of these, however, was essentially designed or aimed towards environmental protection. There was thus no specific environmental law by 1991 (Pariera, S., 1991), with the exception of the Improvement and Conservation of National Environmental Quality Act of 1975 (NEQA-1975), under which the National Environment Board (NEB) was established. The NEB, however, remained more or less an advisory body with little authority to implement stringent measures for environmental conservation, until its reorganization in 1992 (see below).

The country's first truly environmental laws were all passed in 1992 by the Anand Panyarachun government. In all six laws related to the environment were passed, with one (the first in the list below) being directly concerned with the environment:

1. Enhancement and Conservation of National Environmental Quality Act, 1992,
2. Factory Act, 1992,
3. Hazardous Substances Act, 1992,
4. Energy Conservation Promotion Act, 1992,
5. Public Health Act, 1992, and
6. Cleanliness and Orderliness of the Country Act, 1992.

One of the important features of the new legislation is the desire to move away from the conventional "command-and-control" type management and towards active

[1] By Tolentino's (1991) definition, these 70-plus laws would be natural resource laws rather than environmental laws.

participation, and use of economic instruments to control environmental damages (for example, the use of polluter-pays-principle). The Enhancement and Conservation of National Environmental Quality Act, 1992 (NEQA-1992), for instance, acknowledges people's right of information on environment, right to claim compensation in the event of damages from pollution from State's projects, and to make complaints against polluters. It also requires people to cooperate with the state for environmental protection, and to comply with the environmental laws and regulations.

Some of the innovative features of the NEQA-1992 are (Kaosa-ard, 1993):

1. It attempts to manage environmental problems in an *integrated* manner through an inter-disciplinary ministerial committee with short-term and long-term plans.

2. It delegates environmental management to the provincial authority.

3. It recognizes and encourages people and NGO participation in environmental protection.

4. The Environment Fund of about US$200 million has been set up to promote investment in pollution control and to translate the polluter-pays-principle into practice.

Several Critics, including environmentalists and law experts, have however pointed out that the new law is really a pollution control law, rather than an integrated pollution and natural resource management law (Business International, 1992, p.346). Business International (*ibid.*) goes further to accuse the interim government that passed the laws of having paid little attention to the problems outside the urban areas. In its words:

> The interim administration's green activities seemed, however, to be restricted to issues that affect people within the urban boundaries; it made some progress on nature conservation—primarily to appease foreign critics—but its politics toward the exploitation of natural resources were little different from those of its predecessor. For example, it supported the controversial Pak Mun Dam, which will result in the displacement of whole villages, and showed no interest in resolving the continuing conflict between the environment and development in the countryside. (*ibid.*, p.324)

Institutions

Despite their impressiveness, enforcement of the new environmental laws remains a critical issue for two reasons (Eamsakulrat, 1993). First, most Thai laws, particularly laws on industrial pollution, are based on United States laws which are too stringent to be implemented in Thailand given the difference in the level of development. Second, implementation is spread over a number of agencies cutting across various sectors and with conflicting jurisdiction. The various agencies dealing with industrial pollution, for example, include the National Environment Board (NEB) under the Ministry of Science, Technology and the Environment (MOSTE)[2], and the Department of Industrial Works (DIW) under the Ministry of Industry (MOI). Other institutions dealing with specific environmental issues are the Board of Investment (BOI), the Industrial Finance Corporation of Thailand (IFCT), the Industrial Estate Authority Thailand (IEAT), the Department of Environmental Health (DEH) under the Ministry of Public Health (MOPH), the Public Works Department (PWD) under the Ministry of Interior, the Office of Industrial Services and Waste Treatment and the Office of Toxic Substances (both under the MOI), and the Office of the National Economic and Social Development Board (NESDB) (Eamsakulrat, *ibid.*).

The NEB, formed in 1975, was the country's first environmental agency. However, until its reorganization in 1992, it remained chiefly an advisory body with no direct intervention in environment or natural resource use related matters.

Following the adoption of the ECNEQA-1992, the NEB was reorganized by splitting it into three institutions: the Office of Environmental Policy and Planning (OEPP), the Pollution Control Department (PCD), and the Department of Environmental Quality Promotion (DEQP). These institutions have been placed under the purview of the Ministry of Science, Technology and Environment (see Figure 3.1). Whether the reorganized NEB will be able to take up the role of a national environmental agency remains to be seen.

Despite the enactment of the ECNEQA-1992, many steps leading to the effective implementation of environmental laws remain to be undertaken. For example, as of November 1994, the water effluent standards are being forwarded to the NEB for consideration. Once approved, measurement methods must be specified. Also following

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[2] Although under the MOSTE, the Chairman of the NEB is the Prime Minister.

approval, pollution charges and types of industries to be controlled must be identified, and local authorities must be trained to implement the law.

The experience of Thailand shows that the enactment of a law is only the first step, beyond which substantial human resource development is required for effective implementation of environmental legislation. Moreover, economic instruments, such as tradable pollution rights, cannot be implemented until effluent standards and conditions at each locality are well understood.

Viet Nam

Environmental concerns have received increasing recognition in Viet Nam since 1984, when the Vietnamese government formulated a National Conservation Strategy. In 1991, with the support of the Swedish government, the UNDP, and the UNEP, Viet Nam drew up the National Plan for Environment and Sustainable Development (NPESD) for a ten-year period 1991-2000.

The Plan recognizes that sustainable development cannot be achieved without striking a balance between natural resources, population and economic growth. Priorities in the Plan center on development of appropriate organizational structures, integrated environmental policies and legislation for different sectors, and management programs. The action plan for the first five years includes several environmental management components with highest priorities given to: (1) establishment of a single environmental authority, (2) population control Programme, (3) watershed management (including reforestation, soil erosion control, problem soil management, and stabilization of shifting agriculture), (4) agricultural and industrial pollution control, and (5) estuary protection. For the next five years (1996-2000), watershed management and population control programs are given top priorities, while other important areas include the protection of coral reefs, wetlands, and inland waters (SCS *et al.*, 1991).

Figure 3.1 Structure of the Ministry of Science, Technology and Environment, Thailand

Ministry of Science, Technology and Environment

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Office of Environmental Policy and Planning (OEPP)	Department of Environmental Quality Promotion (DEQP)	Pollution Control Department (PCD)	Department of Energy Development and Promotion (DEDP)	Office of Atomic Energy for Peace (OAEP)	Department of Science Service (DSS)	The National Research Council of Thailand (NRCT)
• Office of the Secretary • Environmental Policy and Planning Division • Natural Resources and Environmental Management and Coordination Division • Environmental Impact Evaluation Division • Urban Environmental and Area Planning Division • Environmental Foreign Affairs Division • Conservation of Natural and Cultural Heritage Division • Office of Environmental Fund • Regional Environmental Offices (North, South, East and Northeast)	• Office of the Secretary • Public Education and Extension Division • Environmental Information Division • Environmental Research and Training Centre	• Office of the Secretary • Water Quality Management Division • Air Quality and Noise Management Division • Toxic Substance and Solid Waste Management Division • Legal and Complaints Division • Pollution Management Coordination Division	• Office of the Secretary • Finance Division • Work Plan Division • Training Division • Design Division • Bureau of Energy Regulation and Conservation • Bureau of Energy Development and Maintenance • Bureau of Energy Study, Research and Development • Office of Energy Cooperation • Regional Offices of Energy Development and Promotion (Regions 1-4)	• Office of the Secretary • Health Physics Division • Radiation Measurement Division • Waste Disposal Division • Isotope Production Division • Reactor Operation and Training Division • Electronic Instrumentation Division • Biological Science Division • Physics Division • Chemistry Division • Nuclear Facility Regulatory Centre • Public Relations Section • Thai Irradiation Centre	• Office of the Secretary • Research Division • Analytical Chemistry Division • Chemical Division • Physics and Engineering Division • Biological Science Division • Scientific and Technological Information Division	• Office of the Secretary • Expert Group for the Disciplinary Committee on Natural Sciences • Expert Group for the Disciplinary Committee on Social Sciences • Research Project and Coordination Division • Research Policy and Planning Division • Research Information Centre • Translation and Foreign Relations Division • Research Evaluation and Project Analysis Division • Research Promotion Division • Remote Sensing Division • LANDSAT Ground Station, Lad Krabang • Sakae Rat Environmental Research Station, Nakhon Ratchasima

Sources: Thai Government Organizational Directory 1995 and DEDP

Following the adoption of a new constitution in April 1992, Viet Nam has rapidly progressed towards reforming its legal and institutional framework. Although much needs to be done at this stage, Viet Nam has now its framework law in place, and institutional capacity is being improved. With the support from the Global Environment Facility of the World Bank, Viet Nam is now preparing a biodiversity action plan.

One obvious advantage Viet Nam has is its abundant and qualified human resource. Viet Nam's universities have been an important source for experts on various natural resources and environment-related issues. There is also a network of professional science and technology associations which are linked both to the universities and the government and provide advice to the latter.

Legislative Framework

In January 1994, Viet Nam adopted its first comprehensive environmental framework legislation, the Law on Environmental Protection. This law sets general guidelines for the protection of the environment, charges the State with the responsibility to manage and protect the environment of the whole country, to draw plans for the protection and build up potential for environmental protection activities at the central and local levels. For example, Article 10 of the law states that the national government must submit to the National Assembly reports on the assessments of the state of the environment every year.

The other recently passed environmental laws include the new Law on Land, promulgated in 1993. This law provides for long-term leases of state land to individuals and non-governmental organizations. Another legislation, the Forestry Protection and Development Act of 1991, is being redrafted.

With the framework law in place, the urgent need now is the development of sub-laws and specific regulations concerning the various elements of environmental protection. To make the Environmental Protection Law effective, a Decree Guiding the Implementation of the Law on Environmental Protection, and a Decree on Administrative Punishment are being drafted. In April 1994, the Prime Minister issued a Decree on the Guarantee of Clean Water and Environmental Sanitation in Rural Areas, whereas MOSTE and the State Planning Committee (SPC) have promulgated Inter-Ministries Guidelines on the Environmental Protection Planning. Areas such as the framework for Environmental Impact

Assessment and adoption of appropriate environmental standards are also being discussed. For example, the Decree Guiding the Implementation of the Law on Environmental Protection, includes guidelines and regulations for EIA.

Institutions

Prior to 1992, environmental responsibilities rested mainly on the State Committee for Science and Technology (SCST). In that year, SCST was upgraded to the Ministry of Science, Technology and Environment (MOSTE), and its Department of Environment (DOE) was charged with the duty of implementing the environmental action plan (NPESD). At the national level, MOSTE is the central authority charged with the development and implementation of environmental policy, a role strengthened by the new Environmental Protection Law. The law requires MOSTE to submit annually an environmental status report to the National Assembly. MOSTE is now preparing the first report for submission at the end of the year 1994.

