

Environment and the Crisis in East Asia: A Step Back or a New Way Forward?

The direct impact of the economic crisis on the environment has been either small or positive. Urban and industrial pollution has declined, while natural resource depletion has not worsened. However, reform of regulatory arrangements is critical to ensure that the recovery does not repeat the mistakes of the past. The key elements of such reform should be:

- *Make haste slowly: develop a broad consensus on environmental priorities and policies;*
- *Openness to trade and direct investment: work with partners who can promote both economic efficiency and environmental performance;*
- *Ensure that regulatory arrangements are transparent; and*
- *Decentralize the implementation of environmental policies as far as possible.*

In the years before the crisis in East Asia, people throughout the region were beginning to see that a “grow now, clean-up later” policy had resulted in unacceptable environmental costs. Many city dwellers were suffering from respiratory and related illnesses or dying prematurely as a consequence of poor air quality. The loss of forests was exacerbating soil erosion, the severity of floods, and the destruction of natural habitats. Water pollution was threatening the productivity of irrigated agriculture and fisheries, increasing the costs of industrial enterprises, and endangering the lives of infants and young children. All of these problems were greatly worsened during 1997 by the effects of severe drought and the forest fires in Indonesia. Without radical changes it seemed certain that these costs could only get worse as a result of continued economic growth and urbanization.

The realization of the scale of environmental costs was beginning to prompt efforts throughout the region to improve environmental management. Will the financial crisis in East Asia cut short those efforts or can it provide an opportunity to follow a better path in future? This chapter highlights the choices that countries face in East Asia and suggests ways in which past trends can be reversed without jeopardizing prospects for economic recovery and future growth.

In the simplest terms, the immediate effects of the crisis have been beneficial for the environment. Sharp

declines in incomes and industrial output have substantially reduced air and water pollution caused by vehicles and industrial enterprises. World market prices for timber and many other natural resources have collapsed, reducing the profitability of current production and increasing the return that may be obtained by postponing production into the future. These short run adjustments are entirely consistent with what is known about the impact of previous economic crises on the environment—e.g. the Latin American debt crisis of the 1980s, the collapse of socialism at the beginning of the 1990s, and the Mexican crisis of 1995.

Against this, many observers are concerned that a prolonged recession will exacerbate pressures on natural resources. Fewer jobs and lower urban incomes will force marginal urban residents to move back to rural areas, which will accelerate the conversion of forest land to agriculture and increase the stress on other critical resources such as fish stocks and water resources. The consequences of poverty and desperation will be reinforced by shifts in relative prices if the crisis results in a large real depreciation of exchange rates. These would increase the ‘income’ that can be obtained by exploiting natural resource stocks such as forests and minerals to pay debts or sustain consumption. Finally, public budgets for environmental management may be slashed as expenditures for financial

restructuring and other spending demands crowd out the environment.

Policy makers have to give priority to restoring growth. Environmental improvements resulting from economic crisis may not be sustainable and certainly they come at much too high a price. Economic growth is essential to reverse the declines in incomes, reduce poverty, and to establish a proper balance between people and their environment. But, this priority need not be incompatible with forging a better environmental path for the future.

Environmental dimensions of the crisis

The economic and financial crisis in East Asia has a larger environmental dimension than similar episodes elsewhere in the world because it struck at a time when parts of the region were already suffering from severe drought and from the cumulative consequences of past mismanagement of natural resources. The effects of the drought have been most serious in Indonesia, as the most rural of the main economies in South-East Asia, so that crop failures and the resulting acute distress in many rural communities have exacerbated the sharp

decline in employment and income in urban areas. Further, the drought combined with mismanagement of forests in Kalimantan and Sumatra led to extensive and prolonged forest fires. Quite apart from the damage to forests, these fires have spread a pall of air pollution over many areas of South-East Asia which is likely to have caused many deaths and even more cases of respiratory illness (see Box 1).

Whether the economic and financial crisis was provoked or exacerbated by deep-seated flaws in the region's economic policies remains a matter of dispute. However, it is clear that the combination of economic crisis, drought, and fire has highlighted the weaknesses of existing institutions and policies with respect to the management of natural resources and environmental problems. Some examples will illustrate the problems.

- Parts of Indonesia—especially the eastern Java and outer islands—have always been prone to drought. Irrigation systems, grain storage and distribution, employment programs, and other mechanisms have been developed to mitigate the effects of droughts or to assist those affected. However, over-use of water resources combined with heedless discharges of industrial and municipal wastewater mean that

Box 1. Forest fires—a symptom of deeper problems

South-East Asia was hit by twin blows in the summer of 1997. The rapidly spreading financial crisis was accompanied by an environmental crisis as forest fires burning out of control razed more than 300,000 hectares of forest in Indonesia and spread a thick pall of smoke over large parts of South-East Asia. The smoke, combined with urban air pollution from traffic and other sources, caused immense health, social, and economic damage.

Estimates suggest that more than 7 million people were affected by the haze, which caused premature deaths, severe respiratory illnesses such as asthma and bronchitis, as well as other health problems including sore eyes and skin rashes. Timber losses were largest in Kalimantan, while tourism declined by as much as 30 percent in Singapore and Malaysia, and even more in Indonesia. More than 1,100 flights had to be cancelled as airports were closed due to heavy smogs.

