

# Introduction

**E**NVIRONMENTS IN TRANSITION—Cambodia, Lao People’s Democratic Republic, Thailand, and Viet Nam—was prepared to provide a perspective on environment and natural resource management issues confronting countries along the Mekong River and to recommend a set of approaches to address these issues. The report is based on national baseline studies—Country Environment Reviews (CENRs) undertaken by Asian Development Bank (ADB). Governments in the region, policymakers and development practitioners may find the report, in whole or in parts, useful. The objectives of the CENRs were to assess the trends and impacts of environmental problems in these countries and to provide a strategic framework for improving national environmental management within the context of their development priorities.

The report is aimed primarily at enhancing the sustainability of their environments through improved resource management and focuses on issues pertaining to forest and policy issues; biodiversity and protected parks; water resources; coastal and marine resources management; urban and industrial pollution and energy use.

ENVIRONMENTS IN TRANSITION is organized in four chapters. Chapter 1 provides an overview of the basic characteristics of the four countries. Chapter 2 analyzes and describes the extent of environmental stress and emerging problems. Chapter 3 provides the policy and institutional framework for improvements and interventions. Chapter 4 summarizes the environmental action and priority needs for their resolution and it also sets out a strategic framework and recommendations for addressing the key issues identified in each country. The recommendation for priority environmental program and policy initiatives are summarized under four sets of matrices for each country and are

illustrated in the Appendix. Each of these action plans constitutes the development framework for the major environmental subsector and presents opportunities for development assistance.

Cambodia, Lao PDR, Thailand, and Viet Nam—countries of mainland Southeast Asia—not only share common borders, but also resources and environmental impacts varying in intensity and magnitude. These countries play hosts and are repositories of the earth’s diminishing habitats, now under threat. The Mekong Basin has arguably the most diverse biotic and cultural landscape in the world today. The residual impacts of the Indochina conflict coupled with the extraordinary pace at which economic development has been taking place over the last decade has meant that the contradiction between economic growth and environmental protection, and between winners and losers on both sides of the equation, are exposed to an extraordinary and volatile degree (Bryant and Parnwell 1996). These countries while sharing a number of attributes, represent a diversity of aspirations, stages of development, resource endowments, political economy, and bilateral relationships with their neighbors. Fundamental political and economic changes taking place in each country have brought adverse environmental impacts to the region’s shared resources.

Economic growth as a national goal with minimal environmental considerations, has been pursued aggressively by national leaders, seeking to replicate east Asian patterns of growth and industrialization (Hirsch 1998). Such a path has led to serious environmental consequences in these countries: widespread deforestation, pollution of waterbodies, degradation and indiscriminate conversion of agricultural lands, poor air quality in the urban areas, declining fish and wildlife population in the hinterlands, and dislocation of populations.

The Mekong River is the defining element and its basin has long been one of the world's great food sources. Some 80 percent of the basin's population of 60 million people are engaged in agriculture and depend directly on the natural resources base for their livelihood and well-being. The lives of perhaps 300 million people in southeast Asia and southwest People's Republic of China (PRC) depend on its production.

Stakeholders promoting economic growth are cognizant of the social, environmental, and economic implications of the subregion. Riparian nations, donor governments, and multilateral organizations that support development in the basin attach environmental management requirements to the projects they fund, in order to ensure sustainable development. However, the benefits and costs of development are spread unevenly, for a number of reasons: (i) unequal levels of development; (ii) unequal social structures within the countries; (iii) social, spatial, temporal, and environmental externalities; and (iv) development that puts economic growth before equity and sustainability. As this report shows, a key feature compounding the problem is that environmental management institutions in the riparian countries are behest with incomplete policy and regulatory framework, limited technical capacity, and issues related to environment governance.

The interplay of population and economic growth on the environment is clearly evident. Table 1 illustrates the projected population growth in the countries of mainland Southeast Asia. Once richly endowed, they have in varying degrees undergone natural resource degradation and depletion, which parallels approximately each country's population size and level of their economic development. At one end of the spectrum is Viet Nam, whose high population growth has contributed largely to the depletion of the country's valuable forests despite an economy only beginning to rise from the ruins of war. In Thailand where population densities are moderate but has had impressive economic growth, much of the

resource degradation has been the result of the lack of appropriate policies to hold unbridled economic development. On the other end of the spectrum, Lao PDR and Cambodia with low population densities provide examples of resource degradation to a lesser extent, but also encumbered by weak policies and institutions.