Besides MOSTE, other government agencies that have important roles in natural resource management are Ministry of Forestry and Ministry of Agriculture.

Viet Nam's academic institutions have contributed greatly to the development of environmental policies and in enhancing government capacity in various areas, including the EIA. Researchers from universities and other institutions have a long record of active cooperation on issues related to environmental protection and sustainable development. These cooperative activities were coordinated through the National Resources and Environment Research Programme (NRERP) established in 1981. In 1991, this body was reconstituted as the National Research Programme on Environment (NRPE) and is now under the MOSTE. Through the NRPE, there is a constant flow of research inputs into the government's policy formulation process. One area where academics are currently assisting MOSTE in enhancing its capacity is the EIA.

Conclusion

The legislative and institutional changes in the MSEA countries are heralding a new era for the environment, since it is for the first time the concepts of conservation and sustainability are added explicitly to the measures of resource management. Yet, however, institutional capacities to implement new laws remain generally inadequate.

In many cases, the same agency is charged with conflicting roles of managing a resource for development and of resource conservation. In Thailand, for example, the Department of Industrial Works in the Ministry of Industry is charged with the enforcement of laws on industrial effluents and emissions, while the Department of Forestry, an agency originally created to promote the timber industry, also looks after forest conservation through its divisions on national parks, wildlife and watershed management. Even where the role of resource conservation and environmental protection is entrusted to a different agency, as in the case of STENO in the Lao PDR, how far such an agency can exercise its authority over resource managing line agencies remains to be seen.

Whether the roles of resource conservation and resource development should be entrusted to one institution or given to separate agencies is a question worth exploring further. Also, given the multi-sectoral nature of natural resource issues, it is essential that while developing legal and institutional framework due consideration is given to inter-agency coordination in natural resources management, an area still rather vaguely defined in the MSEACs.

4. NGOs and Natural Resources Management in Mainland Southeast Asia

NGOs, Environment and Development

Setting up an efficient and equitable resource allocation system is a major responsibility of the government in most countries. However, actual resource distribution at the local level may not always be efficient and equitable, with the less advantaged groups usually being the losers. Often, they are the ones who bear the major burden of environmental costs of development activities such as industrialization or commercialization of primary activities. This is not to say that governments are not concerned for these groups. In fact, in many countries national governments have set up various extension programs to reach out to these groups and assist in their development. Despite such concerns and efforts, however, government agencies, with their usually rigid and hierarchical structures, are often ill-equipped to combine various local resources for maximum welfare at the community level.

It is thus easier to see why community-level development and resource distribution has usually been a niche for non-governmental organizations (NGOs). Unlike government agencies, NGOs are flexible, willing to innovate and emphasize non-hierarchical values and relationships required to promote true partnership and participation (Edwards and Hulme, 1992), that are so essential at the grassroots level. Traditionally, governments and NGOs have different views about community development, somewhat akin to Clark's (1992) distinction between the "aerial" or bird's eye view and the "street" view. The former usually lacks details of the human condition and the aspirations of the people. The "street" view, though perhaps less scientific, "may reveal serious problems and important issues which are not picked up by the aerial view" (Clark, 1992, p. 196).

Environmental NGOs in Developing Countries

> The ESCAP (1992) offers a working definition of NGOs as:
>
> associations or federations having a legal status in their country of origin and which are, generally, non-profit making, and aimed at raising public awareness for sustainable development; they promote remedies for environmental degradation, work largely with the community and favor a participatory approach to development. (*ibid.*, p.183)

This definition is generally applicable to NGOs in developing countries, with one caveat that not all NGOs in developing countries are legally registered, largely due to the discouraging government attitude. Registration is sometimes viewed as an instrument through which government authorities can exert control over NGOs. In Thailand many NGOs have deliberately tried to circumvent state control by avoiding state registration (Rüland and Ladavalya, 1991, p. 55).

NGOs in developing countries have traditionally focused on community development, usually rural, but in many cases also less privileged urban communities, such as slum-dwellers. Since most community development approaches revolve around self-reliance or resource-use efficiency, environmental conservation is implicit in the activities of most NGOs, particularly those engaged in rural community development.

With the rise in environmental awareness during the 1980s, a number of new NGOs have come into being, focusing on specific environmental or environment-related issues or themes, such as pollution, energy, conservation and environmental education. At the same time, development NGOs have begun incorporating environmental components into their work, making the conservation aspect of their work more explicit. Thus, for instance, the rural development programs of 30 years ago are now repackaged as sustainable agriculture projects. Not least, this incorporation of environmental stewardship and sustainability, as well as the emergence of new environmental NGOs, was also spurred by the simultaneous increase in green funding.

Such a shift in focus and the repackaging of programs to match funding trends, however, need not necessarily be viewed as opportunism on part of NGOs; for underlying these changes is the increasing awareness that environmental and development problems are inseparable. The repackaging of programs often represents attempts by the NGO community to strike a balance between their work priorities and the green trend of the funding agencies.

Environmental NGOs perform two important functions (ESCAP, 1992). Firstly, they transmit information to their members and make them aware of the state of the environment and the major threats to it. Secondly, they convey to governments the sense of popular concern about environmental quality and the health of the resource base.

The way an environmental NGO achieves these objectives varies depending on the nature of the organization and the type of activities it performs. Based on the type of activities, ESCAP (1992) classifies environmental NGOs as dealing with:

a. Sustainable rural development,

b. Urban-based environmental issues,

c. Nature conservation,

d. Environmental education,

e. Scientific and technical research,

f. National level coordination,

g. Network servicing,

h. Regional/sub-regional environmental issues, and

i. Regional NGOs for the promotion of environmental awareness.

The 1992 U.N. Conference on Environment and Development (UNCED) in Rio de Janeiro emphasized the role of NGOs in environmental protection and conservation, and since then many governments have been slowly changing their attitudes towards the potential role of NGOs in environmental conservation. In Thailand, for instance, the government now invites NGO participation in many environmental activities, including the Environmental Impact Assessment (EIA). In spite of these developments, there is still considerable mistrust between NGOs and governments about each other. This climate should change, since a healthy, cooperative relationship between governments and NGOs is essential if the benefits of nationwide development programs are to reach all sections of society, and local environmental concerns are to become an integral part of the government decision-making process.

NGOs in MSEA Countries

Among the four MSEACs, only Thailand has a long history of locally-based and relatively well-organized NGO movement that today covers NGOs spanning more or less all the above classes. In the remaining three countries, locally-based NGO movement is either non-existent, or in infancy. In the centrally-planned politico-economic structure, the need of participatory-type community development work is usually fulfilled by people's organizations formed and run under political party leadership. In the three Indochinese countries, there existed, and still exist a number of overseas-based NGOs. The latter were welcomed not only for the external funding they bring in, but because they are willing to work in consultation with government agencies. With the economic liberalization and the associated political changes, locally-based NGOs are beginning to emerge in Indochinese countries. Today, both Viet Nam and Cambodia have NGOs working in environmental arena, and while there is none in the Lao PDR, there do exist informal local groups, such as the Sustainable Agricultural Forum, that can be expected to become distinct organizations sooner or later.

In Thailand, the NGO movement has diversified greatly since its beginning dating back to the mid-1960s. Today, the variety of NGOs ranges from small-scale village or community level grassroots organizations to national level coordinating bodies; from non-advocacy agencies to activist groups; and from campaign organizations to research institutions. The Thai NGOs have surged to such a level that their role in environmental conservation and protection is now being recognized by the government. In Viet Nam, only a handful NGOs exist today, most of which have come into being after the country's shift toward the market economy. However, it is difficult to distinguish those that work independently of the government and are purely people's initiatives from those linked with the government. Nonetheless, most Vietnamese environmental NGOs have been conceived in the universities, probably because universities generally enjoy more autonomy than any other government institution. As against this, most of Cambodia's NGOs were formed as grassroots initiatives, and receive little support from the local government.

NGOs in Cambodia[1]

The formation of NGOs in Cambodia was probably inspired by the presence of a large number of foreign-based NGOs during the early 1990s, when the political climate began to normalize during the UNTAC presence between 1991 and 1993. Today, there are about 35 active groups (including NGOs, and associations), virtually all formed during the above period. Many more groups exist on an informal basis, some of which are seeking permission to establish formally.

The work of most Cambodian NGOs is cross-sectoral in nature, though there are at least five that work in environmental fields. The major activities of these environmental NGOs include education and training, and resource conservation, including tree planting. Since many of these project directly serve the needs of the local communities, public participation in the projects is very high.

Cambodian NGOs receive support from international NGOs, donor agencies including various UN bodies, and governments of other countries. In contrast, the local government provides little support, if any. According to some NGO workers, the government attitude is more of suspicion than cooperation. In this sense, the Cambodian situation is similar to Thailand's in the 1970s and 1980s, when numerous grassroots level NGOs were formed, which were suspected by the government as political organizations in disguise.

The Cambodian NGOs have formed an informal alliance for cooperation which meets once every month. Through this alliance, the Cambodian NGOs cooperate with other international NGOs working in Cambodia, and also try to link with NGOs outside Cambodia, including, for example, TERRA (Towards Ecological Recovery and Regional Alliances) and the TDRI (Thailand Development Research Institute) in Thailand.

While most Cambodian NGOs are grassroots-level, there are a few that are active in training and policy research. One of these is the Cambodia Development Resource Institute (CDRI), which though a locally based NGO, was established and is run by expatriates. CDRI was established to enhance human resource development in Cambodia and to conduct research and analysis which could contribute to the formulation of sustainable development policies and strategies (see Box 4.1). Many programs of CDRI aim to offer

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[1] The information on NGOs in Cambodia is based on personal communication (May 1995) with Mr. Sil Vineth, President, Socio-Economic Development Organization of Cambodia (SEDOC) and the TDRI research mission to Cambodia (April 1994). The authors gratefully acknowledge Mr. Vineth's contribution.

Cambodians information and skills that will empower them to participate more fully in the reconstruction of their country.

Another high profile NGO is the Ramsey Sophanna Foundation, established recently by H.R.H. Princess Christine Alfsen Norodom Serivuth, who views training in integrated resource management is the top priority for regional cooperation, followed by strengthening policy-making and planning capacities.

