Indonesia Update Series

The Politics and Economics of Indonesia's Natural Resources

Edited by
Budy P. Resosudarmo

INSTITUTE OF SOUTHEAST ASIAN STUDIES
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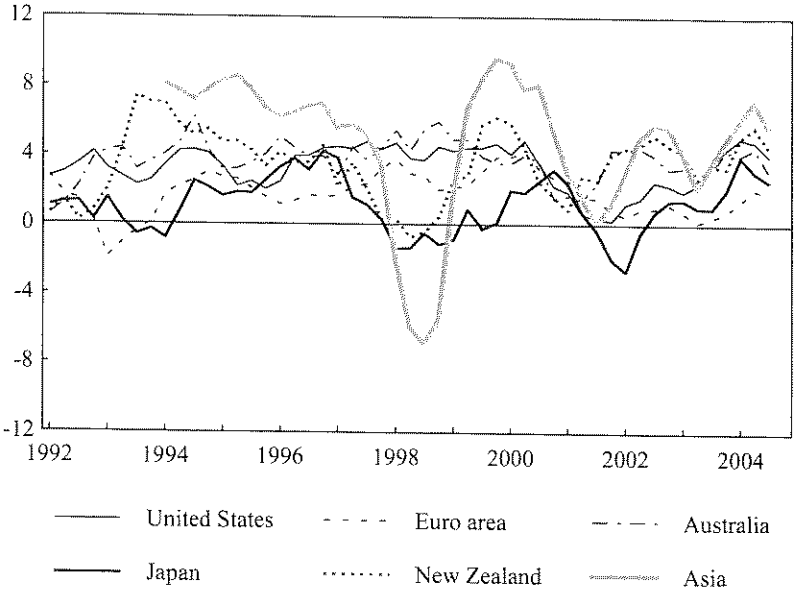
Warwick J. McKibbin

INTRODUCTION

Indonesia faces a number of important challenges both in the short run and in the longer run. The world economy is currently growing robustly but a number of uncertainties cloud the economic outlook. A strong global economy is being challenged by higher oil prices. The emergence of significant trade imbalances between East Asia and the United States will undoubtedly put pressure on economic and political relations between the major regions of global growth. At the same time as the global economy is providing short-term economic stimulus to Indonesia, there are a number of serious environmental problems that Indonesia needs to face. Key among these are depletion of natural resources, particularly the degradation of forests, and rising greenhouse gas emissions.[1] Global policies to reduce greenhouse gas emissions will directly affect Indonesia, a major fossil fuel producer.

This chapter gives an overview of the current state of the global economy, with a focus on the three most important risks currently facing world growth: the impact of rising oil prices on the global economy, the resolution of trans-Pacific trade imbalances and, related to this, surprisingly low long-term real interest rates throughout the world. The chapter then focuses on two sets of longer-term issues currently facing Indonesia. The first concerns rising energy use, rising greenhouse emissions and the implications for Indonesia of serious global climate change policy. The second concerns the serious depletion of natural resources, particularly forests. I also suggest how we can deal with these two longer-term issues within a single framework that focuses on creating property rights and clear incentives to manage forests and greenhouse gas emissions. This is particularly important for Indonesia, which is the only member of the Organization of the Petroleum Exporting Countries (OPEC) to have ratified

Figure 4.1 Real GDP growth in selected OECD countries and Asia, 1992–2004 (year-end percentage change)



Asia = Hong Kong, Indonesia, South Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand.

Sources: Australian Bureau of Statistics; CEIC Data Company; Thomson Financial Services and Products.

the Kyoto Protocol to the United Nations Framework Convention on Climate Change.[2]

SHORT-TERM GLOBAL ECONOMIC OUTLOOK

The world economy is growing strongly after several years of slow growth. The latest International Monetary Fund (IMF) *World Economic Outlook* predicts global growth to be 5 per cent in 2004 and 4.3 per cent in 2005 (IMF 2004: 3, Table 1.1). Figure 4.1 shows the composition of this growth in economies of the Organisation for Economic Co-operation and Development (OECD). Strong growth in the United States and Australia, a tentative recovery in Japan and low but rising growth in Europe suggest a sustained economic recovery in OECD economies. More impressive growth continues in Asia, as shown in Figure 4.2. China continues to be a powerhouse despite attempts to cool the economy

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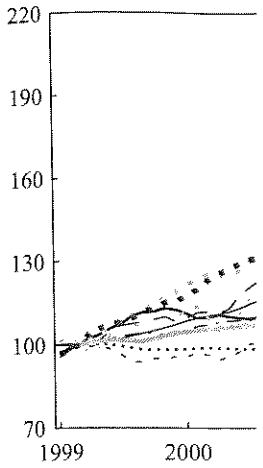

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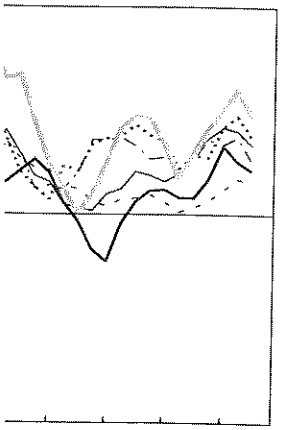