Many of the inequities and dilemmas spawned by economic growth are not issues of competition among different social actors over resources. In many cases, these disputes arise over the unintended consequences of resource use and encroachment, the "side-effect" of extractive or infrastructure development. Fish migrations upset by the construction of dams, downstream river sedimentation, siltation or flooding caused by logging activities, air pollution from thermal power, industrial emissions and effluent discharge and their impact on nearby communities— are examples of "externalities" whose costs have been borne by individuals and communities other than those reaping the benefits (Hirsch 1998).

Although environmental and resource management is largely the reserve of nation states, the four countries are also subject to globalization forces that are changing the nature of environmental management. On one hand, the most significant impact is limiting the unilateral policy-making capability of nation states by market and political pressures to maintain or gain competitiveness. On the other, globalization and the internet are emerging as key instruments in information diffusion and coalescing the international and national civil societies to environmental sustainability.

As the most commonly recognized forum of environmental advocacy and action, nongovernment organizations (NGOs) play a role in curbing the tendency for unrestrained exploitation of resources. Several modes of NGOs operate in these countries and provide this stewardship role: some are mainstream organizations implementing large-scale projects and involved primarily with wildlife conservation such as World Wide Fund for Nature (WWF); others are alternative community-based

Table 1: Population Growth in Mainland Southeast Asia ('000)

Country	1980	% Annual Growth	1985	% Annual Growth	1990	% Annual Growth	1995	% Annual Growth	2002	% Annual Growth	2005
Cambodia	6,500	2.26	7,330	2.89	8,570	2.43	9,756	2.06	10,879	1.70	11,890
Lao PDR	3,200	2.32	3,620	2.76	4,200	2.40	4,774	2.64	5,500	2.51	6,290
Thailand	46,720	1.88	51,580	1.60	56,080	1.45	60,460	1.27	64,543	1.13	68,422
Viet Nam	53,720	2.05	59,870	1.92	66,233	2.13	74,104	1.93	82,014	1.73	89,784
MSEA Region	110,140	2.00	122,400	1.88	135,083	1.88	149,099	1.70	162,936	1.53	176,386

Source: World Bank 1997.

organizations working along the areas of community forestry. In Thailand, NGOs have mushroomed to become the environment's strongest advocates. In Cambodia the major involvement by NGOs in the 1990s has complemented and in many cases guided the directions for activities of development agencies. While NGOs in the Lao PDR and Viet Nam are in their nascent stage, international NGOs are active and vocal in their concern over ecological and social dislocations caused by dams and large infrastructure projects.

Except for Thailand, the media in all three countries are in their fledgling stage. They nevertheless play a catalyst role. The press in Thailand has been influential in focusing on environmental issues and lending weight to major campaigns, a reflection of the high level of awareness in the country (Hirsch 1998).

Environmental institutions have grown with the bureaucracy, largely encouraged by donor incentives. In all four countries the institutions are being decentralized with functions and responsibilities transferred to provincial environment agencies. However, unclear delineation of responsibilities between new or newly expanded environmental ministries and traditional resource-based departments of government such as agriculture and fisheries, has discouraged efficient environment management. A weak tax base, an overstaffed and underpaid civil service, and lack of technical training and expertise in government line agencies have collectively hindered economic development from being tempered by environmental responsibility, and ramifications of this are emerging. In Thailand and Cambodia, tensions within the ministries of Agriculture and Environment have arisen from the unclear separation of regulatory and economic functions.

## Basic Characteristics

### Economic Performance

The late 1980s was a landmark period for the economies of the countries. Thailand achieved its remarkable double-digit economic growth during the period, marking the country's definitive shift from an agrarian to an export-driven industrializing economy. While all this was happening, the socialist states of the region were also shedding their command-economy structures and embracing market-oriented policies. Overall population growth of the countries were moderate during the period, and this is projected to continue to steadily slow down (see Table 1 in the previous section).

There was a reversal of the economic trend in 1997 when Asian currencies began to crash one by one, trig-

gering a financial crisis of the proportion that rocked most Asian economies. Though the crisis started in Thailand, Viet Nam, Lao PDR, and Cambodia—countries with nonconvertible currencies or stock exchanges and with largely rural and agrarian populations, were gradually dragged into the crisis as foreign investments, tourism, and exports linked to Asia fell (Lamb 1998).