Box 4.1. Cambodia Development Resource Institute (CDRI): A Profile

CDRI was established and recognized by the Council of Ministers on July 4, 1990, as a non-profit, non governmental organization. The institution maintains close links with Cambodian policy makers but is autonomous. It is financed by many international donors, notably governments of Australia, of Netherlands, of Sweden, the European Economic Community (EEC), the Canada Fund, the Cambodia-Canada Development Program (CCDP), Church World Service (CWS), APHEDA and CIDSE.

Activities: The institute's Economic and Development Training Program is geared to develop and implement education and training activities in economic and social development for public sector and Cambodian project partners. CDRI is collaborating with international institutions such as the Asian Institute of Technology (AIT), Harvard Institute for International Development (HIID), ISS and the East-West Center. Since 1991, CDRI has conducted 15 seminars and workshops on economic and aid management issues. These activities encourage participation in the form of discussion and practical exercise.

The institute also runs a Documentation and Information Resource Center (DIRC). The DIRC compiles data and publishes reports, surveys and papers on development issues. DIRC publishes a quarterly newsletter offering a forum on socio-economic and development issues and an update on current development activities or studies about Cambodia. Another publication, "Market Watch," monitors cost of living indicators. The institute also publishes a Guide to International Aid and Lending Institutions, and an English/Khmer glossary of economic terms.

In addition to the above, the institute runs an English Language Training Center (ELTC), and a Computer Training Center (CTC). The latter's objective is to introduce Cambodian participants to the use of micro-computers and their various applications in planning, budgeting and management.

CDRI's Research program is currently in its planning phase. The institute expects to collaborate with other international institutes in carrying out joint research capacities. Research project ideas include an introduction to socio-economic research, and research techniques, including research methodology. Then, after the primary stage of research collaboration, joint research with other countries could be done such as with Thailand.

Though it has excellent training programs for Cambodians in the areas of English language and computers, both of which are considered to be the priority needs for Cambodia, CDRI does not seem to have developed expertise in research.

Conclusion

While locally based NGOs are emerging only recently in Cambodia, they have been quick to join together to form an informal network. Such an alliance would help strengthen the Cambodian NGO movement. That these NGOs are trying to link up with their counterpart in the region and outside is also a positive development, since such linkage would widen their knowledge and experience as well as lending moral and material support for their work, which is essential, especially since the local government support is hard to come by.

NGOs in Thailand

Thailand has a long history of pursuing market-based economic policies. These policies were one of the factors behind the country's rapid economic growth. The National Economic and Social Development Plan, implemented every five years[2] since 1961, has been used as a tool for justifying economic decisions in the development process.

The rapid economic growth has had two important consequences. First, despite a remarkable rise in the national income in the past decade, development policies have failed to improve income distribution, so that income disparities between the urban rich and the rural poor have widened (Table 4.1). Second, the rapid growth has been accompanied by a number of environmental problems which are affecting society at large, but particularly its less privileged sectors which have less bargaining power and fewer resources to mitigate the impact of the problems.

Table 4.1 Income Shares of Thai Population by Quintiles

Income Group	1975/6	1980/1	1985/6	1988/9	1990/1
Richest 20%	49.26	51.47	55.63	55.01	56.48
Next richest 20%	20.96	20.64	19.86	20.30	20.11
Middle 20%	14.00	13.38	12.09	12.20	11.92
Next poorest 20%	9.73	9.10	7.87	7.98	7.44
Poorest 20%	6.05	5.41	4.55	4.51	4.05
Richest 40%	70.22	72.11	75.49	75.31	76.59
Poorest 60%	29.78	27.89	24.51	24.69	23.41

Source: TDRI, 1993.

[2] Except the first Plan which covered a six-year period.

Not surprisingly, the initial wave of NGO movement concentrated on development issues, such as health, literacy and economic activities, as a way of promoting overall human development. Their activities targeted mainly rural areas, though some also became active in urban slums. The first Thai NGO to focus on rural development was the Thai Rural Reconstruction Movement (TRRM), established in 1966. Since then the Thai NGO movement has grown steadily, gaining momentum particularly after the students' uprising in 1973 and the following brief democratic period that lasted until 1976. Later, in the 1980s, when political climate was relatively calm, many new NGOs were established.

NGOs and Environmental Awareness

Rural community development still remains the core of most NGO activities in Thailand. Since the late 1980s, however, many NGOs have started developing a kind of "environmental approach", mainly as a response to the increasing environmental degradation (Pfirrmann and Kron, 1992, p. I/70). The close association of livelihood issues with environmental degradation was a key factor in drawing NGOs into the environmental arena (Hirsch, 1994, p. 10).

Popular environmental awareness in Thailand gained momentum in the late 1980s when a number of environmental problems started coming to fore (for example the flash floods in 1988, blamed on deforestation, and the sporadic cases of illness and deaths, claimed to have been the result of industrial pollution). A number of advocacy groups and campaign organizations acted as catalysts in this mass consciousness-raising through their protests against environmentally-damaging government projects and policies, and through awareness campaigns. Notable among the former were the protests against the government plan to use Khao Yai National Park for conventional tourism, against the Nam Choen dam, and the protests to pressure the government to revoke commercial logging concessions. Among the campaigns, perhaps the more successful and widely known was the famous "Magic Eye" anti-pollution campaign in Bangkok to save the polluted Chao Phraya river and against littering.

While the success of these protests and campaigns in achieving their objectives had been mixed, they had other beneficial impacts: (a) they succeeded in drawing the attention of the public, press, politicians and academia towards environmental issues; (b) the success of the protests boosted the NGOs' confidence in their ability to influence government decisions that ran counter to the public opinion; (c) these campaigns helped bring different NGOs together to work on a common platform—these informal groups were progenitors of a

number of new environmental NGOs (such as the Project for Ecological Recovery) and networking organizations; and finally, (d) their success inspired other development NGOs to turn to environmental issues, or to adopt the "environmental approach" in their work.

Since many social development activities in which most NGOs have been engaged are closely linked to resource allocation and conservation issues, it was easy for development NGOs to move into the environmental arena. A number of them have now included projects such as integrated farming or sustainable (alternative) agriculture in their activities, while some others have focused on agro-forestry or community forestry. NGOs working in areas other than rural development, such as media, youth or civil rights, have also begun adding environmental component into their work (Pfirrmann and Kron, 1992, p. I/70).

During the mid- and late 1980s, funding agencies and support organizations also began focusing increasingly on environmental issues. For example, Private Agencies Collaborating Together (PACT), a US-based organization with a local branch until recently[3], had been supporting NGOs working in a range of fields related to conservation. A coalition of 15 NGOs working in the Northeast received support from PACT for the Project for Rural Ecological Development (RED-Project) which works with people's organizations in 36 forest areas. The increasing support from funding agencies to environment-related projects was also a significant factor in motivating development NGOs to start working on environmental issues.

Environmental NGOs in Thailand have thus grown out of traditional community development work which still remain the major NGO activity. Thailand's situation is peculiar in that despite being a middle-income economy, two-thirds of its population is rural and agriculture-dependent. In this context, it may be "a strength of Thai NGOs that in their work they do not exclusively focus on environmental issues, but follow a rather integrated approach in close cooperation with the people directly affected" (Pfirrmann and Kron, 1992, p. I/75), unlike European environmental NGOs which are often characterized by an academic-type, information-oriented approach. In the European (or any developed country for that matter) context, problems of poverty and social inequality are not as urgent as they are in developing countries. As a result, environmental NGOs in these countries can afford to concentrate purely on environmental issues, whereas for most NGOs in developing countries, community development remains a priority that cannot be ignored when dealing with environmental issues.

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[3] In December 1994, PACT ended its operation in Thailand.

Even then, in addition to NGOs that supplement their development work with environmental activities, NGOs that focus specifically and explicitly on environmental issues have been formed, probably out of the perceived need to focus specifically on environmental issues that have emerged in the recent years. The dividing line is thin between these "purely environmental" NGOs and those whose environmental approach is only secondary, since to which category a particular organization belongs would depend on how the organization views itself; and these views, portrayed in the organizations' own philosophy, are subject to change (Pfirrmann and Kron, *ibid.*, p. I/67).

NGOs in Thailand exist in various forms, such as associations, foundations, research institutes, forums, groups, projects and committees. This variety of forms, together with the difficulty of separating environmental NGOs from those whose work does *not* relate to environmental issues, has made it difficult to identify the exact number of environmental NGOs in Thailand. A preliminary estimate from the study being conducted by the Thailand Environment Institute puts the figure of NGOs working in the field of environment and development at over 200 (TEI, 1994). Of these, 46 are registered with the Department of Environmental Quality Promotion (DEQP) under the Ministry of Science, Technology and Environment (MOSTE), and are thus eligible to avail financial support for their environmental activities from the Environment Fund set up by this ministry. The 200-plus organizations include 16 foreign based organizations (of which 5 are registered with the DEQP), 3 foreign volunteer assistance services and three non-governmental funding agencies[4].

Of the 46 organizations registered with the DEQP (including the five foreign-based NGOs), 19 are identified as primarily environmental. Their environmental activities include grassroots-level work, coordination among NGOs, research, or a combination of these.

The majority of environmental NGOs in Thailand are small organizations scattered across the country. About 60 are based in Bangkok and represent a wide variety, ranging from a non-advocacy group like World Environment Center (WEC) Foundation which focuses mainly on urban, industry and health issues and works closely with business groups including transnational corporations, to those like the Project for Ecological Recovery (PER) which has focused on specific issues such as water and energy and is better known for its successful anti-dam protests. Some others such as the Wildlife Fund, Thailand (WFT) focus on wildlife and habitat protection and environmental education. There are also a number of

[4] Excluding PACT which closed its branch office in Thailand.

foreign-based NGOs, including funding agencies such as The Asia Foundation, The Ford Foundation or the Terre des Hommes. These latter are support organizations that lend financial and advisory assistance to locally-based NGOs.

Classification of NGOs in Thailand

Gohlert (1991, p. 83) typifies the evolution of Thai NGOs into three generations: the first generation of relief and welfare, the second group with their long-term project activities, and the third acting as catalytic or "strategic" organizations. This broad classification, however, masks both the structural (scale of operation and size) and functional (type of activities) diversity of Thai NGOs. Moreover, it does not apply specifically to environmental NGOs which are a phenomenon of the 1980s.

The Directory of Environmental NGOs (DEQP, 1994) compiled by the Environmental Promotion Division of the Department of Environmental Quality Promotion under the Ministry of Science, Technology and Environment (MOSTE), classifies environmental NGOs into the following five groups, some of which are further subdivided. The number of organizations under each group or subgroup is indicated in parentheses.