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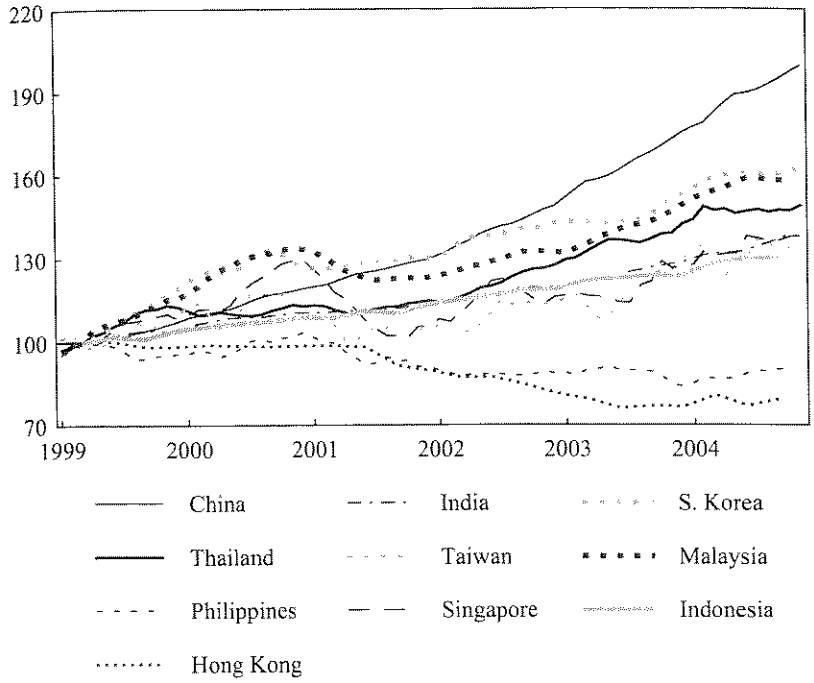
Figure 4.2 Industrial production in Asia, 1999–2005 (March quarter 1999 = 100, smoothed)[a]



a Figures for China, India, Indonesia, Malaysia, the Philippines and Taiwan have been seasonally adjusted by the Reserve Bank of Australia.

Source: CEIC Data Company as provided by the Reserve Bank of Australia.

through monetary restrictions and interest rate increases. The contraction of monetary policy will probably be effective but there is unlikely to be a major slowdown in China (see McKibbin and Stoeckel 2004a).

There are more serious threats to global economic growth than policy developments in China. Since early 1999 oil prices have risen sharply, from around $10 per barrel to over $55 per barrel in October 2004. This rise in oil prices is a significant shock to the world economy. The International Energy Agency recently predicted that every $10 per barrel rise in oil prices reduced world GDP by 0.4 per cent (IEA 2004). McKibbin and Stoeckel (2004b) suggest an even higher figure – closer to 0.6 per cent of GDP for every $10 per barrel rise. The current rise in oil prices is not as large in real terms as the oil shocks of the early 1970s, but it is significant and could slow the world economy significantly. In

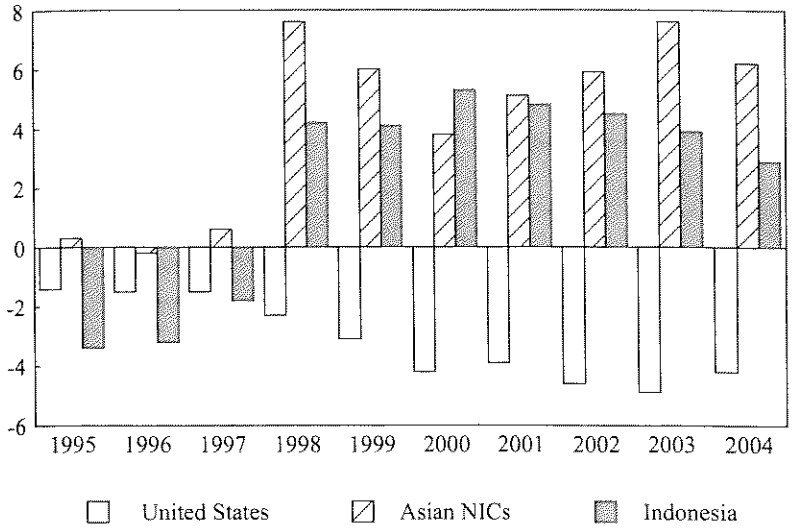
particular, McKibbin and Stoeckel (2004b) find quite different effects on different economies; of Indonesia's trading partners, Japan is likely to be the hardest hit. The effects on Indonesia are likely to be complex. On the one hand, the value of oil exports increases, which generates revenue. On the other hand, growth in key trading partners is likely to slow and the demand for other exports from Indonesia will tend to decline. Moreover, within Indonesia there are severe distortions in domestic energy pricing (discussed further below). In particular, the Indonesian government subsidises domestic energy prices. This has the curious implication that, as world oil prices rise, the dollar value of subsidies provided by the Indonesian government rises, which puts severe pressure on the fiscal position. It is hard to imagine that the current policy of energy subsidies can persist for long without major pressure on the fiscal position of the country.

A second important issue clouds the global outlook. Since the 1997 Asian crisis there has emerged a serious trade imbalance between Asia and the United States. Figure 4.3 shows the current account balances for the Asian newly industrialised countries (NICs) and Indonesia. Since 1998 the current accounts of all Asian crisis economies have shifted sharply towards current account surpluses. This reflects the large capital outflows from these countries. The current account of the NICs went from near balance in 1996 to a surplus of nearly 8 per cent of GDP in 2003. The puzzle is why these trade positions have not reversed given recovery in these countries' economies. Figure 4.3 also shows the gradual deterioration of the US current account deficit from under 2 per cent of GDP in 1995 to nearly 5 per cent of GDP by 2003.[3]

Lee, McKibbin and Park (2004) explore the causes of these trade imbalances and policies to deal with them. They find that the imbalances are not caused by trade policy or exchange rate policy in Asia (in contrast to Dooley, Folkerts-Landau and Garber 2003), but are driven by two other key factors. In order to understand these factors, it is important to realise that the current account is both the difference between exports and imports of countries (adjusted by factor payments) and the difference between national savings and investment. A country with excess national savings relative to investment will experience a current account surplus; a country with low savings relative to investment will experience a current account deficit. The major story behind these current account imbalances is changes in saving and investment balances, not trade policy or exchange rate policy.

