

The Environment, Climate Change and Natural Resources in Southeast Asia

Issues and Challenges

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The environment, climate change and the management of natural resources have been taking centre stage with policy-makers and governments in Southeast Asia. It is now recognized that environmental degradation cannot continue unabated over the long term. It is already affecting countries, their economies and communities. Economic and social well-being will depend on how well environmental resources are managed.

Concern for the environment was well documented in the *Third ASEAN State of the Environment Report 2006: Towards an Environmentally Sustainable Community* (SOE 2006).¹ In this report, ASEAN leaders stressed that the resources used to fuel economic growth have to be utilized in a sustainable manner, in order to ensure that prosperity in the region will be durable. ASEAN leaders have also acknowledged that sustainable development, with a dynamic and mutually supportive balance between economic growth, social equity and environmental integrity are to be the guiding principle to establish the ASEAN Community.

One way to achieve this balance would be by reconciling economic-environmental trade-offs within the social setting in public policy making.

Due consideration must be paid to protecting the environment and its natural resources by ensuring that resources are used in a way that benefits society as a whole, not just private interests. To do this, we need an accurate assessment of the value of environmental goods and services to society.

ASEAN faces enormous challenges. Besides ongoing efforts at economic integration and political cooperation, and the high poverty incidence in Cambodia, Lao PDR, Myanmar, the Philippines and Vietnam,² there is a need to redress environmental problems like air and noise pollution, sewage disposal and management, traffic congestion, land degradation and deforestation, the depletion of natural resources and biodiversity, damage to marine and coastal ecosystems, depletion of the ozone layer and excessive emissions of greenhouse gases.

Managing environmental resources is not easy. Markets normally do a good job of dealing with scarcity — as things become scarcer, their prices increase, people consume less of them and producers invest more in producing them. However, this does not happen when environmental goods become scarce, because few of them are bought or sold in markets. Many are

also subject to misguided government policies that encourage environmental destruction by, for example, subsidizing energy consumption, over-fishing and deforestation.

Environmental economics can help us to recognize the economic cost and causes of environmental depletion and so help us to react quickly — by strengthening property rights (either private or community-based), applying corrective taxes and so on. Economics can also help us design environmental laws that incorporate workable economic incentives and that, therefore, have a good chance of affecting behaviour.

Conversely, environmental economics can reveal the full environmental costs of human activity. By assessing such costs and incorporating them into the prices of goods, we can use market forces to bring about environmental protection: If we all had to pay the full environmental cost of our activities, we would soon learn to conserve resources and to consume in less damaging ways.

The papers in this special issue deal in varying degrees the need to “price” environmental resources. They also address some of the issues identified in the SOE 2006. Specifically, they use economic analysis to examine issues surrounding climate change, environmental degradation and the depletion of natural resources. The authors have been given a free hand to approach these issues from a quantitative or qualitative perspective, and on any aspect of the environment, provided they focus on ASEAN as a region or on ASEAN member countries.

These papers report the findings of a series of research projects financed by the Economy and Environment Program for Southeast Asia (EEPSEA). EEPSEA was established in May 1993 to support training and research in environmental and resource economics. Its goal is to strengthen local capacity for the economic analysis of environmental problems so that researchers can provide sound advice to policy-makers. The programme uses a networking approach to provide financial support but also meetings, resource persons, access to literature, publication outlets, and opportunities for comparative research across its member countries. Such countries include

Thailand, Malaysia, Indonesia, the Philippines, Vietnam, Cambodia, Lao PDR, China and Papua New Guinea. EEPSEA is a project administered by the Singapore office of the International Development Research Centre (IDRC) on behalf of the Sponsors Group. The latter currently includes IDRC, the Canadian International Development Agency (CIDA) and the Swedish International Development Cooperation Agency (Sida).

Climate Change

The SOE 2006 report highlighted that climate change is a serious environmental challenge facing the region and is perhaps going to become the critical global challenge of the twenty-first century. All countries in ASEAN, except Brunei Darussalam, have ratified and acceded to the Kyoto Protocol, which aims to reduce global greenhouse emissions and address the issue of global warming. Total emissions from ASEAN are still very much lower than most developed countries (7 per cent of that of Europe, and 12 per cent of that of North America); however, emissions are increasing at a rate of 6 per cent per annum³ or about six times faster than in developed countries. Countries in ASEAN have also been actively participating in the Clean Development Mechanism under the Kyoto Protocol where developed countries invest in greenhouse gas reduction projects in developing countries to obtain carbon credits. This enables technology transfer and at the same time promotes sustainable development in developing countries.