1. NGOs registered according to the ECNEQA-1992, Article 7,8. (44)

2. NGOs registered as "legal persons" with the National Culture Commission:

   these are further divided into,

   a. foundations (15)

   b. associations (7)

   c. international organizations (5)

3. NGOs not registered as (1) or (2) above: these are further divided into,

   a. clubs (11)

   b. projects (14)

   c. others (18)

4. Networking NGOs (6)

5. NGOs working with hill-tribes (12)

This list, however, is not exhaustive. One indication of this is that many more NGOs working in the area of the environment and conservation attend the Environment Forum ("Forum for Annual Reporting on Environment"), a collective effort of environmental NGOs nationwide. The fifth forum held in 1994, for instance, was attended by 147 NGOs.

The length and breadth of Thai NGOs cuts across a range of geographical extents of work (local/regional/national and rural/urban), a spectrum of issues (e.g. water, rural ecology, forests, coastal resources, air pollution, littering and so on), and the functional attributes (research organization, advocacy group, campaign organization, etc.).

Broadly, therefore, NGOs can be classified based on three criteria.

- **Spatial**: local, regional or national, or urban or rural,
- **Thematic**: based on issues addressed (nature conservation, dams, etc.), and
- **Activity-based**: whether advocacy, education, research, non-advocacy, etc.

Spatially-based

1. Local NGOs or associations: A number of environmental initiatives center on issues that directly affect a given community. Most, though not all, of the grassroots level NGOs and associations fall in this category. Local groups can be further subdivided as:

- those that are isolated, completely self-reliant community initiatives to manage environmental resources, such as the traditional community forestry or the local irrigation system (*mueng fai*).
- those that are similar to the above, but receive external material or other support. For example, the Yad Fon Foundation, a grassroots level NGO working in 12 villages in Trang province in Southern Thailand, has been successful in receiving financial support from such agencies as the National Environment Board, Asian Development Bank, and Wildlife Fund Thailand, as well as the European Community. It should be noted that not all NGOs of Yad Fon Foundation's size are successful in securing funding from such a wide variety of sources. For most, the funding source is generally NGOs, usually foreign-based.

• those that are implemented as NGO projects. Here the initial impetus comes from an NGO established elsewhere, but working in the given area. The beneficiary community may then be slowly encouraged to participate in the decision making.

• those that are concerned with a specific issue or a group of issues, though these issues may not necessarily be related to day-to-day livelihood concerns. Most provincial or city-based environmental groups, or students' activist groups so far as they concern a location-specific issue, fall into this category. For example, the Club of Chiang Mai, which is concerned with the city's cultural heritage.

2. Regional-level NGOs: NGOs working on local level sometimes come together to form a regional association or coordinating group. The RED-Project in Northeastern Thailand or coordinating bodies such as NORTHNET in the North and ECA (Esaan Community Association) are examples of regional-level NGOs.

3. National-level NGOs: Truly national level organizations are coordinating agencies, particularly the NGO-Coordinating Committee on Rural Development (NGO-CORD). NGOs that focus on a specific issue or theme, such as the Wildlife Fund-Thailand (WFT) with its emphasis on nature conservation and Project for Ecological Recovery (PER) which deals with socio-ecological impacts of large dams, would perhaps also qualify as national-level organizations. Their activities are national-level in the sense that being object-specific they may cover any part of the country.

4. Transnational NGOs: Thai NGOs have generally restricted their activities within national borders. Environmental problems, such as air and water pollution, water and forest resource issues, however, can cross national boundaries. To date, only one Thai environmental NGO has been established with this understanding. Towards Ecological Recovery and Regional Alliances (TERRA) was created as a sister organization of PER, to address watershed, forest and water-related (hydropower, fisheries, etc.) livelihood issues revolving around the Mekong river.

A small but growing number of other NGOs are also showing interest in the neighboring countries, but their activities are currently restricted to exchanging information through meetings and seminars (in which participants from these countries are invited), or to human resource development through training. The Thailand Development Research Institute (TDRI), for example, through its Natural Resources and Environment Program (NRE) is

envisaging to extend its expertise in policy research in natural resources and environment management issues to other Mekong river riparian states.

Theme-based

Environmental NGOs are generally formed under circumstances that demand organized action on a certain issue. As a result, most environmental NGOs, particularly advocacy groups and campaign organizations, have been established to focus on just one or a group of related environmental issues—in short, a theme. The WFT, for example, concentrates on nature conservation, while the PER has focused on campaigns against dams and commercial forestry. The Sueb Nakasathien Foundation is concerned with forest conservation, especially in the Huay Kha Khaeng and Thung Yai Naresuan national parks. The Local Development Institute (LDI) focuses on community-level natural resources management. Some such as Siam Environmental Club (SEC) and the Thai Environmental and Community Development Association (TECDA) have focused mainly on environmental awareness and education through the use of media. Activities of the Environmental Law Center and the Green World Foundation (*Mulnithi Lok Sii Khiew*) also center on environmental education.

Activity-based

Depending on the type of activities they pursue, NGOs can be classified as advocacy or non-advocacy groups, campaign organizations, research institutes, and so on. Once again, a considerable diversity exists in the types of activities NGOs perform, and since the activities are object-specific, they may vary in space and time depending on priorities. Thus, a single NGO may fall under two or more categories. The TDRI, for instance, besides being a research institution, is also involved from time to time in public education through print and television media. Some of the major activity-based groupings are highlighted below, following Hirsch (1994) and others.

1. Activist/advocacy groups: These groups adopt more overtly political, activist-based approach in their involvement in environmental issues. These groups are as much concerned with broader nature conservation concerns as they are with the livelihood issues of local communities, but are more inclined to the latter politically. Hence, they are

grassroots-based only in the sense of alliance and political identification, but not membership. Students' activist groups also fall in this category, though some of these may focus different issues at different times depending on the situation.

2. Non-advocacy groups: These groups provide the necessary inputs to various other groups without taking any side or offering judgment. Their broad aim is to help other environmental groups, whether NGOs, businesses, government agencies or individuals, in their environmental activities by providing the necessary information or expertise. For example, the World Environment Center Foundation (WECF).

3. Nature Protection: These groups are concerned with nature protection and conservation, for example, Wildlife Fund Thailand (WFT). Their approach can sometimes come in conflict with livelihood concerns of local communities.

4. Campaign Organizations: The two prominent organizations in these categories are the "Magic Eye" and the "Think Earth". Incidentally, in Thailand, these are identified with big business groups. They embody an environmental awareness aspect by focusing on a specific theme for a specific time period (for example the Magic Eye campaign to save the Chao Phraya river from further pollution), although their initiatives may be multifarious, with other activities, ranging from drawing contests for children on environment-related themes, to organizing public meetings on certain issues.

5. Research: Research-oriented organizations such as Thailand Development Research Institute (TDRI) take a policy-based approach to environmental issues, while taking into account social and institutional aspects of the issues. These are mainly concerned with national level policy research, and their opinions are generally taken seriously by policy-makers. While these institutes are contracted by the government from time to time to conduct research on specific topics, they are independent organizations and do not rely on the government for support. Decisions on research initiatives and the direction of research work are taken independently by the organizations themselves. Although registered as NGOs, these groups are basically think tanks.

6. Education: Some organizations, particularly, the *Lok Sii Khiew* (Green World) Foundation, have focused their activities on environmental education, through publication of books for children, for instance. With the rising environmental awareness, education is increasingly becoming an important component of many other environmental NGOs. TDRI, for instance, used television and print media to disseminate the results of the

studies it conducted to the general public, parliamentarians and bureaucrats, through a program called TDRI White Paper Series. Environmental education has also entered in the work of non-environmental education groups. Komol Keemthong Foundation (KKF), whose activities focus on education of the younger generation, for example, put special emphasis on new ideas concerning the problem of social change soon after its establishment in 1971. Since the 1980s, KKF's educational activities have increasingly targeted "green-themes", including the support for campaigns against disputed projects such as the Kaeng Krung and Nam Choen dams.

More and more NGOs now realize the importance of environmental education in their work, and the number of NGOs engaged in educational or training activities is ever increasing: Green World Foundation, PER, Sueb Nakasathien Foundation, Siam Environment Club, Thai Environmental and Community Development Association, Think Earth, Thailand Environment Institute, TDRI and Wildlife Fund Thailand. Some of these organizations use services of academics for their educational activities.

7. Supporting and Coordinating Organizations: A small number of NGOs, some established in the early 1980s, have been providing financial and organizational support to small NGOs and helping bring the diversified environmental NGOs on one common action platform. These NGOs emerged out of the need to coordinate among the large number of small NGOs and action groups, and their formation has in turn encouraged the formation of many more small-scale NGOs.

NGO-CORD, the coordinating body with the largest NGO membership, for instance, attempts to strengthen the capacity of its member NGOs in assisting local communities more effectively in making measurable and sustainable improvements in their lives. As grassroots-level NGOs work closely with local communities, it is easier to initiate through them any development or conservation project with public participation.

Coordinating agencies also help NGOs in locating funding and consultancy sources. PACT, for instance, used to coordinate among NGOs, albeit informally, as well as between NGOs and academia to meet the NGO needs for technical inputs or research assistance. Before ending its operation in Thailand, PACT undertook the SPIRITED PROGRAM to focus on critical environmental concerns. The program emphasized on three sectoral components: environmental conservation, land use and community forestry, and environmental health; and two institutional development components: media and

communications, and non-profit legislation and financial sustainability. PACT's operational strategy had been to strengthen coalitions of NGOs and build linkage with other sectors.

8. Miscellaneous Activities: Some large-scale organizations like the Thailand Environment Institute (TEI) and the Local Development Institute (LDI) have been active in a number of areas at the same time. TEI's activities include research as well as mediating between NGOs and the government on environmental issues. The institute also links with business enterprises on environmental issues, and like WEC, is engaged in training activities for business-people.

Community-based resource management and development issues lie at the heart of LDI's activities which range from providing funding support to policy research and information dissemination. Funding support is provided for training and research activities, information dissemination and for organizing seminars, as well as under the village loan and enterprise loan facilities to support community-level development projects and local initiatives for resource management. Though not basically a research institute, LDI has been engaged in policy research with the assistance of university academics. One of these projects is a study on community forestry and capacity of small rural communities in natural resource management. The Bt19 million project was begun in 1990. The other project focuses on biodiversity and people's knowledge and use of indigenous plants for medicinal and other purposes.

Government-NGO Relationship

For a long time, and especially during the 1970s when the activities of the Communist Party of Thailand (and the government crackdown on them) peaked, the government suspected NGOs of being communist front organizations. These suspicions hardened with NGOs' skepticism to Thailand's development strategy. NGOs view the government as emphasizing rapid economic growth through industrialization and infrastructure development centered principally on urban areas, and instead advocate a qualitative development concept (Rüland and Ladavalya, 1991, p. 62).