The fires were a symptom of deficiencies in forest management and policies, as well as regulations about converting land to various commercial uses. Uncontrolled fires were caused by the widespread practice of clearing

forest areas which have been logged as well as other land by fire. Land cleared in this way has been used for oil palm, rubber and pulp wood plantations, for rice crops in peat areas, and, to a much lesser extent, for extensive slash and burn agriculture. Due to drought conditions, partially caused by El Nino, the fires spread to secondary and primary forest areas, grasslands and peat bogs.

Forest fires, like the currency crisis, brought to the surface fundamental structural problems in a dramatic way. They forced political leaders to acknowledge the costs of current practices by commercial timber and plantation companies. Further, they offered an opportunity to introduce reforms that address land-use, forest conversion for plantation, clearing methods, and enforcement of existing restrictions.

Although the use of fire to clear land was outlawed in Indonesia in 1995, agricultural and forestry authorities have lacked the political commitment to implement the rule, while the budget of the Ministry of Environment has been insufficient to effectively police fire-setting. Violators, therefore, have been rarely prosecuted.

agricultural and industrial production has become more vulnerable to water shortages, while institutions and policies to alleviate poverty have been disrupted by economic and fiscal stringency as well as institutional decay.

- Mismanagement of water resources has become an increasingly serious problem in Thailand. The tale moves from high in the main watersheds where deforestation has changed seasonal patterns of runoff, to irrigation systems which have been expanded beyond the capacity to rivers to provide reliable supplies, to urban areas which pollute supplies required by downstream users, and finally ends in coastal areas where the loss of mangroves and misuse of pesticides threatens the future of the once-thriving shrimp industry. Drought and economic shocks serve to reinforce these problems at a time when the government and the Thai population wish to rely more heavily on agriculture for income and exports.
- Many cities in South-East Asia suffer from severe air pollution with high levels of particulates. The main sources of particulate emissions are usually diesel trucks and buses, two-stroke motorcycles, and domestic use of kerosene. For all of these, there are more efficient and less polluting options available, but this would require a determined effort to penalize polluters and to ensure that fuel prices and other economic incentives reflect the social costs of pollution. In the short run, the crisis has seen some decline in traffic and pollution as a result of falling economic activity. However, longer term initiatives are stalled by a reluctance to adjust fuel prices and to insist on changes in behavior by vehicle operators, even where these might generate significant savings in the medium and longer term.
- There are widespread concerns that massive currency devaluations will accelerate the wholesale cutting of mature tropical forests, both in order to realize the immediate value of the timber and to plant alternative crops whose economic return may have increased. Weak institutions responsible for forest resources combined with low fees and taxes on the exploitation of such natural resources have lead to large-scale mismanagement in the past. There is clearly a danger that this problem may get

worse as a result of acute short-term pressures for immediate revenue and rural poverty.

East Asia's financial crisis and environmental problems have similar roots: rapid growth without proper safeguards, policies, and controls (see Figure 1). In the financial sector, the capacity of governing institutions and policies has been outpaced by the growth of capital flows and lending. In the environmental arena, growth has outstripped both the absorptive capacity of the environment and the speed with which policies and institutions can respond to new challenges. Collusion between segments of government and parts of the private sector put pressure on agencies to provide subsidies, direct credit, and exemptions from regulations, which has compromised their ability to enforce appropriate standards of prudence and good performance.

As an example, East Asia's forest sectors are poorly developed in terms of their linkages to their national economies, level of technical and economic efficiency, environmental performance, and quality of governance (World Bank, 1992a). Asia has lost more of its forest area in the last thirty years than any other region in the world (see Figure 2). Regional forest policies fail to recognize the scarcity of forest resources and provide inappropriate incentives. The low level of stumpage fees, which should reflect the rents earned by extracting timber, is the most serious problem, since this encourages deforestation and leads to the impoverishment of forest-dependent communities. In Indonesia,

Figure 1. East Asia financial crisis and environmental challenges: Common roots

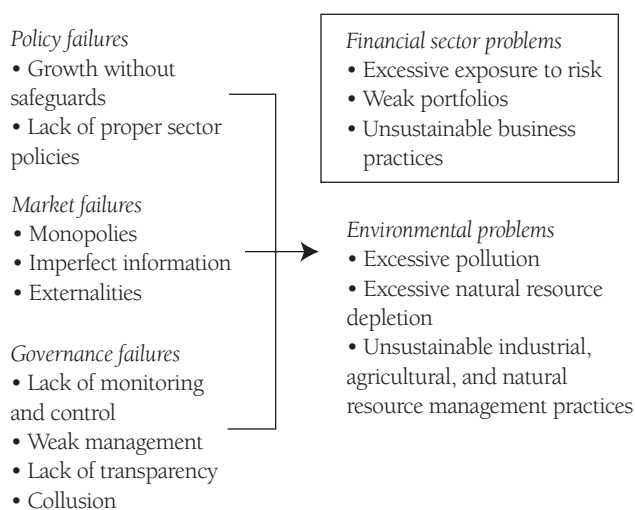
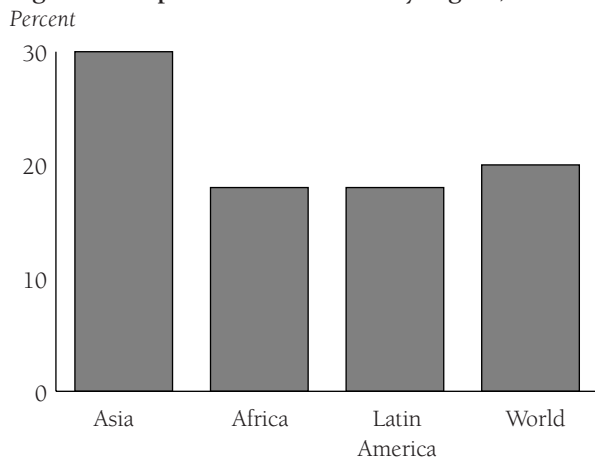