One important explanation for the rise in current account surpluses in Asia and the rise in current account deficits in the United States since 2000 is the large increase in US fiscal deficits since 2000. Between the late 1980s and 2001, the US fiscal balance improved dramatically, from negative to positive, peaking at a surplus of 4.4 per cent of GDP in 2000. However, in 2002 the fiscal balance deteriorated significantly due to tax cuts, an increase in spending due to the war on terror, and an economic slowdown. The federal government

Figure 4.3 Current account balance in selected countries, 1995–2004 (per cent of GDP)



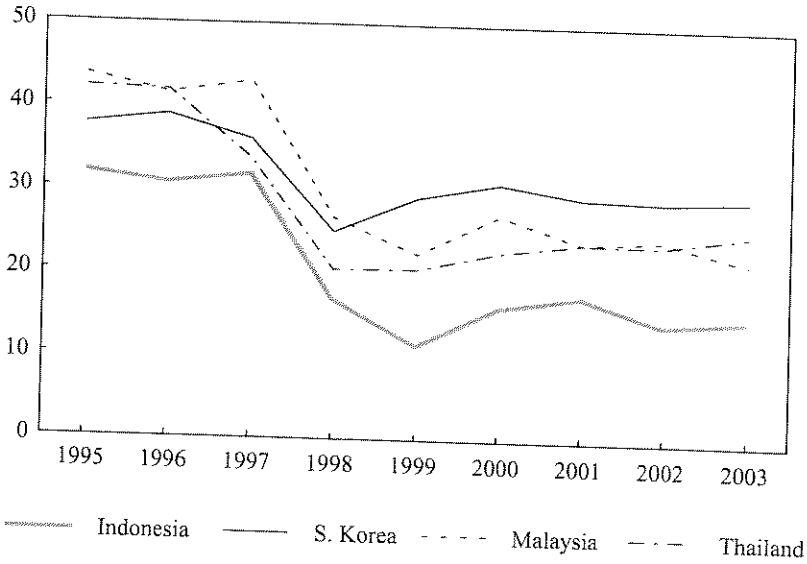
Asian NICs = Hong Kong, Singapore, South Korea and Taiwan.

Source: Lee, McKibbin and Park (2004: Table 1).

budget balance (including the social security surplus) shifted from a surplus of 2.5 per cent of GDP in financial year 2000 to a deficit of more than 4 per cent of GDP in financial year 2004. This large change in government savings translated into a large fall in national savings and a worsening of the current account as foreigners increasingly financed US investment.

The second key factor can be seen from Figure 4.4, which shows the ratio of total investment to GDP in Indonesia, South Korea, Malaysia and Thailand. Since the 1997 Asian crisis, investment has dropped sharply in all these economies. For a given savings rate, a sharp drop in investment (both public infrastructure spending and private investment) should improve the current account surpluses of these countries. For Indonesia, South Korea, Malaysia and Thailand, the decline in investment has been 10–20 per cent of GDP. This is both dramatic and puzzling and explains a significant part of the improvement in the current surpluses of Asia. It has serious implications not only for trade imbalances but also for future growth prospects in Asia, since investment is a critical driver of future productive capacity. In the short run, the United States is fortunate that, in order to offset its low national savings rate, it can continue to borrow at very low real interest rates, thanks partly to the collapse in Asian

Figure 4.4 Investment in selected countries, 1995–2003 (per cent of GDP)



Source: Lee, McKibbin and Park (2004: Table 4).

investment. Low real interest rates may also reflect the extremely low short-term nominal interest rate in the major economies of the United States, Europe and Japan. Monetary authorities in these regions will eventually have to raise nominal policy interest rates. Eventually the large current account imbalances should self-correct through a rise in global real interest rates, a depreciation of the US dollar or both. A gradual adjustment is feasible and should be manageable for countries like Indonesia, but a sharp adjustment in either policy interest rates or long-term real interest rates could cause serious problems for the recovery phase in Indonesia, especially if real interest rates begin to reflect a shortage of global savings.

Thus the global economy looks favourable to Indonesia in the near term, yet there are potential problems such as the global rise in oil prices, the emergence of trade imbalances between Asia and the United States, and an upward movement in world real interest rates.

LONGER-TERM RESOURCE, ENERGY AND CLIMATE ISSUES

Until the 1997 crisis, Indonesia had experienced three decades of sustained economic growth of above 6 per cent per year. As in many countries, this was dri-

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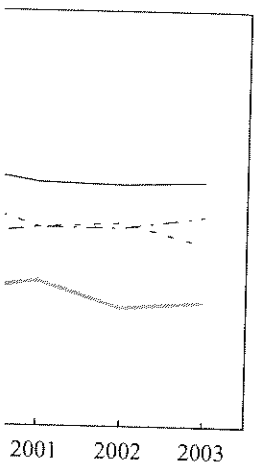