The long-term implications of the Asian crisis on the environment remains to be seen. The crisis has exacerbated as well as created new problems, for instance, as the cost of kerosene mounts, people are turning to wood for fuel—driving the poor to degrade the environment to survive (Sunderlin 1998). Environmental degradation tends to most directly hurt the poor, by way of polluted and unsafe water, inadequate sanitation, erosion and flooding, toxic waste, and indoor air pollution. For policy prescriptions, the poor are most appropriately seen as victims of the mounting environmental degradation and only secondarily as potential contributors (Dauvergne 1999).

**Cambodia** initiated efforts to reorient its economy in the mid-1980s. Features of this reorientation include economic liberalization, changing role of the public and private sectors, and trade reform, including stabilization of the exchange rate. Complemented by generous donor assistance, liberalization measures and structural reforms have resulted in considerable progress made in the past few years, and expedited the country's transition to a market-oriented economy. Cambodia however, still faces a number of challenges as it progresses from the path of recovery to sustainable growth and development. The economy remains predominantly rural and agriculture-based, hence vulnerable to vagaries of climate. Domestic resource mobilization is low and public investment driven primarily by donor assistance. Underlying these issues is the task of reducing widespread poverty even as the population rapidly multiplies.

Dependence of the Lao PDR on trade with Thailand has made the country victim of the regional financial crisis. Since 1997, macroeconomic conditions in the Lao PDR have deteriorated severely. A World Bank source reported inflation rates of 180 percent, the highest in the world (World Bank 1999). The value of the kip, the Lao currency, has fallen to less than 30 percent of its value in mid-1997, hence it has become difficult to find merchants and entrepreneurs willing to accept payments in local currency. Until the financial crisis, the economy was growing relatively rapidly, though there is optimism it will return to pre-crisis growth levels as neighboring ASEAN economies recover.

Timber, electricity, and coffee, key exports, make up 70 percent of foreign exchange revenues in the Lao PDR.

Timber accounted for more than 40 percent of export earnings over the past decade. Illegal logging has caused the Government annual losses in revenues in excess of \$20 million. Timber royalties made up over 16 percent of total fiscal revenue in 1994/95, while in 1995, exports of timber and wood products reached \$88 million, more than 25 percent of the country's total export receipts (World Bank 1997). In 1996, forest products accounted for an estimated 28 percent of the Lao PDR's total exports. Composition of the GDP by sector are as follows: agriculture, 56 percent; industry, 19 percent; and services, 25 percent.

Thailand's economy grew at an annual average rate of 7.3 percent from 1965 to 1989, and by 7.8 percent from 1980 to 1995, nearly twice the growth rate of other low- and middle-income countries for the same period. The impressive growth is widely believed to have been the result of prudent macroeconomic management and stable foreign exchange rates. Three sectors—preserved and canned seafood; textiles, garments and leather products; and electrical goods—accounted for 75 percent of economic growth. From 1960 to 1995, a period of less than four decades, Thailand's per capita incomes grew by nearly a fourfold. The number of people living below the poverty line was reduced dramatically, from 17.9 million to 6.8 million, or from one-third of the population to a mere 10 percent from 1988 to 1996.

By the mid-1990s, Thailand's economy was becoming progressively more industrialized, and its culture highly urbanized and linked to international markets. Beneath this picture of market-based economic success, major structural imbalances had begun to surface in early 1997. Lax regulation in the banking and finance sector and misjudgments in exchange rate policy have been blamed for the serious recession the country experienced between 1997 and 1998, the height of the crisis. Underlying these visible and well-publicized lapses were disconcerting social and environmental trends. By 1996 over 92 percent of total poverty registered in the rural areas, 77 percent concentrated in the north and northeast section of the country. One of five persons in the northeast, or 19 percent lived below the poverty line. Poverty reduction rates were also slowing down and national income distribution becoming increasingly skewed. By 1992, the share of personal income of the richest 10 percent of the population was 28 times that of the poorest 10 percent (World Bank 1999).

In the conventional economic sense, the recession has been overcome with impressive speed in Thailand. Real GDP declined by 0.4 percent in 1997, and by 8 percent in 1998. The combined effects of International

Monetary Fund (IMF)-led adjustment assistance and a package of austerity measures, financial reforms, and government-stimulated spending appear to have taken hold. In 1999, real GDP was set to grow at slightly over 3 percent; a 5 percent growth is expected this year. Inflation is expected to remain at 6-7 percent but fiscal budget shortfalls and current accounts for international balance of payments should be moderate. Overall, the prospects augur well for the economy, which should gradually improve over the medium term and could accelerate further as the Asian regional economic situation improves (ADB 1999).