Figure 2. Tropical forests cleared by region, 1960–90

Source: WRI, 1998.

the annual sustainable harvest is estimated at 22 million m³, but the annual production of forest products

is in excess of 40 million m³. Further, land management regulations, especially those related to the conversion of forests to other uses, such as tree and plantation crops, are largely ineffective.

Thus, the combined effects of drought and economic crisis have highlighted pre-existing deficiencies in environmental policies and institutions, just as financial contagion has exposed the basic weakness of financial systems. Financial instability has had a direct and large impact on economic activity and incomes. By comparison, the effects of environmental neglect are more insidious and longer term in nature, though they may be no less significant in aggregate. Still, the short term costs of the drought and forest fires have been significant (see Box 2).

The weaknesses of regulatory arrangements in the region has been recognized for some time, even if

Box 2. The costs of drought and forest fires

Some attempts have been made to estimate the scale of the environmental damage caused by the combination of drought and forest fires during 1997–98. Many of the figures quoted are based on anecdotal evidence or on questionable economic assumptions. Thus, at the present stage it is only possible to offer a partial assessment of these costs.

Loss of forest cover There are widely differing estimates of the area of forests that were burned during 1997–98 and the extent of the loss of cover. Indonesian government institutions put the loss at under 300,000 hectares, though other estimates are 10 times this figure. The loss resulting from the fires represents the difference between the value of the land burned as forest and its value as agricultural or plantation land, adjusting for any residual value of timber which can be recovered. The average value of forests is about \$1,500 per hectare, of which the non-timber benefits account for up to 20%. Assuming an average loss of 50% of the timber value as well as all of the non-timber benefits this yields an overall loss of only \$270 million on the low estimate of the area burned or up to \$3 billion on the high estimate.

Loss of plantation and small-holder perennial crops The fires are believed to have affected up to 1.7 million hectares of perennial crops, especially in oil palm plantations and a variety of small-holder crops. The difference between the value of land with mature crops and in alternative agricultural uses is \$2,000–\$3,000 per hectare. Not all of the crops will have been lost, while land that was largely burned can be replanted and will reach maturity

in 5–8 years depending on the crop and the management regime. Thus, the average loss is unlikely to exceed \$1,000 per hectare or \$1.7 billion in total.

Loss of annual crops The drought and haze caused by forest fires have had a severe impact on agricultural production in large parts of Indonesia and Philippines with lesser effects in Thailand and Malaysia. Assuming that the maximum loss of agricultural value-added in Indonesia and Philippines was 5% with a 2% loss in the other two countries, the total loss of value-added will have been about \$2.6 billion. Most of this was the result of the drought rather than fires.

Health damages Many people throughout South-East Asia were exposed to high levels of particulates and other pollutants for periods of 3–6 months as a result of the haze caused by the forest fires. It is reported that peak levels of smoke exceeded 6,000 micrograms per cubic meter, worse than the devastating smog episodes in London, Pittsburgh, and the Ruhr (Germany) in the 1950s. Based on estimates of the damage caused by previous severe smogs and by current air pollution in China, the lowest reasonable estimate of the cost of this air pollution would be 2% of GNP for Indonesia, Malaysia, and Singapore and 1% for Philippines. This amounts to \$6.7 billion, but the true cost may be 2–3 times this figure.

Overall, the cost of the damage caused by the combination of fire and drought may have been of the order of \$12–14 billion—with one-half being the health cost of air pollution caused by fires. This amounts to about 2.5% of total GNP for the main countries affected.

progress in dealing with the problems was frustratingly slow. There is, however, another environmental dimension to the crisis which could pose a much more serious dilemma concerning the path to economic recovery and future growth.

All of the countries in South-East Asia have, historically, relied heavily on exports of raw or processed natural resources to import capital goods and underpin economic growth. Rice, palm oil, timber, metals, oil, and gas have been and remain important or even dominant sources of foreign earnings. Agricultural growth has been underpinned by an expansion in the area of land under cultivation—from 15% to 23% of total land area in Malaysia over 1980–94 or from 36% to 41% in Thailand over the same period. Could it be that the economic slowdown is linked to the diminishing scope for extensive growth and a failure to use resources more productively? If so, economic recovery and growth may depend upon a willingness to accept greater exploitation of natural resources, even if only on a temporary basis.