This atmosphere of suspicion is slowly changing to one of more openness and towards a tendency to listen to each other. Since the late 1980s, there have been encouraging developments towards NGO-government cooperation (Suwana-adth, 1991 *ibid.*, p. 43), notable among these are:

1. Invitation by the NESDB to Thai NGOs to participate in an ADB-supported pilot project to train village volunteers to help promote environmental conservation.

2. Inclusion of NGOs in the preparatory process toward the 1992 UNCED conference in Rio de Janeiro, Brazil.

3. Participation of NGOs in the development of the National Forestry Sector Master Plan.

4. Establishment of an NGO-Liaison Office for agriculture and environment in the Ministry of Agriculture and Cooperatives.

5. Participation of NGOs in the formulation of the 8th Plan (NESDP).

Such attempts at cooperation have been sporadic rather than comprehensive, and the outcome of these interactions is not always positive. For example, the only representative NGO[5] on the steering committee on the National Forestry Sector Master Plan withdrew after the government failed to take into consideration recommendations forwarded by NGOs.

The main factor responsible for bringing the two parties to the negotiating table is the ongoing environmental degradation. The government has begun to realize that NGOs are not working against the system and their participation in the decision-making process is important if the objectives of sustainable development are to be met. Some NGOs, on their part, are realizing that they cannot provide an alternative to development, but rather complement the work of the government and official donor organizations (Rüland and Ladavalya, 1991, p. 58), and therefore it is beneficial for them to work together with the government. An additional factor that has facilitated the changing attitude in government-NGO relationship, according to Rüland and Ladavalya (1991) is the generational changes in the Thai bureaucracy. They observe:

> "A younger generation of bureaucrats, especially at the district (amphoe) level, share many educational and social characteristics with their [NGO] counterparts, creating better understanding and facilitating cooperation in the field."
>
> (*ibid.*, p. 63).

[5] Wildlife Fund, Thailand.

Today, the Thai NGO movement is widely recognized both locally and internationally. One favorable outcome of this is that the government has been compelled to take NGOs into account, and for the first time, in the Seventh National Economic and Social Development Plan (1992-96), the government has made provisions for NGO involvement in the national planning process. In fact, recognizing the flexibility of NGOs and grassroots level initiatives, government agencies (e.g., Tourism Authority of Thailand, Department of Technical Cooperation) have themselves started setting up NGOs. Some others, such as the Electricity Generating Authority of Thailand (EGAT), have started lending support to NGOs in an attempt to improve their image.

The formulation of the environmental law in 1992 (ECNEQA-92; see chapter 4) was one step in the direction of the government-NGO-people cooperation, since with this legislation institutionalization of this relationship has begun. Although imperfect at present in many respects, the new law encourages cooperation among NGOs, bureaucrats, technocrats, academia, and the general public on environment-related issues. It recognizes the role of NGOs in the conservation of the environment, and spells out their rights and duties in the enhancement of national environmental quality (Sections 6 and 7 of the Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 [1992]). New development projects that are anticipated to create environmental impacts are being discussed by the government, NGOs and the general public together, through public seminars and discussions.

In general, the government-NGO relationship seems to work better at the national rather than at the local level (Rüland and Ladavalya, 1991, p. 63). Even at the national level, some NGOs, such as the policy research organizations, seem to have a better relationship with the government than others. There is some kind of interdependence in this relationship, since these NGOs often act as advisors to the government on policy issues, and this position, by its very nature, earns them further recognition in international circles and among donor agencies.

More grassroots level NGOs, however, still remain outside the slowly molding NGO-government relationship. They can influence government decisions only through collective actions that are either organized in nature (such as the Environment Forum) or spontaneous, centering on specific events (for example protest against certain government policies or action). Individually, few grassroots level NGOs have clout to influence the government decisions, largely due to the small scale of their operation. A substantial number of them are not even officially registered.

Here, larger-scale NGOs that have developed a working relationship with the government may have a role to play. They could, for instance, act as mediators between the grassroots NGOs and the government. Their position in this regard is further strengthened by the fact that through their founders or committee members, who are often, but not always, academics or ex-government officials, these NGOs have informal linkages with government agencies as well as enough technical expertise to conduct objective studies on the conflicting issues. However, to play this mediator role, large-scale NGOs must first gain the trust of grassroots NGOs who often distance themselves from those favored by the government.

While large and small NGOs need to build a closer relationship between themselves, the existing government-NGO-people relationship too leaves room for further improvement. Despite its commitment to encourage NGO and people participation in the national decision-making process, expressed in the NEQA-1992 act, the government is yet to gain the trust of both people and NGOs. The 1992 law stipulated the establishment of the Environment Fund to which NGOs, as well as business organizations, would have access. Despite a number of applications from the NGO sector for support from this fund, as of September 1994, there had been no disbursement of this fund to any NGO.

The government also needs to improve the bureaucratic processes so as to facilitate the establishment and working of NGOs. Current regulations regarding registration of NGOs, particularly the requirement of a deposit[6], are cumbersome for even medium-scale NGOs.

- NGOs have forwarded a number of proposals on development or environment-related issues, including a rural credit scheme to ensure rural development. The government needs to respond by studying these proposals objectively, and within a specified time frame, and making its policies on these issues clear to the public. The NGO suspicion of the government's commitment stems from the opaqueness of certain government policies. For example, NGOs as well as academics have been suggesting to the government that dam construction project proposals were written down by the government many years ago, and that in light of new understanding of the environmental processes, they may have become obsolete and require new environmental impact assessments (EIA). However, there has been little positive response from the government on these suggestions.

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[6] To register as a foundation (*Mulnithi*), the law requires a deposit of Baht200,000 (US$8,000), an amount equivalent to the annual budget of nearly one-fourth of Thai NGOs (Rüland and Ladavalya, 1991, p. 61)

While the government will have to learn how to work with NGOs, the NGOs also need to learn how to participate in national development. Many NGOs that today criticize the government on its policies do not have viable alternatives to offer. They either tend to take a long-term view, as in their concepts of sustainable development, and tend to forget the more immediate realities, or they may view a certain solution that seems to work in a given situation or area as a common answer that can be applied in different situations or areas.

Many small rural NGOs still advocate the community culture approach which espouses anti-materialistic values, and romanticizes the traditional pre-industrial rural life (Rü land and Ladavalya, 1991, p. 65-66). The community culture approach has been criticized as "traditionalist language of social change" (Rüland and Ladavalya, 1991, p.66; citing Hirsch and Lohmann, 1989, p.443), and as "an analytical and anti-theoretical response of conservative forces to Thailand's modernization process" who fail to appreciate that "capitalist penetration and economic interdependence have gone too far [to allow restoration of] a self-contained and self-reliant society" (Rüland and Ladavalya, *ibid.*).

Quite often NGOs criticize government policies or suggest alternatives without substantiating their arguments with concrete evidence or thorough research. Their limited financial and human resources make NGOs vulnerable to these information blindspots. Fortunately, a number of academics take interest in NGO work and are willing to provide research inputs. In fact NGOs such as the Sueb Nakasathien Foundation whose founders are well-reputed academics have become a strong voice for the environment. However, only a small number of small- and medium-scale NGOs are able to access services of academics and scholars to conduct researches on various issues they work on. Having an in-house capacity or finances to conduct research on the issues they generally deal with would indeed enhance the credibility of NGOs and ultimately give them more say in decision-making.

Government-NGO-People Interaction

Until recently, local people played little or no role in the formulation of policies which directly or indirectly affect them, just as NGOs were allowed only passive role in the national development process. Development plans were usually formulated by the central government. There was no public participation in the planning process; as a result, public protests and confrontations usually occurred when the plans were being implemented.

The situation is gradually changing. There is an increasing understanding that sustainable development requires a focus on not just community development based on

models designed by "enlightened outsiders" (Rüland and Ladavalya, 1991, p.57; citing Tendler, 1982, p.19), but on community empowerment and participatory processes. Local people can decide for themselves what activities are best suited for their area, and are often the best managers of local resources if they have right to collective ownership of these resources. According to NGOs, government policies are generally drafted by technocrats with little knowledge of the local situation, of local communities and their habitats. The existing policy formulation process, being largely controlled by the central authorities, allows little room for feedback from the people who are supposed to benefit from these policies. People are often ill-informed about the exact nature of a government policy or action and its impact on them; the end-result is usually public protest, with the government backing off, at least for the time being. NGOs therefore feel that decentralization of decision-making is essential to address issues of social concern on a local level, including natural resource degradation. However, a number of environmental issues, including resource allocation have a broader dimension and addressing these may require a wider (regional or national) perspective.

Thai environmental NGOs have made a substantial contribution to integrating large rural constituencies into the mainstream political process (Rüland and Ladavalya, 1991, p.70; citing Hirsch and Lohmann, 1989, p.439). Increasing instances of public protests against government policies or plans testify to the growing awareness among Thai people about their rights. In the environmental arena, public protests against dams and displacement of people, against industrial pollution and its effects on workers' and community health, have been among the highly publicized.

Thai NGOs and environmental Issues

The work of grassroots or region-level environmental NGOs generally reflects the priority environmental problems in the region. For example, NGOs working in Southern Thailand usually focus on coastal resources management and rubber plantations, while those in the Northeast focus on integrated farming and community forestry. NGOs in the North generally work on watershed management through reforestation, community forestry, and sustainable agriculture. Those working with hill-tribes, are usually engaged in alternative crops programs designed to end the opium growing practice prevalent among the hill-tribes. Almost always, concerns of NGOs on these issues have evolved from their earlier community development work which still remains the major focus.

Thai NGOs' perception of environmental degradation is not much different from that of the government or academics. Deforestation, water use, urban and industrial

pollution are all priority issues for NGOs as they are for government agencies. However, the two have different views on the possible causes of these problems and on the approaches to solve them.

A. Deforestation: NGOs such as the Sueb Nakasathien Foundation, Wildlife Fund Thailand (WFT) and Project for Ecological Recovery (PER) have focused on forest conservation as one of their major concerns. Sueb Nakasathien Foundation stresses this through its forest protection activities in Huay Kha Khaeng National Park and Thung Yai Naresuan. It also supports the buffer zone conservation in Huay Kha Khaeng. WFT's project on "Environmental Awareness and Development Mobilization" around Khao Yai National Park aims to solve the problems of encroachment and forest destruction in 10 villages around the park. The WFT has been also active in reforestation programs around Khao Yai. PER's approach to forest conservation is from a socio-ecological standpoint. It has consistently attempted to draw the government's attention to the negative impacts of dam construction on forest and watershed ecology and on the evicted rural communities.