ASEAN governments, have signed the “ASEAN Declaration on Environmental Sustainability” and the “ASEAN Declaration on the 13th Session of the Conference of the Parties to the UNFCCC and the 3rd Session of the CMP to the Kyoto Protocol” during the ASEAN Summit which was held in Singapore from 18 to 22 November 2007. Both are forward-looking documents which renew ASEAN’s commitment to protect the environment and to mitigate the negative impacts of climate change. These declarations were signed on 20 November 2007.

The ASEAN Declaration on Environmental

Sustainability detailed the initiatives that ASEAN countries will be adopting to tackle the environmental challenges in the region like water and haze pollution, conservation, management of forests and the grave issue of climate change. In the same meeting, ASEAN leaders have re-emphasized the need to honour and implement commitments to multilateral and regional sustainable development and environmental agreements, and to intensify regional and international cooperation in promoting, sharing and implementing environmentally sustainable practices.

The second declaration, the “ASEAN Declaration on the 13th Session of the Conference of the Parties to the UNFCCC and the 3rd Session of the CMP to the Kyoto Protocol”, pledges ASEAN members’ support for the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol.

Also the “Singapore Declaration on Climate Change, Energy and the Environment” signed by ASEAN Leaders together with leaders from India, China, South Korea, Australia, Japan, and New Zealand during the East Asia Summit pledged action to control greenhouse gas emissions. This declaration, signed on 21 November 2007, is significant as it includes both China and India, countries which have so far resisted calls to curb emissions. China went a further step ahead and pledged to make more efficient use of energy. However, the decision not to include numerical targets for carbon emissions reductions raises questions about the effectiveness of the agreement to respond decisively to the climate change threat.

In this special issue, the paper by Herminia Francisco explores the opportunities for adaptation that countries in Southeast Asia could use to reduce the adverse impacts or to take advantage of the opportunities offered by such changes. The paper also explores the funding sources through the Global Environment Facility (GEF) for adaptation. Adaptation measures could take the form of shifting planting calendars, purchasing insurance, or investing in new infrastructure to control floods. The paper concludes by recommending policy measures that Southeast

Asian governments could explore to address the challenges of climate change.

Erwin L. Corong asks whether global warming can be tackled and trade expanded without adversely affecting impoverished communities; in this case, in the Philippines. This is crucial, since there is often a perception that environmental protection must be forgone for economic growth and development. The paper examines two issues: First, have tariff reductions resulted in higher carbon emissions? Second, would the imposition of a carbon tax to restrain carbon emissions harm firms, households, and the government? The paper shows that tariff reductions have the potential to improve the economy by providing cheaper inputs and gearing the economy towards an outward-oriented manufacturing sector. The revenue gained from the carbon tax could also be used to offset the foregone tariff revenues and to reduce household income taxes, producing welfare increases for households. This would result in an improvement in the economy as well as satisfying the environmental objective of reducing greenhouse gas emissions.

Using fuel efficiently assumes greater importance now that climate change has gained centre stage in world affairs. It has often been argued that an efficient use of natural resources requires that prices reflect their scarcity values. The benefits have been widely recognized, but there has been debate on whether the reform has been equitable across the different segments in society. In the case of Indonesia, fuel pricing reforms had consequences in terms of impact on the various segments of households. In the paper, “Mitigating Distributional Impact of Fuel Pricing Reform: The Indonesian Experience”, Arief Anshory Yusuf and Budy P. Resosudarmo examine the impact of the distributional impact of fuel pricing reform across households, using Computable General Equilibrium Modelling, and lessons which can be learned from this experience.