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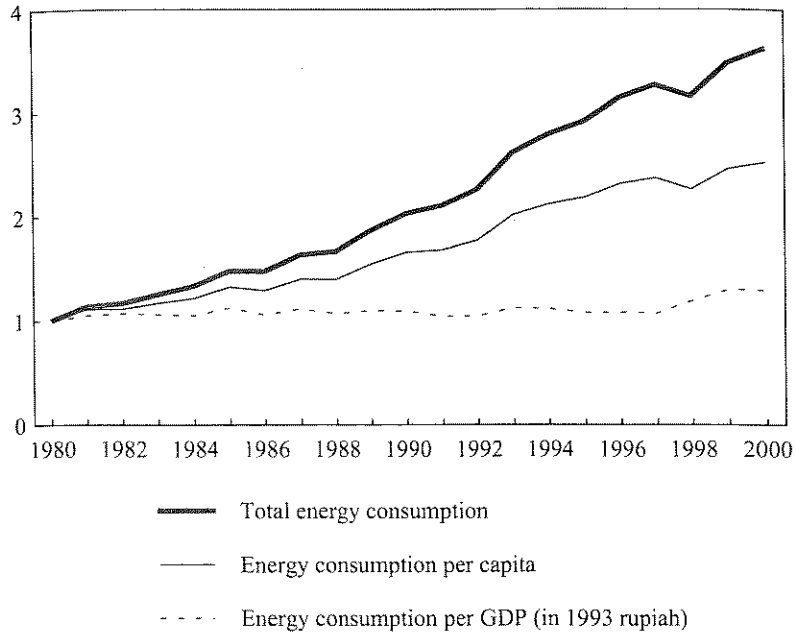
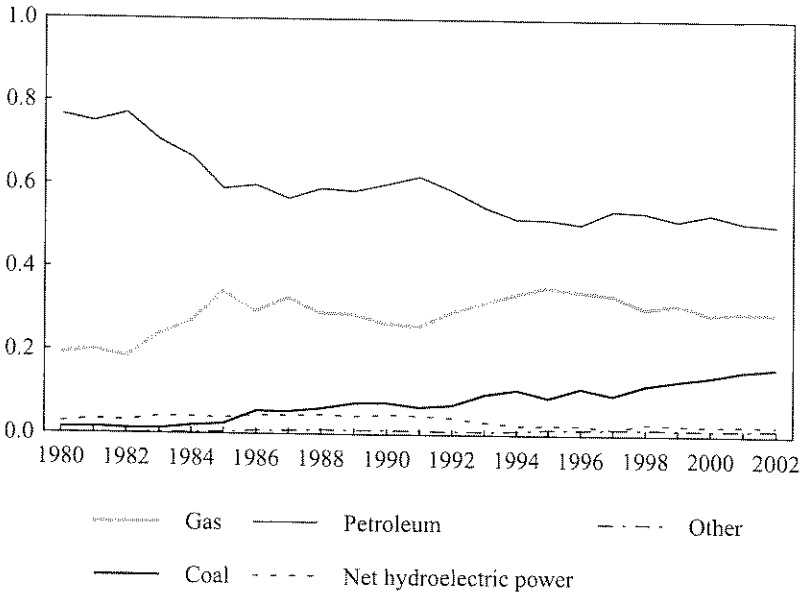
Figure 4.5 Relative trends in energy consumption in Indonesia, 1980–2000 (1980 = 1)



Source: Total energy consumption: US Energy Information Administration; others: World Bank (2002), *World Development Indicators*.

ven particularly by access to cheap energy sources. Indonesia is exceptional in that it has large reserves of fossil fuels and is a member of OPEC.[4] Figure 4.5 shows the path of energy use in Indonesia since 1980. In 2000, total energy consumption was more than 3.5 times that of 1980, while per capita energy use was more than 2.5 times that of 1980. Energy use per unit of GDP has remained surprisingly constant during the period, with a slight upward trend since the 1997 crisis. When compared to developed countries, this constancy of energy use per unit of GDP is surprising. In most OECD economies there is a trend decline in energy use per unit of GDP (of approximately 1 per cent per year), reflecting increased energy efficiency as well as a changing economic structure away from energy-intensive manufacturing towards less energy-intensive service industries (McKibbin, Pearce and Stegman 2004). In Indonesia it appears that, over the past few decades, either this gradual increase in energy efficiency has not occurred or there has been a particular pattern of structural change that offsets the effects of energy efficiency. Any lack of energy efficiency is probably

Figure 4.6 Energy consumption in Indonesia by source, 1980–2000 (share of total energy consumption)



Source: US Energy Information Administration.

due to subsidies of energy prices, which reduce incentives for substitution away from energy use towards labour and capital. As noted above, when combined with the current period of high oil prices, this aspect of Indonesian energy policy may be causing serious structural distortion in the nature of production and creating fiscal problems.

Figure 4.6 shows the composition of energy consumption in Indonesia by energy source as a share of total energy consumption (defined in quadrillion British thermal units). Not surprisingly, oil (petroleum) dominates energy use, followed by gas and then coal. Coal has shown the biggest proportional gain in market share since 1980. The rise in coal use has important implications for greenhouse gas emissions in Indonesia because coal has greater carbon emissions per unit of energy than do oil and gas. Renewable energy sources barely appear on the chart.

The energy trends in Indonesia are problematic. Despite the reliance on fossil fuel energy within Indonesia, one of the positive developments since the early 1980s has been the reduced reliance on fuel exports as a share of total exports – a decrease from 80 per cent in 1982 to just over 20 per cent in 2000.