The evidence concerning the extent to which economic growth in East Asia has been financed by depleting natural capital is mixed (see Box 3). Natural resource rents represent a lower share of GDP for countries in the region—an average of just over 5% for 1990–94—than for comparable middle income countries. Similarly, “genuine savings” are much larger relative to GDP than for other middle income countries, though in this respect the South-East Asian countries are some way behind the other East Asian countries. On the other side of the account is the fact that countries have been trying to finance very high levels of investment. This leaves a “savings gap” that can only be financed either by foreign borrowing or by the depletion of natural capital (see Figure 3). It is reasonable to assume that the crisis will restrict access to foreign capital flows, at least temporarily, and that there are limited possibilities to increase domestic saving rates which have always been relatively high. Maintaining macroeconomic balance will, then, involve some combination of two options :

- Cutting the level of investment, which means either accepting a lower rate of growth or ensuring that investment resources are used more productively in future; and

- Increasing the rate of natural resource depletion.

This is the key macroeconomic issue behind concerns about what may happen to the use of natural resources during any economic recovery.

Minimizing the environmental impact of the crisis

Pollution and economic growth

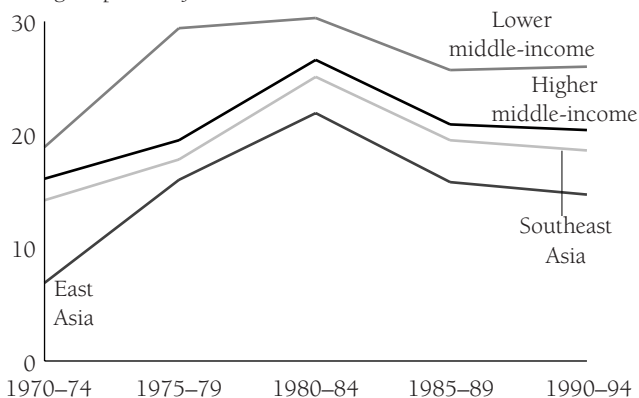
As a result of the financial crisis, many countries have experienced a fall in GDP in 1998 and will only recover gradually over the next 2–3 years. Lower economic activity has reduced pollution from industry and vehicles, improving environmental conditions in industrial and urban areas. On the other hand, new investment, which is typically associated with less pollution per unit of output, has also slowed or ceased, while the life of existing, dirty, plants may be extended.

To examine these effects, projections of total emissions of key pollutants under “pre-crisis” and “post-crisis” scenarios have been prepared using a model that captures the impact of economic growth and industrial change on output and emissions.¹ Discharges from small sources—small and medium industrial plants, vehicles, and households—have the most direct impact on average exposure to pollutants. Hence, the analysis here will focus on trends in emissions from small sources.

The crisis is expected to have a significant impact on emissions from small sources of the main air pollutants. Figure 4 shows post-crisis projections for the two pollutants which cause the greatest damage to health—par-

Figure 3. The savings gap relative to GDP

Savings as percent of GDP



Box 3. Economic growth or natural resource depletion?

Many countries in South-East Asia have relatively large endowments of natural resources which have provided a substantial share of total exports—either via the direct export of minerals, fuels, foods, and raw materials or indirectly for processing industries that export a large share of their output.

This may be viewed in two ways. The figure presents estimates of “genuine savings” as a share of GNP. “Genuine saving” is the difference between gross saving and the depletion of natural capital, or a measure of net saving for the economy after allowing for non-renewable resource use. The results show that “genuine saving” as a share of GNP is consistently higher for both the

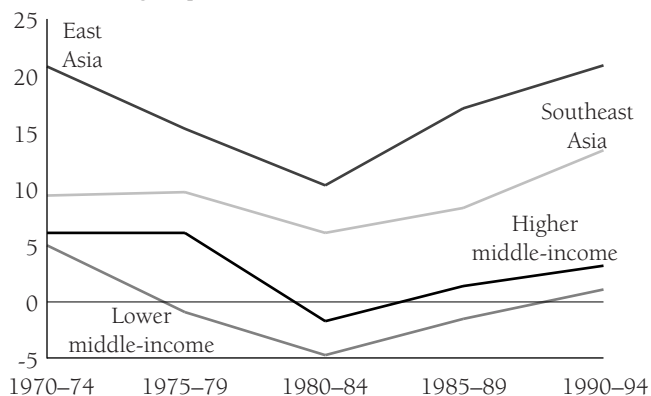
South-East and East Asian groups of countries than for middle-income groups. For the South-East Asian countries, the share of “genuine saving” in GNP rose after 1980–84 and amounted to nearly 15 percent of GNP by the mid-1990s.

A second indicator is the “savings gap” as a share of GNP—the difference between gross investment and “genuine saving.” This measures the extent to which investment has to be financed either by foreign borrowing or by the depletion of natural capital. These may be regarded as relatively close substitutes because both are equivalent to the creation of claims on future income in order to finance current investment. The depletion of natural resources means that rents from such natural resources will be lower in future, so that income as conventionally measured will be lower. Foreign borrowing is a commitment to make repayments out of future income, thus lowering the net income available for domestic consumption.

The “savings gap” similarly shows that the two groups of Asian countries have lower savings gaps than the averages for the groups of all lower and higher middle-income countries. The difference between the South-East Asian countries and the higher middle-income countries is slight, but it is much larger between the South-East Asian countries and the group of lower middle-income countries into with most of them fall. This reflects the extent to which all middle-income countries have come to rely more heavily on foreign borrowing or the depletion of natural capital to finance high levels of investment.