NGOs such as LDI and PER also emphasizes community forestry as a viable answer to forest conservation problems and an important tool to achieve sustainable land use and appropriate rural development. LDI also supports issues of water resource management, peoples' organization, agricultural policies, and natural resource management by local communities.

NGOs have strongly resisted commercial plantation schemes. While the government sees in commercial plantation a solution to mitigate effects of deforestation (such as soil erosion), NGOs attack these solutions as "vested interests" of business groups. They instead support community forestry. A number of NGOs have been promoting integrated farming as a means to achieve self-sufficiency for rural farmers.

Shifting cultivation in the upper watersheds and forest land encroachment by lowland farmers are also considered among the major causes of deforestation. While some NGOs also point their finger at encroaching farmers as culprits of deforestation, they seldom hold them responsible. Instead, deforestation is viewed as a physical manifestation of the social problem of land distribution. Increased road access to remote areas in the name of tourism and development of minority communities, as well as dam construction and other infrastructure activities are also blamed for deforestation in upper watersheds. Charcoal-making is also one of the causes of deforestation according to NGOs.

B. Water Shortages: The tendency among Thai NGOs is to criticize the government for its inadequate policies and institutions for water management. While these allegations are justifiable, Thailand is by no means unique in its problems of institutional inadequacy in water management. At the same time, among NGOs, understanding of the root causes of water scarcity and about the intricacies of hydrological cycles is rather limited.

C. Pollution from Urbanization and industrialization: NGOs such as LDI perceive the problems of urbanization and industrialization as a result of copying western development models without making necessary changes to suit local conditions. Thailand, according to these NGOs, should follow a path of development that is based on the country's comparative resource advantages, basing its economic growth on agro-based industries, for example.

Environment may be—and should be—everybody's concern, but tackling environmental issues needs more than just sentiment and conventional wisdom. Environmental NGOs in Thailand are now realizing the importance of scientific knowledge in addressing environmental issues, though there are some who still treat traditional wisdom as superior to modern knowledge. The increasing exchange of information among NGOs and between NGOs and academia, and the experience of working on environmental issues itself, are encouraging NGO workers to appreciate the scientific explanation of environmental realities that sometimes runs counter to traditional beliefs. The emphasis placed by a number of NGOs on environmental education also reflects on this trend. However, many NGOs also like to see more scientific research carried out on traditional practices of natural resources management before these are outright discarded as unscientific.

Institutional Capacities

Most small NGOs face the typical stumbling block of shortages of funding and human resources. Obviously, research on environmental issues is not generally a strong point of small Thai NGOs. Some have even rejected formal scientific and technological knowledge as inferior to traditional wisdom, despite the fact that both approaches have their strengths and weaknesses and could be adapted to one another to yield a more effective natural resources management strategy. Only a few, mainly city-based, NGOs concentrate on research related to environmental issues. In addition, some action-oriented groups conduct action research based on surveys and field data collection on village community situations. In such a research, participation of local communities is often enlisted in simple surveys (for example,

collecting field data on commercial plantation in the community neighborhood by counting trees).

When research input becomes a necessary condition for a certain project, small NGOs may approach coordinating agencies or larger NGOs for grants to conduct the research with the help of universities. NGOs such as Sueb Nakasathien Foundation and Towards Ecological Recovery and Regional Alliances (TERRA) provide grants to other NGOs for conducting research.

On the whole, however, barring large research organizations such as LDI, TEI and TDRI, Thai NGOs rarely venture into research activities. Besides financial and human resource constraints, another disincentive is the fact that NGOs, particularly grassroots NGOs, are rarely consulted in the government policy formulation. The community forestry research conducted by LDI, for example, received less than a lukewarm response from the government.

Future of Thai Environmental NGOs

Within the past decade the Thai environmental NGO movement has grown to become a significant force to challenge environmentally-sensitive government policies and projects, so much so that the government is realizing that it can no longer ignore the demand from NGOs for more public participation in decision making process. The institutionalization of NGO-government-public relationship through the NEQA-1992 reflects this change in government thinking.

In practice, however, much remains to be done to improve the government-NGO-people relationship on many levels. A considerable degree of mistrust still exists between NGOs and the government and among NGOs themselves. Grassroots-level NGOs are generally averse to collaborating with city-based, *"elitist"* NGOs, fearing the latter may be biased toward the government. Clearing this air of mistrust should be given priority if NGOs and the government are to work together to design a more effective development strategy. Once again, the role of large-scale NGOs in gaining the trust of grassroots level NGOs and bringing them closer to the government, cannot be more stressed.

Having diversified from traditional community development work, Thai environmental NGOs are slowly beginning to appreciate the need to supplement their experience with scientific knowledge of the complex natural processes and the human intervention the interactions of which lead to environmental problems of pollution and

resource depletion. They have also begun to realize the importance of backing their arguments with scientific explanation or evidence, in influencing decisions for or against a development project. A majority of them, however, do not have any in-house facility for either training or research. In the future, this need would have to be fulfilled by other NGOs or universities. Already, some funding and coordinating agencies are providing NGOs with training, but these efforts would have to be stepped up.

Conducting training and research activities needs not only human resource capacity, but also financial resources. Securing these is going to be a more and more challenging task for Thai NGOs, as external funding, which according to one estimate[7] accounts for 70-90 percent of the budget of majority NGOs, is receding. With its rising economic prosperity, Thailand is receiving a low priority from external funding agencies which, having had to tighten their budgets due to recession in their own countries, are focusing on those countries that have more urgent financial needs. The closure of PACT together with the ending of operations of the USAID, and CIDA's diversification in Indochina are indicative signs of this change. At the same time, Thai NGOs, having so far relied mainly on foreign funding, have not made any serious efforts to garner recognition, let alone support, from local funding sources.

Coordinating NGOs such as the NGO-CORD are now thinking of setting up a trust fund to finance small projects and as a source of working capital for the future. They are also in the process of setting up a committee to channel bilateral or multilateral external assistance entering through embassies, and distribute it to NGOs[8]. Individually, some NGOs are trying shed their traditionally publicity-shy image and come out in open to inform the public of their activities and seek financial support, while tightening their budgets. Some others which have developed expertise in certain fields including training are selling it to others to generate funds for their own activities.

The constraints of funding and the need for training, education and research capacity are additional factors that will bring the Thai environmental NGOs closer together. As they form a stronger forum, they are also likely to get better recognition by the general public as well as the government.

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[7] Cited in The Nation, 1 April 1994 in the article entitled "When the till is empty".

[8] From interviews.

NGOs in Viet Nam

Viet Nam's transition to the market economy began in the late 1980s. Already burdened with growing population pressure and damaged during the decade-long war, Viet Nam's natural resource base and environment will now have to accommodate the economic development process. The government alone may not be able to address all environmental problems at all levels.

Fortunately, the research capacity of Viet Nam's academic institutions in addressing environmental issues seems to be relatively well developed. Today Viet Nam's academic institutions are taking a leading role in addressing environmental issues and have become breeding grounds for NGOs and various associations in the field of environmental conservation.

Environmental NGOs and associations

Most of the 105 organizations listed in the Viet Nam NGO directory 1992/93 are international NGOs. Of these 105, some 46 work in environment-related areas, such as agriculture, food processing, irrigation, livestock, forestry, and agro-forestry. Only two, namely, the local offices of Indochina Foundation (ICF) and International Union for the Conservation of Nature (IUCN), focus mainly on environmental problems.

Like its immediate neighbors, Viet Nam has very few locally-based and -run NGOs. Most organizations concerned with environmental issues are government agencies like the Institute for Development Strategies (IDS), or semi-affiliated institutes such as the Artemia Shrimp Research and Development Center and the Training and Research Center for Water Supply and Environmental Technology (CEFINEA). IDS is a think-tank and a research arm of the State Planning Committee (SPC). It has around 80 staff members, constituting one-half of the SPC workforce. Its major activities are economic forecasting and formulation of long-term development strategies.

In the past few years, a number of environmental NGOs have been established, active mostly in the areas of policy research and/or training. Among these are the Center for Natural Resources Management and Environment Studies (CRES), the Center for Environment Research, Education and Development (CERED), the Environment and Sustainable Development Center (ESDC), and the Institute of Ecological Economics (IEE).

It remains unclear, however, as to which of these are viewed as NGOs by the others, and which work independently of the government.

CRES is probably more independent in terms of its activities. It was established in 1985 and considers itself as the first NGO active in environmental research and policy analysis. It was registered with the State Council of Science and Technology, the precursor of Viet Nam's Ministry of Science, Technology, and Environment (MOSTE). CRES appears to play a strong role in environmental policy. It enjoys good relations with MOSTE, the Prime Minister's Office, and with key advisors to government agencies. Its director, Prof. Vo Quy, was the key actor in drafting the 1991 environmental legislation, and is currently working with others on drafting laws and regulations that will put the legislation into practice.

CRES's current activities include land management research and projects, training other environmental experts, environmental legislation and policy, environmental conservation projects, improving the quality of MOSTE's environmental impact assessment (EIA) as it applies to issues of natural resource conservation and protected areas, and participation in international research networks.

CERED, founded in 1991 by ex-CRES people, is concerned with the policy side of balancing economic growth objectives with environmental quality. The center has very strong relations with key international donors, notably the Organization for Economic Cooperation and Development (OECD), UNDP, Japan Wildlife Research Center, and the Nagao Environment Foundation. The current director of CERED, Dr. Ninh, maintains close relations as well with government agencies, including MOSTE, and serves as a "consultant" to the President of the parliament. CERED's research and related activities focus on global climate change and domestic environmental policy issues. CERED, however, is a rather small organization in terms of staff strength, and often subcontracts the research work, because of which some workers do not consider it as a research institute in its own right.

Viet Nam has some 15 to 20 professional associations covering various areas of science and technology. In 1986, these associations came together to form Viet Nam Union of Science and Technology Associations (VUSTA). Both IEE and ESCD are members of VUSTA. IEE was created in 1988 by a retired university professor, as the first environmental institute.

Among those mentioned, ESCD is the most recent. It was established on 5 June 1994 (The Environment Day) as a research, training and education institute. Its policy

research activities focus on the feasibility of sustainable development at the grassroots level. It also acts as a non-profit consultancy for provincial and other rural organizations. In future, it plans to focus on two related problems: urbanization and migration[9].

Apart from the local NGOs, there are semi-affiliated government organizations which are considered part of the universities. The Artemia Shrimp Research and Development Center at the Can Tho University is one example. It receives supports from the European Community and a Dutch NGO. The center specializes in R&D in fresh and brackish-water prawns aquaculture.