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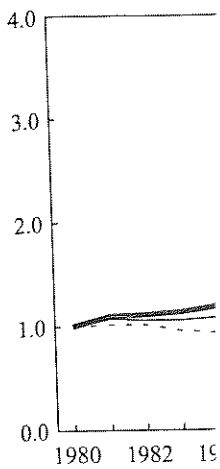

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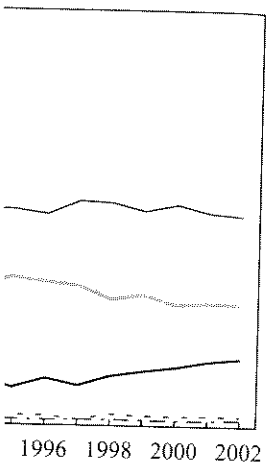

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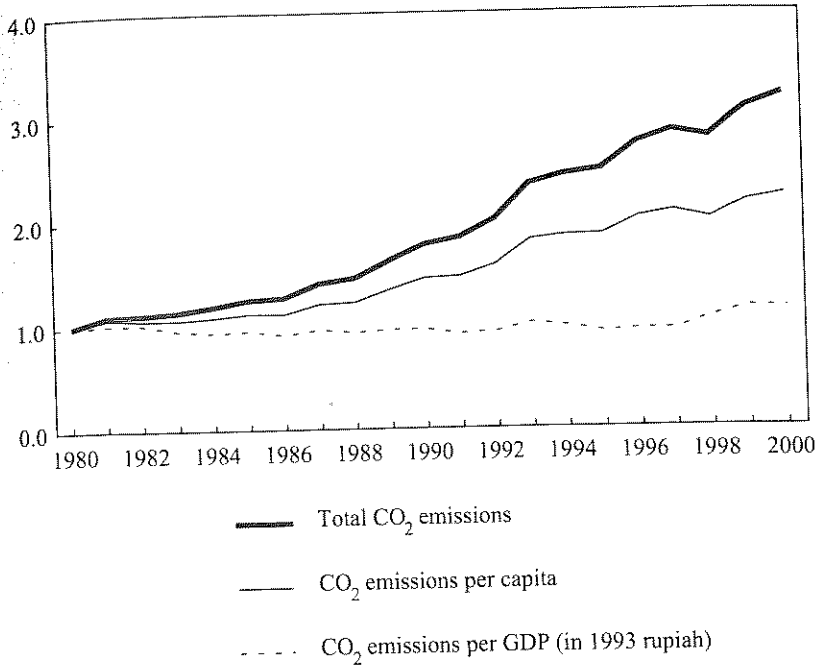
Figure 4.7 Relative trends in carbon dioxide emissions in Indonesia, 1980–2000 (1980 = 1)



Source: US Energy Information Administration; World Bank, *World Development Indicators*.

Directly related to energy use are emissions of carbon dioxide, the most important greenhouse gas. As Indonesia has ratified the Kyoto Protocol, its domestic emissions of carbon dioxide will be scrutinised more closely in coming years. I discuss the implications of global climate policy in the next section of this chapter. Figure 4.7 shows that, on a per capita basis and as a share of GDP, the paths of carbon dioxide emissions from fossil fuels look very similar to the paths of energy use (see Figure 4.5). This is not surprising given the almost exclusive reliance on fossil fuels for energy in Indonesia. There was a more than three-fold increase in carbon emissions in Indonesia between 1980 and 2000. The composition of the sources of emissions is somewhat different from the energy use composition shown in Figure 4.6, because each type of fossil fuel produces a different amount of carbon dioxide emissions per unit of energy. Coal emits by far the largest amount of carbon dioxide per unit of energy, followed by oil and then natural gas. By 2001, coal accounted for 18 per

cent of energy consumption but was responsible for 25 per cent of carbon dioxide emissions in Indonesia. Thus since 1980 emissions of carbon dioxide have risen faster than energy use in Indonesia.

Given ratification of the Kyoto Protocol, and the fact that there is no sign of a change in the trend of carbon dioxide emissions in Indonesia, it is clear that changing the future path of emissions will require significant policy responses if Indonesia is to be a full participant in the Kyoto Protocol system. Optimists will argue that this can be done by foreign investment in energy technologies induced by the Clean Development Mechanism (CDM) of the Kyoto Protocol. It is not clear how much the CDM will cost or how important it will be, but I believe that the complexity of the process and the high costs of administration are likely to result in very little new energy investment from this source. For Indonesia, a more important issue than the impact of domestic policies on greenhouse emissions may be the economic impact of global policies targeting one of Indonesia's major exports, fossil fuels. I discuss this below.

Indonesia faces many other resource and environmental issues.[5] Change in land use – particularly the destruction of forests – is perhaps the one most closely related to carbon emissions. This is a fundamentally important issue that needs to be addressed in a much shorter timeframe than carbon dioxide emissions. Figure 4.8 shows the alarming decline in forests in Indonesia between 1990 and 2000 – a decline both relative to the world and in comparison with the rest of Asia. While plantation area has risen by 38 per cent over the period, the overall forest cover has fallen by 16 per cent, implying a large decline in natural forest cover. This has environmental implications for ecosystem loss and soil degradation as well as social implications for native forest users. The burning of the forests has also resulted in emissions of carbon dioxide and black carbon, with important implications for health, agricultural productivity and localised climate change. Streets (2004), Streets et al. (2003) and others suggest that direct action to reduce the emissions of black carbon from household energy use and the burning of forests is an important issue that needs urgent attention not only in countries like China but also in Indonesia.