Box figure 1. Genuine savings relative to GNP

Genuine savings as percent of GNP



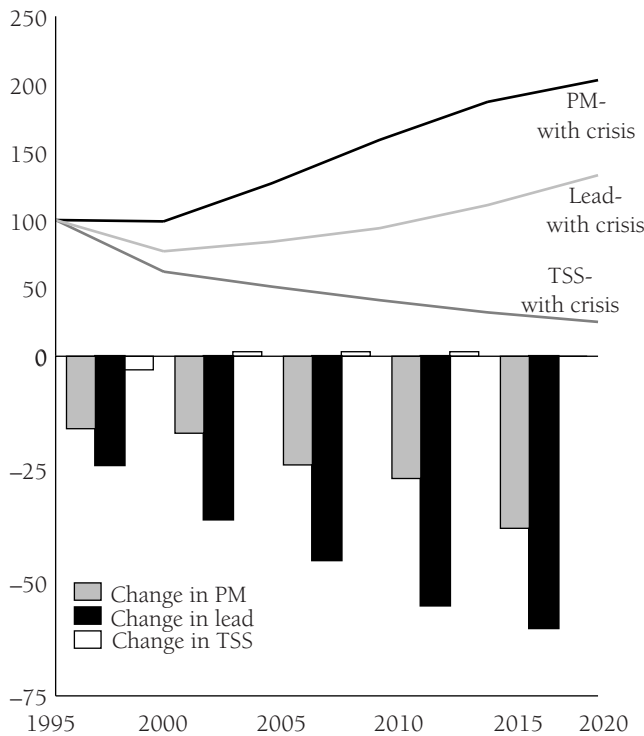
ticulates (PM) and lead. In addition, the figure shows the estimated changes in emissions as a result of the crisis.

Urban air quality is almost entirely determined by emissions from small sources, so the trends displayed may be used as indicators of changes in air quality in the main urban centres. There are a wide range of small sources which emit particulates, largely as a result of burning various types of fuel, so this provides the best indicator of air pollution in general. Lead comes primarily from cars using leaded gasoline, so it can be used as a general indicator of traffic pollution. The immediate impact of the crisis should be to reduce exposure to particulates in 2000 by about 17% relative to its projected level had the crisis not occurred, while the reduction for lead is about 20%. These reductions extend into the future on the assumption that the growth that was lost during the crisis is never recovered.

The story is somewhat different for total suspended solids (TSS) which is a general indicator of water pollution. As a result of (a) recent efforts to reduce discharges of water pollutants by industrial plants, and (b) investments in improving access to water and sanitation, the level of emissions was projected to fall significantly by 2000 and in subsequent periods. In this case the crisis has negative as well as positive effects, because it will delay improvements in the environmental performance. The net effect will be a reduction of about 5% in emissions in 2000 relative to pre-crisis projections, but a small increase in emissions from 2005 to 2015.

Economic recovery after 2000 will mean that emissions of air pollutants will soon exceed 1995 levels unless measures are taken to bring about large improvements in the average level of emissions per

Figure 4. Small source emissions of key pollutants, Indonesia, 1995–2020
1995=100



Note: PM=particulate matter, TSS=total suspended solids discharged to water.
Source: World Bank estimates.

unit of GDP. In this respect the medium term impact of the crisis will be detrimental because investments will be delayed which will, in turn, increase the average emissions per unit of GDP by 5–10% in 2005. A similar concern about the impact of the crisis on environmental investments relates to the issues of access to water and sanitation, which is the most critical environmental priority for most countries in the region. The average life expectancy of people in the Asia/Pacific region is shortened by nearly two years as a consequence of the lack of clean water and sanitation services (World Bank, 1997). Hence, it is important to protect public expenditures allocated for this purpose, while alternative sources of finance linked to improvements in service efficiency and greater cost recovery will be required in the longer term.

Shifts in natural resource prices

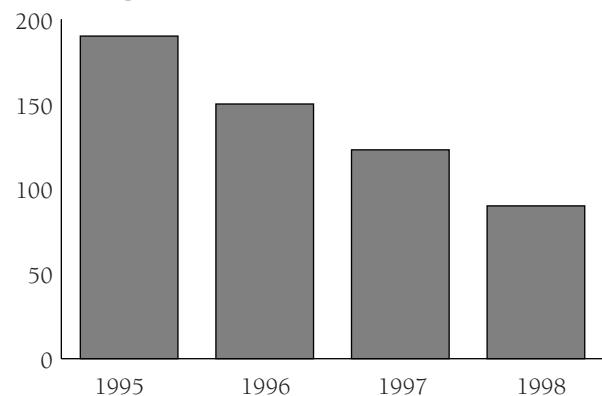
Despite environmental concerns about the impact of currency depreciations on logging, the demand effects

of the crisis have, so far, swamped any response to relative prices. South Korea and Japan, two of the largest importers of forest products, have reduced their demand for plywood by 30 percent. Indonesia’s Minister of Forestry has predicted that the country’s wood-related exports will drop by 25 percent in 1998, from US \$8.3 billion to \$ US 6.2 billion (Jakarta Post, Dec. 30, 1997). Many logging companies are in serious financial trouble. The Jakarta Post (Jan 15, 1998) reported that “at least 5.9 million cubic meters of cut logs remain in the forests because the timber estates have stopped operations.”