The Training and Research Center for Water Supply and Environmental Technology (CEFINEA) is another example of semi-affiliated organizations. Founded in 1990 by the Ministry of Education & Training, this institute was given the task of training, carrying out scientific research and applying scientific and advanced technologies to the fields of water supply for urban and rural areas, waste and waste-water treatment, and environmental management.

Government-NGO relationship

In Viet Nam, NGOs and the government seem to be inter-dependent. Local NGOs like CRES and CERED are concerned with policy research and analysis, areas in which their inter-dependence with the government is probably justified. The funding sources for these agencies are international agencies such as UNDP, UNEP, OECD, IUCN, and WWF, or even the Government of Viet Nam itself. They are thus well-placed and despite their small sizes in terms of workforce, do not suffer the hardships that small NGOs in most developing countries do. It is, however, hard to find action-oriented, let alone activist, NGOs in Viet Nam.

Vietnamese NGOs and Environmental Issues

Deforestation and coastal resources management are seen by most NGOs as issues calling for priority attention. Although deforestation is a national priority problem, it is particularly serious in the North. In the South, mangrove destruction for shrimp farming is a more urgent problem.

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[9] Personal communication with Dr. Le Thac Can, Chairman of the Association for Nature Conservation and Environmental Protection, a member of VUSTA.

At present, Environmental Impact Assessment (EIA) seems to be the major environmental focus of agencies in Viet Nam. As the amount and scale of public projects expand, the demand for EIA provides extra-budgetary resources for local research organizations who act as consultants. However, the emphasis on EIA without due recognition of cost-benefit analysis may lead to over-extraction of natural resources. The benefits derived from EIA also depend largely on the monitoring and enforcement capacities of regulatory agencies. It is also evident that environmental considerations have not become an integral part of economic decision-making, and vice versa. National Environmental Protection Research Program is an agency that focuses on EIA. The Program was created by MOSTE in 1991 to assist the Ministry in environmental policy planning, EIA, and legal reforms. The Program has conducted two EIA case studies in Viet Nam with support from the UNEP.

Institutional capacities

Most agencies except those affiliated to the State Planning Committee (SPC) do not have economics expertise. Economic planners in the SPC are usually converted from engineering, mathematics and operational research backgrounds. However, there are numerous professional associations. The role and the potential of these associations in public policy-making are not immediately evident, and this issue is worth exploring in further detail.

Among these agencies, networks of researchers and educators are quite strong. Their research skills and knowledge of environmental and natural resources issues are advanced. Compared to them, the capacities of government agencies are quite weak. There appears to be a strong commitment to legislative reform at the MOSTE, for instance, but implementation capacities are undeveloped or non-existent. Still, though Viet Nam benefits from highly-educated experts, particularly in universities and quasi-government research institutes, there is a severe deficiency in information capacities. Estimates of remaining forest cover in Viet Nam, for example, ranges from 8 percent to 23 percent among experts, some of whom use different definitions of forest cover, while others worked from different data bases. At a more basic level, there seems to be a need for a natural resources profile of some sort, perhaps conducted by a team of leading experts.

Future of Vietnamese NGOs

Vietnamese NGOs differ from those in Thailand in that they are more directly communicative with their government than are the latter. This partly owes to the absence of a tradition of having independent, private organizations, and partly to the fact that most locally-based NGOs are founded by university professors, who are not only government employees themselves, but also sit on various government panels and committees as experts. With Viet Nam's on-going liberalization program, these NGOs are becoming more and more independent, particularly in securing external funding. Although NGOs and the government seem to enjoy a healthy relationship since both are equally concerned with solving the environmental issues at hand, one would welcome the emergence of completely independent research institutions that would give independent views, critical if necessary, on environment-related policies and actions. Given the current course of development of Vietnamese NGOs and the openness of the government to NGO views, it may not be long before such institutions are formed.

Conclusion

As economic liberalization stresses on increased role of the private sector in economic activities, it may also be expected to trigger increased public participation in resource management activities. The increasing emergence of NGOs in Viet Nam and Cambodia indicate that the concept of public and private-sector participation in natural resource management is taking roots in these countries. Sooner or later, these trends may also be expected to emerge in the Lao PDR.

In Thailand, the NGO movement has grown stronger during the past decade as environmental problems, and the government's inability to address them effectively, become increasingly evident. Thai environmental NGOs have proposed numerous suggestions and alternative development plans with the emphasis on community-based sustainable management of resources. Although the government has not lent itself to accepting NGO proposals, it can no longer ignore the NGO resistance to developments that take place at the expense of the environment and local communities.

Among the Indochinese countries, however, such confrontational approach when dealing with the government is not possible, nor is it advisable. Since public-private sector cooperation is new both to the government and the newly founded NGOs, and since the

restructuring of the economy is just beginning, the best approach for governments and NGOs in those countries would be to pursue cooperation rather than confrontation. At the same time, these NGOs should also try to link themselves with similar groups outside to instill new concepts and ideas that can be experimented (with caution of course) in their own country. For development to be sustainable and equitable, participation of all players in the process of development is essential. In this respect, it is necessary that governments, NGOs and the public cooperate in forming appropriate development strategies that have long-term benefits for all.

5. *Agenda for Regional Collaborations*

The transitional economies of Mainland Southeast Asia—Cambodia, the Lao PDR and Viet Nam—are facing new challenges resulting from both institutional changes and the opening up of their economies to the outside world. Market-based economies, on the other hand, are also realizing the need to adjust to the changing economic and geopolitical conditions of the sub-region. To keep up with the changes and to smoothen the transition process, not only political will is required but also matching capacities in problem identification, in prioritizing public investment allocations, and in policy implementation so that a least cost path to development could be followed. In this connection, this chapter highlights important issues, constraints and possibilities of future collaborations in the sub-region.

Common Problems, Mutual Needs and Potential Conflicts

Despite their geographic proximity, the MSEA countries differ in development potentials according to each country's natural and human resource endowment which in turn have been affected by the processes of socio-political evolution. For natural resources, Cambodia and the Lao PDR are relatively more abundantly endowed than Viet Nam and Thailand[1].

In the near future, Viet Nam appears to take a path similar to Thailand's, one which begins with labor-intensive industrialization, since in both countries labor is among the more abundant factors of production. Both share the common aspiration of gradually upgrading their industries towards high-tech manufacturing. Pressed by increasing wages in Thai industries and capital needs in Viet Nam, the needs of the two countries coincide.

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[1] This statement must be qualified by the fact that Viet Nam has ample mineral and marine resources which have not been fully explored.

Industrial relocation however may trigger off a "pollution-haven" dispute. There is a need for the recipient country to strengthen its institutional framework governing environmental protection.

In the areas of natural resources, the four countries face some common problems, such as rapid deforestation and shifting cultivation, and with the exception of the Lao PDR, coastal resources management. In Thailand the area under shifting cultivation has steadily reduced to about 10 million *rai* (1.6 million ha). Thailand has undergone a number of years of experiments on various patterns of development of highland agriculture. In the areas of coastal resources the rise (and fall) of shrimp farming in Thailand and corresponding destruction of the mangroves provide important lessons for Viet Nam and Cambodia.

The priority for Cambodia and the Lao PDR is the improvement of national welfare through extraction of resources in a sustainable manner. The Thai private sector has taken an important role in resources extraction to fulfill the need of the Thai industries. While the export of natural resources earns Cambodia and the Lao PDR much-needed foreign exchange, this potential coincidence of needs could turn into a conflict if the natural resource extraction is not practiced on a sustainable basis and if resource depletion or ecological degradation threatens the livelihood of local populations.

Another important area of potential needs and conflicts is the use of the Mekong River. The Lao PDR can potentially build 54 hydroelectric dams on the tributaries of the Mekong and Thailand is eager to buy the power. However, damming the tributaries could severely affect the ecological services the Mekong renders, particularly to Cambodia and Viet Nam.

The exploitation of the polluting lignite, of which the Lao PDR and Thailand have large reserves, could also create transborder environmental problems, i.e. air pollution and acid rain. Laotian and Thai collaborators have identified potential lignite projects in Northwestern Lao PDR. Exploitation of these reserves requires commensurate investment in Thailand's power plants to introduce clean coal technology for environmental protection.

Human Resource Constraints

In most developing countries where human capital is limited, trained manpower tends to be concentrated in the public sector as the government sector normally provides a

steady stream of income and higher prestige. It is therefore not surprising that local NGO capacities are not well developed in the sub-region except in Thailand. Viet Nam, however, shows a stronger base of educational institutions, and therefore a relatively good supply of trained manpower. Substantial investment in human resource development is needed in the sub-region for both the public and private sectors including NGOs.

The Role of NGOs

Despite the fact that NGOs are few, there is some indication that the governments in the sub-region will increasingly accommodate rural-based NGOs in the national development effort. Although direct participation of the more advocative and environmentalist NGOs in the policy making process is less evident, at least in Thailand these NGOs have made their impact felt through the free press and have been able to act as a group to prevent public projects the benefits of which cannot compensate for the environmental damage they cause. Both the governments and NGOs will take time to learn to use each other's expertise and strengths to achieve benefits for the public at large.

The major problem in Thailand is the growing financial strain on NGO activities. Despite the government's establishment of a financing facility for NGOs, little has been released while external or foreign funding has been declining. At the same time, the private sector has not adequately appreciated the need to support non-profit environmental conservation activities.

Importance of NRE policies

Apart from macroeconomic management which is the most critical policy challenge, economic policies are tantamount to natural resources management policies in the three transitional MSEACs, and to a lesser extent in Thailand. These countries, particularly Cambodia and the Lao PDR, are trying to cope with the exploitation of their natural resources to harvest profits from primary industries and boost agricultural production. Natural resources management lies at the heart of these strategies.

As poverty alleviation is the most urgent task on the development agenda in these countries, exploitation of natural resources takes priority over environmental conservation. Natural resources management issues are more important than, for instance,

urban environmental issues like sanitation and water pollution which are an emerging problem in major cities, especially Ho Chi Minh City in addition to Bangkok. The question is how to proceed to reduce poverty with the least damage to the environment, rather than not to proceed in order to preserve the environment.

Policy research is an important tool for addressing both poverty and environmental problems as it provides answers regarding options and limitations. With the exception of Thailand, policy research capacities in the MSEACs are virtually non-existent. Economists are scarce and are trained for a planned economy, or they have been converted recently from other professional fields such as engineering or mathematics. Universities generally have much lower research capacities than government institutes in Cambodia and the Lao PDR. In the case of Viet Nam the reverse is by and large the case. In Cambodia and the Lao PDR economics is not taught at local universities.