RESPONDING TO CLIMATE CHANGE AND OTHER CHALLENGES

For several decades the global community has struggled with the issue of how to respond effectively to the threat of climate change. In 1992, the United Nations Earth Summit in Rio de Janeiro produced a landmark treaty on climate change that undertook to stabilise greenhouse gas concentrations in the atmosphere. By focusing on stabilisation, however, the treaty implicitly adopted the position that the risks posed by climate change require that emissions be reduced no matter what the cost. The agreement, signed and ratified by more

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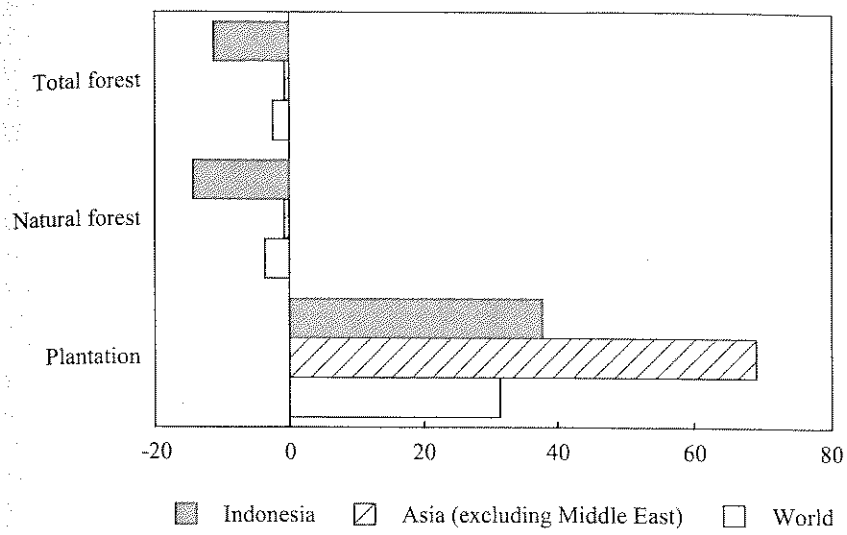
Figure 4.8 Change in forest area by type, 1990–2000 (per cent)



Source: World Resources Institute.

than 186 countries, including the United States, spawned numerous subsequent rounds of climate negotiations aimed at rolling back emissions from industrialised countries to the levels that prevailed in 1990. To date, however, the negotiations have had little effect on greenhouse gas emissions and have not produced a detectable slowing in the rate of emissions growth.[6] The treaty's implementing protocol, the 1997 Kyoto agreement, crawled into life after being heavily diluted at negotiations in Bonn and Marrakech.[7] The survival of the Kyoto Protocol in its current form has been given some impetus by its recent ratification by Russia, yet many problems must be faced before we can see if actions under the protocol are actually reducing emissions. More than a decade of negotiations has produced a policy that is very strict in principle but ineffective in practice.

The problem at the international level is actually worse than it appears from the troubled process of Kyoto ratification. Even when the Kyoto Protocol comes into force (which it had not at the time of writing), it will place restrictions only on industrial economies, and will exclude the world's largest greenhouse emitter, the United States. Developing countries, including Indonesia, have ratified the agreement but have not taken on any responsibilities for reducing emissions except those that emerge from mechanisms such as the CDM and joint implementation. Thus, in a real sense, a majority of future global greenhouse emis-

sions are not bound by the current international agreement. Indeed, both the United States and Australia claim that the reason they will not ratify the Kyoto Protocol is that developing countries are not taking on commitments. The fact that the world's largest emitter, the United States, is not substantially involved in climate policy dilutes global action even further. With no binding commitments by the key developing countries of China, India, Brazil and Indonesia (among others), effective action against climate change is still hypothetical.

Yet developing countries have a valid point in their argument that, while they are prepared to be part of a regime to tackle climate change, they should not be required to bear a disproportionate part of the costs of taking action. Current concentrations of greenhouse gases in the atmosphere are primarily the result of economic activities in the industrial economies since the industrial revolution. Because it is the stock of carbon in the atmosphere that matters for temperature changes, any climate change in the near future will largely be the result of the past activities of industrial economies. Why should developing countries not be able to follow the energy-intensive development paths previously followed by the industrialised economies? This issue has inevitably led to an expectation that the industrialised economies should pay compensation for action taken in developing countries. One of the biggest dilemmas for developing countries is that at some stage they will need to make some form of commitment to curbing greenhouse gas emissions in their own self-interest because, on most estimates, they are the countries likely to incur the greatest damage from climate change (IPCC 2001).

Standing back from the intensity of international negotiations, it is worth clarifying several important facts about the costs and benefits of climate policy, and exploring whether developing countries could take approaches that are not being considered because of the standard refrain that 'Kyoto is the only game in town'. This mindset has already hindered effective action for a decade as countries and industries postpone action until agreements are clarified. The delay in providing clear incentives for moving away from fossil fuel-based systems may ultimately prove to be extremely costly, given the uncertainties of climate change and the kinds of decisions on energy systems being made in regions of the developing world that are growing rapidly, including Indonesia. At some stage Indonesia will probably substitute away from oil into other energy sources, which may include coal rather than more greenhouse-friendly options.

One of the largest sources of anthropogenic greenhouse gas emissions is the burning of fossil fuels. The cheapest way to make the global energy system less reliant on fossil fuels is to remove these emissions from future rather than existing energy systems. It is costly to change existing energy systems because of the huge investments in physical and human capital surrounding them. It is much cheaper to change future investments (which will largely occur in devel-

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oping countries) before they are undertaken. Technology will ultimately be the source of reductions in emissions, whether through the development of alternative sources of energy or through ways of sequestering carbon released by burning fossil fuels. In terms of carbon intensities, developing countries have a huge opportunity to avoid the pitfalls experienced by industrialised economies in their development process. The key issue is how developing countries can be encouraged to establish energy systems that are less carbon intensive over time. If climate change does emerge as a serious problem, developing countries will ultimately have to move towards a less carbon-intensive future. It is likely to be significantly cheaper to do this over time than to face massive restructuring at some future period and the sorts of problems industrialised economies encounter today.