Falling demand has reinforced the longer term decline in the world prices of logs and plywood prices (see Figure 5) which will only be reversed after a substantial shift in the balance between output and demand. New markets for timber products may open up in response to policy changes or low prices—for example, changes in timber harvesting regulations in China. Even so, logging and production of wood products in the region are likely to continue to contract as a result of tighter constraints on credit and the availability of investment resources.

The longer term effects of the crisis will depend on the nature and extent of changes in relative prices. Forest management and land use decisions rest on the relative values of both the capital stock and the flow of income over time. An increase in the absolute value of the timber stock need not imply a shift in the return from cutting timber now rather than at some time in the future. This would only be true if the real price of timber were expected to fall. Similarly, the returns from converting land from forest to plantation or agricul-

Figure 5. International log prices, 1995–98
U.S. dollars per m³



tural use will depend on shifts in the relative prices of timber, perennial crops, and agricultural products. All are traded items, so that exchange rate changes should not favor one form of land use over others.

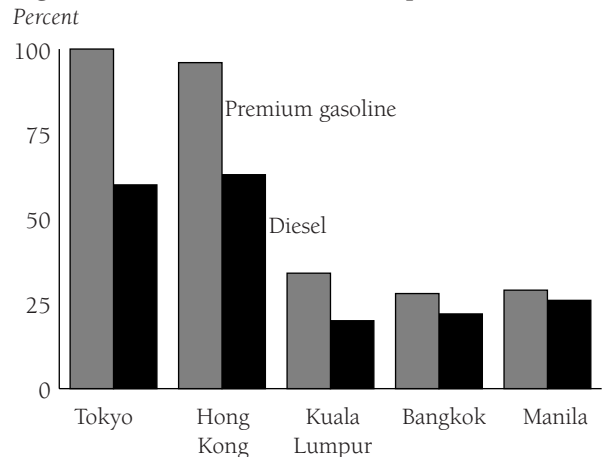
Nonetheless, the level and structure of user fees for exploiting natural resources should be adjusted. These have been consistently set at a level well below what would be justified by the resource rents. Increases in user fees would enable the government to capture a more reasonable share of the income that is generated by logging, fisheries, mining, and other natural resource activities. More importantly, the adjustments would provide an opportunity to establish a more appropriate structure of incentives for the use of natural resources.

A sharp increase in user fees would discourage any short term tendency to “mine” stocks of natural resources in response to temporary swings in the relative prices of timber and other natural resource products relative to domestic goods as a result of exchange rate changes. However, compliance with such user fees—even at their current low level—has been very poor, so that increasing fees without devoting more effort to enforcement will achieve little more than yet more distrust and a further loss of confidence in the overall system of natural resource management. To the extent that higher fees are a barrier to effective enforcement, it may be appropriate to phase them over a period of up to 2 years, provided that the requisite effort is devoted to improving collection rates. At the same time, regulations on harvest planning and oversight of concessionaires and other operators must be enforced more uniformly.

Eliminating subsidies

There are other perverse price incentives which result in significant environmental costs and should be eliminated as quickly as possible. The most important are subsidies or highly discriminatory taxes which favor the use of kerosene and diesel fuel over other fuels in Indonesia or which mean that all transport fuels are much cheaper than in richer countries (see Figure 6). There is substantial evidence which shows that the fiscal impact of these pricing policies is regressive from a distributional point of view, while they encourage the use of fuels which contribute heavily to local air pollution.

Figure 6. Relative automotive fuel prices in Asia



Source: McMorran and Hamilton, 1996.

It may be argued that attempts to eliminate such subsidies have, in the past, provoked political unrest. However, public resistance should be seen in the broader context of fiscal policy and income distribution. Large increases in fuel prices or taxes may be difficult to implement on their own but are likely to be more acceptable if packaged with other tax changes whose overall impact is seen as being equitable. Among the questions that should be considered are:

- If taxes have to be raised or public expenditures reduced, is it better to increase fuel taxes or lower subsidies rather than, for instance, cutting back on expenditures which more directly benefit the poor and those most severely affected by the crisis? It is important to distinguish between resistance to changes in fuel taxes as a general protest against incompetent, corrupt, or inequitable economic policies and the self-interest of those who benefit directly from distorted prices. For Indonesia, government subsidies in the 1998–99 state budget amounted to Rp 7.4 trillion (US\$ 1.5 billion). It is difficult to reject the argument that such resources could be used more effectively in other ways to alleviate poverty and to mitigate the impact of the crisis.
- Trying to correct fuel taxes and subsidies very quickly is usually doomed to failure. Progressive adjustments every quarter or half year will be more palatable, provided that the changes are signaled well in advance, because it gives people time to adjust.
- From an environmental perspective it is not critical that prices should be adjusted very quickly. Short

run changes in the level and composition of fuel use in response to price are modest—most estimates of short run price elasticity of fuel demand fall between -0.10 and -0.20 . Over a period of a year, income changes are a much more powerful influence on consumption than prices. However, the medium and longer run responses to price changes are much larger—typically 4–5 times the short run elasticity—as people change their habits, buy more fuel efficient vehicles or equipment, and make the investments required to switch to different fuels. Large increases in relative prices may dramatize the need for change but may be counterproductive if they are subsequently reversed. A more gradual approach to which the government is fully committed is, thus, likely to be more effective.