In the mid-1980s, Viet Nam's economy was performing poorly despite substantial infusion of Soviet assistance. This prompted the country's leadership to initiate changes in both foreign policy and domestic economic management, as embodied in the *Doi Moi* launched in 1986. In 1998 this was accelerated further with the policy shift towards a market-oriented economy. Viet Nam registered a strong economic growth following these structural adjustments. The economy, however, was not immune from the impact of the Asian crisis, which affected both its exports and foreign investment inflows and substantially reduced its economic growth to 4-5 percent, by ADB estimates. While this growth performance is relatively better by regional standards, the lowering of economic growth undoubtedly affects the country's capacity to increase employment, redistribute income to the rural areas, and further reduce poverty in the next few years.

## Cultural Heritage

All four lower Mekong Basin countries are small in size, but each one is a country of great ethnic diversity with a dominant ethnic majority. The Lao PDR is an ethnic mosaic of 68 lowland (Lao Loum), upland (Lao Theung), and highland (Lao Suung) ethnic groups, each with associated ethnic distinctions and cultivation practices. Viet Nam is no less diverse: 54 ethnic groups of distinct languages, customs and modes of production coexist in Viet Nam. The Kinh or the Viet, concentrated along the plains and deltas where they are founders of wet rice cultivation, are the dominant ethnic group (87 percent), followed by the Muong and the Thai who occupy the largest area of land to the south.

Cambodia is less ethnically diverse in the lowlands and has been reduced by conflicts that have targeted the Chams and ethnic Vietnamese. Rattankiri province in the eastern highlands is substantially ethnically rich, with several dozen ethnic groups coexisting side by side.

These are largely Buddhist countries and share common economic, political, and social heritage, derived in part from their common Indian association. Viet Nam's civilization and form of government suggests the influence of a strong Sino tradition. The French colonial period, in contrast, has had minimal impact on traditional patterns of society, government, and religion to the populace of the Mekong valley (Cady 1996). The Thai and the Lao inhabitants of the Mekong Valley are identical and come closest to a Lao culture, characterized as a provincial variant of Siamese civilization, from where they derive common ethnic roots.

## Human Resources

**Cambodia** has a population of 11.3 million as of 1998 (ADB 1999), and a population density of 47 persons per square kilometer (sq km). The country is basically agricultural; 90 percent of the people live in the rural areas and subsist on agriculture, which employs 74 percent of the labor force. The population is small but rapidly growing, and subsistence farming alone may not be enough to supply its food requirements in the next few years. War has had a tremendous negative impact on the quality of Cambodia's skilled human resources. Training the workforce to acquire the institutional capacity to manage its natural resources in a rational and more sustainable way is an urgent concern.

**Thailand's** population was 61.2 million as of 1998, though annual growth rate has slowed down to 1.0 percent from 1.9 percent in the 1980s (ADB 1999), largely on account of a family planning program. The World Bank forecasts Thailand's population to reach 68 million by year 2005, and 82 million by 2025. Twenty-three percent of the population is urban. Agriculture employs the largest, though declining proportion of the country's workforce. Scarcity of skilled workers and of mid- to high-level management professionals is a persistent problem. Education has not helped provide the solution. The drop-out rate at secondary school level is high and worsened during the recent Asian economic crisis, with only 28 percent enrolling as against 86 percent enrolled in primary school.

The **Lao PDR** (with a population of 4.95 million and a population density of 19 persons per sq km in 1998) has one of the smallest populations and lowest population densities in all of Southeast Asia. Though small, the population is remarkably culturally diverse. As many as 68 ethnic groups prevail, the majority being ethnic Laom;

other dominant ethnic groups include the Hmong, Mon-Khmer, and Yao. During the 1980s the population grew at an average annual rate of 2.5 percent; recent projections reflect growth rates of between 2.4 and 2.6 percent over the next decade. At current growth rates, the population will reach 5 million by 2005. The pace of population growth is higher in the rural areas where fertility rates are high.