The current state of global policy on climate change is as follows. The United States, the largest emitter of greenhouse gases, has rejected the Kyoto Protocol and is arguing for policies that directly or indirectly reduce emissions through technological change. The European Union is committed to emission targets, assuming Russia provides a great deal of the reductions required through selling emission permits. On 1 January 2005, the European Union will also implement a Europe-wide emissions trading scheme (though it will exempt key sectors such as aluminium, motor vehicles and chemicals), but the scheme only has caps that effectively bind by the end of 2008. Japan is considering what it can do given that current emissions are 16 per cent above target in an economy recovering from a decade of recession. And developing countries have refused to officially discuss taking on commitments.

Given this background, there are several ways in which Indonesia could begin to address carbon emissions. The most obvious first step would be the removal of energy subsidies. The second step would be to raise the price of energy to reflect the true economic and environmental cost of burning fossil fuels. A third option would be the direct importation of less carbon-intensive technologies provided by the CDM. This outcome is possible but not likely, for the reasons already outlined above. Thus I focus on the first two options in the discussion below.

Economic theory provides guidance on the structure of a possible climate change policy for Indonesia.[8] Since greenhouse gases are emitted by a vast number of highly heterogeneous sources, minimising the cost of abating a given amount of emissions requires that all sources clean up amounts that cause their marginal cost of abatement to be equated. To achieve this, the standard economic policy prescription would be a market-based instrument, such as a tax on emissions or a tradable permit system for emission rights. In the absence of uncertainty, the efficient level of abatement could be achieved under either policy, although the distributional effects of tax and emission trading policies would be very different.

Under uncertainty, however, the situation becomes more complicated. Weitzman (1974) showed that taxes and permits are not equivalent when marginal benefits and costs are uncertain, and that the relative slopes of the two curves determine which policy will be better.[9] Emission permits are better than taxes when marginal benefit schedules are steep and marginal costs are flat: in that situation, it is important to get the quantity of emissions down to the threshold. A permit policy does exactly that. In the opposite situation, when marginal costs are rising sharply and marginal benefits are flat, a tax is a better policy. The potential inefficiency of a permit system under uncertainty is not just a theoretical curiosity: it is intuitively understood by many participants in the climate change debate by the expression of the concern about a policy that 'caps emissions regardless of cost'.

Applying this analysis to climate change shows that, because of the uncertainties surrounding climate change, a tax is likely to be far more efficient than a permit system. All evidence to date suggests that the marginal cost curve for reducing greenhouse gas emissions is very steep, at least for developed countries. Although the models show considerable disagreement as to how expensive it would be to achieve a given reduction in emissions, all models show that costs rise rapidly as emission targets become tighter. At the same time, the nature of climate change indicates that the marginal benefit curve for reducing emissions will be very flat.

Although a tax would be more efficient than a permit system for controlling greenhouse gas emissions, it is a major political liability in that it would induce income transfers from firms to the government, and the amounts would probably be perceived as unreasonably large. In particular, firms would end up paying far more in taxes than they spent on reducing emissions, because a tax is levied on all emissions, not only those that are removed at the margin. As a result, the transfers would dominate the political debate and would give firms a powerful incentive to fight the proposal. The political problem is not just that firms dislike paying taxes; rather, it is that the transfers would be so much larger than the abatement costs that they would completely dominate the political debate.

Given the advantages and disadvantages of the standard economic instruments, is it possible to combine the attractive features of both systems into a single approach? Further, is it possible to develop a system that is common in philosophy across developed and developing economies but in which developing economies do not incur short-run costs to the economy in the form of higher energy prices until they have the capacity to pay?

Any climate change regime should include several goals. First, there is a need to recognise the trade-off between economic efficiency and equity within and between countries. Second, there is a need to recognise that policies should be based on clear property rights over emissions and clear long-run emission

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targets, but on near certainty in the short-run costs to the economy. Third, a sensible climate policy should create domestic institutions that allow people to self-insure against the uncertainties created by climate change. Fourth, there should be market mechanisms that give clear signals about the current and expected future costs of carbon. Fifth, countries should encourage, as much as possible, the creation of self-interested coalitions that will keep climate change policy from collapsing, rather than focusing on the creation of a system that survives only through the imposition of effective international sanctions.

The McKibbin–Wilcoxen blueprint (McKibbin and Wilcoxen 2002a, 2002b) was created explicitly to deal with these issues. It is a hybrid system that blends the best features of taxes and emission permit trading.[10] It can be applied across developed and developing countries, but it recognises that developing countries should not bear the same economic costs as industrial countries in the short run.

The approach is set out in detail in McKibbin and Wilcoxen (2002a), but it will be briefly outlined here. The basic idea is that governments in each country impose a requirement that energy producers have an annual emission permit to produce energy each year, based on the carbon content of that energy. The government would create a fixed quantity of perpetual permits that allow a unit of emission every year for 100 years. These would be traded in a market with a flexible price. The government would also be able to create additional annual permits in any year at a guaranteed price. Permits that satisfy the annual constraint for energy production could be either a perpetual permit or an annual permit provided by the government at a fixed price. The price of emissions in any year would never be higher than the fixed price set by the government, and the amount of emissions in any year would be whatever the market delivers. Thus we have a long-term target in terms of emissions but an annual target in terms of the maximum cost of carbon to industry. In a developing country like Indonesia, the annual price would initially be zero if we allowed an allocation of perpetual permits well in excess of current emissions. However, the price of perpetual permits would reflect the expectation that Indonesia would eventually reach the emission levels that caused the carbon emission constraint to be binding. Thus the perpetual permit market with positive prices would provide a financial incentive for Indonesia to begin to change its carbon emissions over time, even though a carbon permit would initially have zero annual cost to industry.