Changes in public expenditures

So far, there is no evidence that environmental spending has been subject to disproportionate cuts. In the Philippines, for example, the budget of the Department of Environment and Natural Resources (DENR) has been affected by general measures including (a) a 25% mandatory reserve on all expenditures other than personnel and debt service, (b) a 10% deferral in the revenue allocation for local government units, and (c) the suspension of tax subsidies to governments units. Various new programs and projects have been postponed, but the overall budget allocation—before mandatory reserve requirements—was increased in 1998 over 1997.

Tight fiscal discipline will complicate a critical transition. It is essential to decentralize much of the responsibility for environmental regulation, especially in large diverse countries such as Indonesia and China. Shortage of money may encourage central governments to delegate more responsibilities to regional and local levels. This will achieve little unless additional resources are provided, at least during a transitional period, to build up and sustain local capacity. Thus, the pattern of government spending on environmental protection must change to reflect both new priorities and new approaches to environmental management.

Finding the resources to ensure that environmental regulation and enforcement can be effectively decentralized must be the most important goal for those

wishing to ensure that countries emerge from the economic crisis with a stronger environmental capacity than when it started.

Environment and poverty programs

Higher unemployment and lower real wages in urban areas has either reduced migration from the countryside to cities or, even, reversed the flow temporarily. If this persists, pressure on rural resources—especially, agricultural land and water—will encourage the conversion of marginal or forest land to agriculture and may encourage rural migration to frontier areas.² Programs which provide employment opportunities, especially in rural areas will mitigate the risk that such adjustments will undermine efforts to manage natural resources better.

Such programs will yield positive environmental benefits if money is allocated to improve rural infrastructure or to protect the rural environment. For example, public expenditures on rural water supply and sanitation or on planting trees and soil conservation can generate substantial employment, while improving the quality of life and/or productivity of rural populations. Similarly, expenditures on improving water supply, sanitation, and waste management in urban areas will help alleviate the poverty created by the crisis and produce lasting environmental benefits for many urban residents.

A new path for the future

In periods of economic crisis, it is all too easy to assume that attention to environmental problems is a distraction from efforts to re-establish economic stability and growth. This presumption reinforces a general preconception in the Asia/Pacific region that environmental concerns are something that should wait until income levels are much closer to those in the rich developed world. The example of almost all industrial countries—including countries that they seek to emulate such as Japan—seems to support this position.

Yet, the rich countries did address some of the environmental problems associated with urbanization and industrial growth. They invested heavily in developing infrastructure for water supply and sanitation. Within

the limits of the technologies available they also tried to mitigate industrial pollution which caused significant damage to human health or property. In some respects, countries in the region are still well behind the achievements of rich countries 80–100 years ago.

Advances in knowledge and technology mean that the trade-off between growth and environmental quality is also very different. Often, the cost of reducing pollution is low or negligible, because modern production techniques and capital are much cleaner as well as more efficient than in the past. All that is required is to ensure that they are properly operated and maintained, something that is necessary if firms are to compete in world markets.

A simple continuation of past policies for the next 25 years would:

- Leave many households without access to clean water and decent sanitation;
- Worsen urban air quality in small and medium Chinese cities as well as in cities such as Bangkok, Jakarta, and Manila; and
- Increase the risks posed by heavy metals and persistent organic chemicals in rivers and water supplies, but improve other indicators of water quality such as suspended solids and dissolved oxygen.

Measures requiring an investment of less than 1% of GDP and with an annualized cost of 1–1.5% of GDP by 2020 will be sufficient to reverse the adverse trends and improve the favorable ones—see World Bank 1997. The main expenditures are linked to the goal of achieving full access to water within 10 years and to urban sanitation in 20–25 years, though in China the main issue is to deal with urban air pollution caused by burning coal for household heating and in small boilers. The benefits of these measures are 5–10 times the costs involved for investments in water infrastructure and 2–3 times higher for expenditures on reducing air pollution.

Following this new path will involve different combinations of incentives, regulations, and institutional changes. However, the experience of economic crises elsewhere suggests that it may be difficult to achieve an appropriate balance when governments and the population at large are preoccupied by the immediate problems of either mitigating or adjusting to large economic changes. Thus, the key question is to identify the steps

that should be taken now to begin to establish a better framework for environmental management in future.

For this purpose, it is instructive to learn from the even more traumatic economic changes that have accompanied the transition in Eastern Europe and the former Soviet Union. This transition will eventually lead to much better environmental policies and conditions. However, the immediate economic costs of the transition have been so large in many countries that it has proved very difficult or impossible to implement effective measures to correct the all too obvious weaknesses of the previous regimes. The most rapid progress on the environmental front has been made by those countries—such as Poland, Czech Republic, and Hungary—which experienced the least economic disruption and were quickest to re-establish economic stability.

There are four main lessons which emerge.