Environmental economics is a new field in Thailand as well. Valuing the environment and placing this side by side with other tangible monetary benefits or costs are challenging but important tasks for appropriate public investment decisions. This area is new and there is a need for more information dissemination among government agencies if resource costs and benefits are to be quantified with reasonable accuracy.

Given the fact that the transitional economies of the sub-region are loaded with advice by international donor agencies and consultants, it is imperative also to consider strengthening the capacities of the public sector and policy-makers so that they would be in a better position to plan their countries' futures and independently prioritize the use of their own public resources. It is crucial to boost these public sector information capacities now. It is somewhat unrealistic to expect that these governments will themselves invest appropriate resources from their budgets towards this end. It is also important to recognize that in these countries, because the size of external budgetary resources is huge when compared to government revenues, the Ministry of Finance and the Planning Offices which coordinate foreign aid are relatively powerful. The staff of these offices must be included in any capacity building and environmental awareness programs.

Relevance of Thailand's Experience

The transitional economies of Mainland Southeast Asia can project their futures by looking at Thailand's experience. The status of mangroves in Viet Nam and

Cambodia in the next few years can be broadly predicted based on what is occurring in Thailand at present. As for watershed management, Thailand's experience in terms of development models is the most varied and advanced in Southeast Asia. But first the transitional economies need to know more about their own resource base. This calls for building databases on natural resources and eventually a natural resources profile in each of the three countries. Even for Thailand, the natural resources profile prepared in 1988 (see Arbhabhirama *et al.*, 1988) is due for updating.

An important area of cooperation among the four countries is the legal framework governing the utilization of natural resources and environmental protection. At present a number of legal codes are being drafted hastily in the MSEACs or without a thorough understanding of the underlying problems and conflicts. Given the similarities of the nature of some of these problems, exchanges of information among the four countries regarding the design and enforcement of environmental legislation would be extremely useful. While Cambodia, the Lao PDR and Viet Nam can examine the effectiveness of and the loopholes in Thai laws, Thailand can learn about community participation in other countries, especially Laos.

Strategies for Regional collaboration

(1) Integrating Environmental Concerns in the National Development Process.

At present, environmental planning in the sub-region is in response mainly to the international community rather than from within. Although an Environment Action Plan has been completed for a few countries, it remains a stand-alone plan, so that some its objective may run counter to the overall development goal.

What is needed is a visionary development plan in which both environment and economic objectives are considered and contradiction in the two, if any, is resolved.

It should be made clear that in a market-based economy, what is important is not just the plan itself but the planning process during which economic and environmental justifications should be made explicit and publicly transparent. It is a process that should be accepted widely and should assure effectiveness as well as efficiency and consistency in public resource allocations.

In this connection the experience of Thailand would provide a first-hand example of both failures and successes for its neighbors.

Natural resources and environmental issues are spatially related: they relate to specific locations and the characteristics of these locations. Moreover, their significance can be determined only with reference to the people they affect (either directly or indirectly). Thus, natural resources and environmental management should take into consideration spatial characteristics (i.e., physical and ecological features) as well as traditional wisdom and people's viewpoints.

(2) Multiple Partnership

This strategy emphasizes the sharing of knowledge, information and costs. The partnership construed here is:

- among funding agencies, to pool resources together and avoid overlapping activities;
- among recipient countries (to share knowledge and information and hence increase strengths and reduce weaknesses of each country, and
- among government agencies to increase inter-agency cooperation; particularly, between central government and local authorities to facilitate exchange of information on the status of the environmental problems at a local level.

(3) Human Resources Development and Capacity Building

In all MSEACs, the transition to free enterprise has made the task of natural resources management and environmental protection more complex for both political and economic reasons. This transition implies a completely different style of government regulation. Capacity-building must focus on support which would enable policy-makers to transform themselves from controllers of production to facilitators of free enterprise. This new role would require the government to provide a framework that guarantees impartiality. Also, the government must be able to provide guidance to the newly emerging enterprises. Support is therefore needed in the reorganization of regulatory bureaucracies and the upgrading of the legal framework, since in the absence of one, regulation would not be effective. For example, with the shift to private property, it is much more difficult now for

governments to regulate land-use patterns unless broadly defined frameworks or guidelines exist. The most dramatic consequences can be seen in the mangroves of Cambodia and Viet Nam.

However, developing an effective bureaucratic apparatus and running it efficiently both require adequately trained human resources. In the coming years, these countries will also need support to develop the human resources. One major area that has been so far lacking but necessitated by the economic transition is the training of officials and researchers in resource economics from a market-based perspective.

Areas of Common Interests and Future Collaborations

(1) Prioritization of public investments for natural resources and environmental management

Countries in the sub-region receive external assistance from various donors for NRE management. Given the framework of Agenda 21, a stock-taking report of public investment priorities for NRE management by various government agencies be prepared and absorptive capacities of local institutions evaluated. In particular, whether there is a role for NGOs in decision making and how each government views the part of NGOs in this process, should be discussed. The background report should also identify the gaps which require short-term technical assistance and long-term human resource upgrading in the area of natural resource and environment management.

(2) Natural Resource and Environment Profile

Nearly a decade ago Thailand compiled a natural resource profile (Arbhabhirama *et al.*, 1988). The process of compiling the profile provided a forum for collaboration between government agencies and NGOs and between government officials and academics. A revision of this resource profile is now due. In addition to updating the information, it would highlight successes and weaknesses of the past development and environmental protection measures.

Moreover, the experience of Thailand in compiling its natural resources profile will be useful to the other countries. By establishing its own NRE profile, each country will go through a similar process and the results of each measure could be guessed from the Thai case.

A framework for setting up a natural resources profile and monitoring changes in the resource base jointly by relevant agencies in each country is therefore useful. Even in Thailand these activities have been minimum and only the forest cover has been monitored. For water, Thailand has just completed studies on 25 river basins which need to be integrated to project future resource needs and possible diversions for emergency purposes. The profile would also indicate institutional framework governing the use of natural resources.

(3) Information Exchange on Policy Issues

Table 5.1 shows a list of issues, such as shifting cultivation and shrimp farming for example, in which the countries of the sub-region have common interest and experience that can readily be shared. The fate of watersheds and mangroves in Cambodia and Viet Nam will have great consequences for the state of the environment in both countries. Each of these ecosystems is threatened by the transition from State control to free enterprise in the absence of proper guidelines on resource-use. Researchers in both countries are eager to study the state of watersheds and mangroves in Thailand. A three-country study (Cambodia, Thailand and Viet Nam) of the cycle of mangrove destruction brought on by the shrimp industry is in order. Regarding watersheds, as noted above, Thailand's experience on highland development is the most varied in the region. There is a good opportunity here for study tours and research exchanges.

The issue of displaced population from large public projects (dam refugees) may not be an important problem at this juncture for the MSEACs except Thailand, but in all of them, processes need to be developed to encourage people's participation in natural resource and environmental planning and implementation process, whether or not they would be directly affected.

Most importantly, information exchange on the need for institutional change and innovation will be particularly useful for all the four countries. Transition to a market economy is only the first step of change. Thailand's experience, especially with regard to the forest sector, will show how the administration needs to reorganize the priorities and the mandate as natural resource issues shift over time. Created as a revenue-extracting agency, the Royal Forest Department now faces the challenge of transforming itself to cope with biodiversity protection and services to commercial plantation. These tasks are by no means easy. Research on the institutions governing natural resources should also include comparative studies of legal framework, regulatory agencies, community institutions, and

economic instruments. It should also focus on how different legal frameworks mediate conflicts over natural resources.

To avoid future conflicts over the use of the Mekong Basin, research on the Mekong Basin needs to focus on how the policy decisions taken by one country's government will affect water management in other MSEACs. Despite the vast amount of resources which have been channeled into this issue through vehicles such as the Mekong Committee, the interest in, and appreciation of, the regional dimension of the development of Mekong water resources, is only starting to develop. One subject of research might be the domestic impact of building dams along the Mekong. This would include looking at the consequences of population displacement and also compensation issues. Thailand's experience with population displacement has been decidedly varied, and valuable lessons could be drawn from research exchanges focusing on this issue. It is imperative that Myanmar (Burma) and the Province of Yunnan should be drawn into the discussion of this issue because it applies to all riparian states of the Mekong River.

Water pollution is a growing problem in all of the MSEACs, particularly Thailand and Viet Nam. Case studies of water quality problems focusing on the impact of new environmental legislation, such as those completed by TDRI (1994) would be useful in highlighting weaknesses of government regulations and conflict resolution procedures.

(4) Training activities

Training in all of the areas listed in Table 5.1 should be targeted at government officials as well as local NGOs if and when exist, as argued in the conclusions summarized above. In Viet Nam, EIA capacities already exist in the quasi-independent institutes, but this has not translated into stronger analytical capacities on part of the government. Capacity building will be constrained in those countries where official capacities are most weak. Once again, capacity-building programs should involve not only officials from the line agencies concerned, but also from the Ministries of Finance, the planning boards/agencies, and other agencies responsible for disbursing foreign aid.

Sharing the information on environment-related matters will help the MSEACs to better understand the need of the time to think globally, act regionally and benefit mutually.

Table 5.1 Areas of Common Interest and Research Priorities for Mainland Southeast Asian Countries

	Cambodia	Lao PDR	Thailand	Viet Nam
I. Background Reports				
1. Prioritization of public investments for NRE Management	R	R	--	R
2. Natural Resources Profile	R	R	R	R
II. Policy Issues (information exchange)				
1. Optimal extraction of resources	3	3	--	3
2. Institutions governing the use of natural resources (forests, water, minerals, fisheries)	3	3	3	3
3. Shifting cultivation (watershed management)	3	3	3	3
4. Shrimp farming and mangrove destruction (coastal resource management)	2	--	3	3
5. Conflicts: Mekong River basin management	1	1	3	3
6. Displaced population from large public projects (e.g. dams)	--	1	3	1
7. Water pollution	2	2	3	2
III. Capacity Building (techniques and policy instruments)				
1. Sectoral Institutional and Legal Framework	3	3	2	3
2. Environmental Impact Assessment (EIA)	3	3	--*	3
3. Watershed Information System	1	3	3	3
4. Benefit-Cost Analysis	1	1	2	1
5. Market-based instruments	1	1	2	1
6. Natural resources accounting	1	1	3	1
7. General research methods	3	3	1	3

Notes: Ranking indicates observed interest in the issue within each country:

1 = Inadequate prior knowledge to express concern
2 = Concerned and/or needed
3 = Very concerned and/or badly needed
R: Recommended by the NRE/TDRI Research Team
* Training available in various institutions

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