The attractiveness of this blueprint for creating institutions that aid economic development in developing countries should not be underestimated. The ability of investors in energy systems to effectively hedge their investment over a long period should prove very attractive for the development of energy systems in developing countries. The timeframe of the assets whose creation we propose (by committing to a global climate regime) is currently unparalleled.

Indonesia could use the new asset as a way of attracting foreign investment and enhancing the development process by creating what is effectively a futures market in energy. This is far more likely to induce foreign investment than the CDM or similar mechanisms that face very high administrative costs. Critics might argue that Indonesia would be unable to create the sorts of institutions such a scheme would require. This may be a problem in the near term, but it would be easier for Indonesia to create property rights and institutions within the country in accordance with its characteristics as a developing country than to impose within it the sorts of institutions and property rights that would be required under the Kyoto Protocol if Indonesia were to sell carbon rights into a global market. The difficulty in implementing the Kyoto Protocol outside the existing small group of industrialised countries with similar institutional structures arises exactly because of the difficulty of achieving the required global synchronisation of property rights in a form that acknowledges the problems experienced in developing countries in the area of property rights.

Indonesia could adapt the system proposed above to include a mechanism for creating credits to maintain and enhance its forests. Introducing property rights into forest management and providing a direct market incentive for managing forests is likely to be the only credible way to reduce the startling decline in forest cover in Indonesia.[11] By combining both carbon emissions and forestry directly in a system with clear property rights, Indonesia could make substantial progress in solving some of its longer-term environmental issues while at the same time creating institutions to assist in economic development and, in particular, encourage foreign direct investment.

SUMMARY AND CONCLUSION

This chapter summarises the outlook for the global economy and raises several important potential problems facing Indonesia as well as other countries in the Asia–Pacific – high oil prices, an adjustment to trans-Pacific trade imbalances and a return of world real interest rates to more reasonable levels. It also highlights several important environmental issues facing Indonesia which have both local and global implications.

The chapter outlines a domestic response that Indonesia could work towards to address the issues of forest degradation, carbon emissions and black carbon emission reductions within a single framework. It argues that Indonesia could implement policies such as the McKibbin–Wilcoxen blueprint as part of a broader strategy of actions to both price future carbon emissions and encourage more sustainable economic development. Such a policy should be an attractive option for Indonesia because it encourages the development of institutions to manage risk, as well as demonstrating a clear commitment to effective action

against future carbon emissions. If the policy was successful in both stimulating foreign investment in energy development and reducing the rising trend of greenhouse emissions through market-based incentives based on the clear establishment of property rights, the demonstration effect across the developing world would be powerful. It would certainly invalidate arguments by countries like the United States and Australia that they should not be required to take action on carbon emissions because developing countries have not made binding commitments. That alone would probably reduce greenhouse gas emissions significantly in future decades.

The alternative strategy for Indonesia is to wait for a resolution of the stalemate over an effective Kyoto Protocol, and to wait for large sums of financial assistance to accompany the transfer of energy technology from the industrial economies though some other Kyoto-like endeavour. This will be a very long wait if past experience is any guide. But delaying action ignores the fact that Indonesians are already making decisions on long-term energy investments, with very few incentives for them to move away from reliance on the country's abundant, low-cost fossil fuels. If the creation of a framework for committing to action on climate policies is delayed, the Indonesian economy could suffer unnecessary structural shocks caused by an eventual need to adapt to the realities of a world with serious climate problems. Indonesia could implement the McKibbin–Wilcoxen blueprint unilaterally without an international agreement, although it could make the policy consistent with Kyoto-style systems if necessary. The approach has many advantages, including a great deal of flexibility for adaptation as the world learns more about the threats and challenges of climate change.

NOTES

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1 See WRI (2004) for an overview.

2 Further details on the Kyoto Protocol can be found later in this chapter.

3 By the second quarter of 2004 this figure was closer to 5.7 per cent of GDP.

4 For an overview of Indonesia's energy profile, see Resosudarmo and Tanujaya (2002).

5 See Resosudarmo, Subiman and Rahayu (2000) for a discussion of marine resource depletion in Indonesia.

6 See McKibbin and Wilcoxen (2002a) for a summary of the negotiations and a critique of the approach.

7 Earlier estimates of the cost of Kyoto can be found in Weyant (1999). Direct comparisons of the versions of the protocol from the third and seventh conferences of the parties can be found in Bohringer (2001), Buchner, Carraro and Cersosimo (2001), Kemfert (2001), Löschel and Zhang (2002) and McKibbin and Wilcoxen (2004).

8 See McKibbin and Wilcoxen (2002a) for a survey and Pezzey (2003) for a comparison of taxes and permits.

9 See also Pizer (1997) for a more recent discussion of the issue.

10 The intellectual idea actually dates back to Roberts and Spence (1976) for general environmental policy and McKibbin and Wilcoxen (1997) for climate change policy.

11 See Chomitz and Griffiths (1996) for a discussion of the causes of deforestation in Indonesia.

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