- *Re-establishing economic stability* is an absolute priority even for those concerned with improving environmental performance. Without economic stability, it will simply not be possible to obtain the support from the public and businesses that is required to implement effective measures to deal with the environmental priorities outlined above.
- *A clear public commitment* to meet environmental and other goals that are consistent with practices in other countries or associations provides a reference framework for all of the agents involved in environmental management. This does not mean that countries should simply transpose EU or US standards, since this has already happened in some cases without any significant impact on actual performance. Rather, it would be better for the ASEAN or APEC countries to commit themselves to a goal of developing environmental institutions and policies over the next decade that are mutually consistent and are broadly “equivalent” to those of OECD countries (allowing for differences in circumstances and resources). Note that what matters is not the adoption of similar “standards” but rather the development of reasonable mechanisms for agreeing and enforcing policies.
- *Openness to trade with and investment flows* from countries which have devoted more attention to environmental concerns is a powerful engine for the transfer of better environment practices without

jeopardizing prospects for economic growth and increasing standards of living. The frequent suggestion that liberalization of trade and investment will generate pressures to lower environmental standards is, in almost all cases, simply wrong. There are many lessons that may be learned from foreign investors and trading partners on how to improve both economic efficiency and environmental performance.

- *Make haste slowly.* Improving environmental performance will involve a commitment to transparency and decentralization in the formulation and implementation of environmental policies—as in the banking, corporate, and public sector governance in general. This will require a fundamental shift in governance and will succeed only if addressed over a realistic time frame. It is easy to gain the impression that the main objective should be to transpose the formal superstructure—technical standards, legislation and regulatory mechanisms—of environmental policy. However, real improvements in environmental quality are the result of a broad consensus about environmental priorities and the measures necessary to improve the situation. There is no such consensus in most Asian countries. Thus, new governments must build public support for tackling a limited set of priorities before attempting to introduce and implement appropriate measures.

The financial crisis is only a transient event. The critical question for the environment is whether resumed growth will be “business as usual” or whether it will reflect fundamental reforms in both the economic and environmental spheres. The economy-environment linkages cannot be managed as directly as financial problems. Solutions require the strengthening of regulatory, institutional, technical, and managerial capacity with an emphasis on cross-sectoral coordination and consensus. Building such capacity and fostering change will require a prolonged effort and proper incentives.

Environmental improvement in the region cannot be based on government finance. It is the job of the government to establish a clear regulatory framework and rules, encouraging individual enterprises and agents the maximum scope for achieving the goals in the most efficient manner that is consistent with the broad rules. In turn, this means that the nature of environmental policies must change. There should be less focus on

emission standards which promote the adoption of end-of-pipe pollution controls and more emphasis on pollution prevention combined with the adoption of cleaner (and more efficient) techniques of production.

In the immediate future, this will mean that firms must be encouraged to get the best out of their existing facilities. Two sets of incentives will tend to reinforce this. The large exchange rate adjustments will mean that the cost of new controls will be relatively much more expensive than before, so that firms should prefer to reduce emissions by adjusting their operational practices, training staff, and ensuring that their plant and equipment is properly maintained. Further, to the extent that much pollution represents a waste of raw materials and other inputs, there will be strong economic reasons to minimize such waste.

The adjustment of fuel prices should be seen in this context. In countries where state controls over the energy sector mean that pricing issues are hotly disputed, many reasons are cited to resist the adjustment of fuel prices in line with exchange rate changes. It is easy to demonstrate that most of them are spurious. Inflation is not especially sensitive to changes in the overall price of energy, while the subsidies to hold down all or specific fuel prices are almost invariably regressive. In fact, it is simply a matter of special interests attempting to protect valuable privileges.

Among the most important of those interests are energy-intensive industries whose profligate use of energy is almost always linked to heavy pollution. While there may be real political constraints on rapid adjustments in the prices paid by households for certain widely used fuels, there is absolutely no reason to protect industrial and commercial users. Thus, at the very least, the wholesale prices of diesel fuel, heavy fuel oil, gas, and coal should be brought into line with world prices within a period of no more than a year.

Public spending on basic water and sanitation infrastructure has an immediate return in terms of the welfare of poor populations and will lessen the employment impact of the economic shock. The costs of lack of access to clean water supplies in rural areas represent a large fraction of the total health damage associated with environmental factors. Hence, there is a very strong case for focusing expenditure on rural employment and social assistance programs on investments in

water supply infrastructure. This is reinforced by the fact that willingness to pay for clean water is high, so that there should be no difficulty in establishing mechanisms to ensure that the operational costs of new systems are fully covered by modest levels of user charges.

Notes

1. The model is based on an input-output framework with separate matrices of coefficients for old and new capital (the coefficients for old capital change gradually over time). The basic assumption of the model is that over the next two decades, less developed economies in Asia will converge toward economic performance and industrial structures similar to middle income countries. It is assumed that East Asian countries will gradually adopt efficient technologies and, as a result, energy and material inputs per unit of output will decline.
2. Cruz and Repetto (1992) argue that such migration was a consequence of unemployment resulting from IMF stabilization programs in the Philippines during the early 1980s. This interpreta-

tion is controversial because there were many other perverse incentives encouraging agricultural expansion in upland areas and the trend was well established before unemployment rose.

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