Agriculture employs 80 percent of the Lao PDR's workforce, the service and industry sectors collectively employ 15 percent. The country's human resource base is limited, both in numbers and levels of skill, notwithstanding the remarkable progress the country has achieved since 1975. Low productivity and limited incomes are major constraints and both are linked to the vicious cycle of poverty and environmental degradation (Lam 1994).

**Viet Nam** is among the most densely populated countries in the world today, with an estimated population of 78.1 million (1998), growing at an annual rate of 1.8 percent (ADB 1998). The majority of the population have settled along the fertile coastal plains and deltas of the Red River in the northeast, and the Mekong in the south, where densities average between 300 and 500 persons/sq km. The hilly regions along the country's western border are sparsely populated, mainly by ethnic minorities.

A quarter of the country's population reside in the urban areas. High population density and uneven population distribution have taxed the environmental capacity of the land. Agricultural production is constrained by limited land and by the pressures of a high and increasing population. Under present growth rates population is expected to double in 30 years. This will require conversion of additional arable lands into settlements, which in turn will further reduce the area allotted for food production.

The quality of life in both of Viet Nam's 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, housing, among others, compete for the Government's attention and need to be addressed holistically. Lack of access to essential amenities and services and persistent, widespread poverty have driven large numbers of Vietnamese to overexploit their natural resources. Yet for a low-income economy with a gross domestic product (GDP) per capita of around \$355 (1999), social indicators in Viet Nam are at par with countries of considerably higher per capita incomes. The widely acknowledged UN Human Development Index, for example, rated the country 122 out of 174 countries in 1998, despite a much lower GDP ranking.

## Physical Geography

**Cambodia** is a small and compact country in the peninsula of mainland Southeast Asia. The country covers a territory of 181,035 sq km bordered by Thailand on the west, Lao PDR on the north, and Viet Nam to the east. The Mekong River and the Tonle Sap (or Great Lake) dominate the Cambodian landscape, along with three mountainous regions: the Elephant and Cardamom mountains in the southwest, the Dangrek Mountains along the northern border of Thailand, and the Eastern Highlands in the northeast. A hundred kilometer long channel, sometimes called the Tonle Sap River, links the Tonle Sap at the capital to the Mekong River. From mid-May to early October (the rainy season), the Mekong River rises, backing up the Tonle Sap River and causing it to flow northwestward into the Tonle Sap, which swells from 3,000 sq km to over 7,500 sq km area. But as the water level of the Mekong falls during the dry season, the Tonle Sap reverses its flow and the waters of the lake drain back into the Mekong in a recycling process of nature that makes the Tonle Sap one of the world's richest sources of freshwater fish.

**Thailand** (total area: 513,115 sq km) covers much of the central, southern and western parts of mainland Southeast Asia. The country is bordered on the north and west by Myanmar, on the north and east by the Lao PDR and Cambodia, and to the south by Malaysia and the Gulf of Thailand. Central Thailand comprises the flat plains of the Chao Phraya River estuary, an area ideal for rice growing. To the northeast the plains rise to meet the

Khorat Plateau and the mountain ranges in the northern and southern regions. The eastern coastline runs along the Gulf of Thailand for about 1,500 km from the eastern tip of Trat Province to the Malaysian border. The West Coast stretches for about 560 km along the Andaman Sea, from Ranong to Satun.

**The Lao PDR** is a small and landlocked country (total area: 236,800 sq km) situated at the heart of the Indochina Peninsula. To its north is the People's Republic of China (PRC), to the east Viet Nam, Cambodia borders its south, and Thailand and Myanmar share its Western border. It is a country of rolling mountains and plateaus (over 70 percent of its territory), of which two-thirds are forested. Most of the population have settled along river valleys. The Mekong River traverses the entire length of the Lao PDR and provides fertile floodplains for agriculture and also serves as a main artery of transport.

**Viet Nam**, situated on the east coast of the Indochina peninsula, covers an area of 331,114 sq km and lies along the western shore of the South China Sea, bordered by the PRC to the north, the Lao PDR to the west, and Cambodia to the southwest. It is a long and narrow strip of country dominated by semi-arid plateaus and barren mountains, with stretches of tropical rain forests. Agriculture is the country's economic base, on which some 80 percent of the population depend, yet only 20-30 percent of the total area is arable. This includes the densely populated Red River valley to the northeast, the coastal plains of the central region, and the Mekong River delta to the south. The terrain is predominantly hilly or mountainous.

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