Deforestation and Conservation

The Association of Southeast Asian Nations (ASEAN) contains about 25 per cent of the

world's forests. In 2005, 45 per cent of ASEAN's land area was covered in forests. In recent years (2000–2005), the rate of deforestation has been estimated at 1.35 per cent in ASEAN. Though this is lower than previous years, ASEAN still has the highest rate of deforestation compared to the rest of the world, which is only 0.2 per cent per year.⁴

To put this more concretely, nearly one-third of the forests in Cambodia, Vietnam, and Lao PDR have disappeared in the last twenty years. Forested area in Vietnam has declined from 44 per cent of land area in 1943 to 23 per cent in 1984. Most of this has been caused by land clearance for agriculture and by logging.

The loss of forest habitats compromises biodiversity in the region. ASEAN has 20 per cent of the world's known species while only occupying 3 per cent of the world's total land area. Three of the world's seventeen mega-diversity countries are located in ASEAN — Indonesia, Malaysia, and the Philippines. There are 27,100 endemic species in the region, of which 86 per cent are endemic plants, 4 per cent are butterflies, 3 per cent are freshwater fish, and the remaining 7 per cent are birds, amphibians, mammals, reptiles and dragonflies/damselflies. There are also twenty-seven Heritage Parks in ASEAN (SOE 2006).

The study by Bui Dung The and Hong Bich Ngoc assesses the potential for the “payment for environmental services” (PES) conservation approach in Vietnam. In this approach, the beneficiaries of an environmental service (such as watershed protection) pay fees to upstream communities to undertake activities that will protect the resource (for example, through agricultural practices that minimize soil erosion). In the area of Vietnam where PES was conducted, there was a reduction in both soil erosion and in destructive natural forest extraction activities compared to non-PES areas. This study illustrates an instance where pricing an environmental benefit has served to reward and incentivize groups to undertake conservation and protection measures. In view of the fact that the Reducing Deforestation in Developing Nations (REDD)

scheme was proposed at the Bali Meeting in December 2007 for alleviating greenhouse gas emissions, the potential for sourcing finance for preventing deforestation now seems even more promising for Vietnam.⁵

Pricing conservation helps to attach a value to a resource which often goes unaccounted for in the market. This, in turn, places conservation on a more equal footing with resources that are marketed and priced. In terms of species conservation, the study by Orapan Nabangchang et al. attempts to put a price on marine turtles using the Contingent Valuation Method (CVM) to assess the willingness of Asians to pay for the conservation of such amphibians across several countries. Information was provided on the importance of marine turtles to coastal and ocean ecosystems, the threats and risks of extinction, and a hypothetical marine conservation programme was constructed. Respondents were then asked if they would contribute to the programme by paying a monthly surcharge on their electricity bills for a period of five years. The values expressed were relatively low, highlighting the need for continued international support for conservation.

Economic Activities and Environmental Impacts: Coal Mining, Pollution and Waste Management

Economic activities often generate unintended impacts on the environment, including externalities or effects on third parties. It is important to manage such impacts, and to internalize these impacts into the decision making of the parties generating the impact.

ASEAN member countries have taken measures to deal with air pollution; air quality standards and monitoring are in place in most member countries. Most ASEAN countries have also taken steps to ensure that fuels used in industries and motor vehicles do not produce excessive amounts of air pollutants that will adversely affect the health of people and the quality of the environment. The following two papers deal with pollution caused by mining and electricity production respectively.

The mining of natural resources provides economic benefits but at times may also result in higher levels of air and water pollution. Such is the case of coal mining discussed in this volume. The paper by Luthfi Fatah examines the positive economic impacts of coal mining on the South Kalimantan Province while also considering the externalities generated by such activities. Coal mining is a profitable activity in the province but it has generated negative externalities in the form of dust and dirt. The paper assesses the economic benefits generated by coal mining (value-added and economic linkages) and explores possible scenarios for producing coal with the least negative impacts on the environment.

A study of the impact of electricity production via coal production and its negative impacts (emissions of sulphur dioxide) by Varaporn Punyawadee et al. examines the impacts of Flue Gas Desulfurization (FGD) systems on power generating plants in Thailand via benefit-cost analysis (BCA). Using BCA, the authors show that it may not be economically feasible to install FGD at all power-generating units at the Mae Moh power plant. However, on non-economic grounds (uncertain environmental risks and future public trust), it has been possible to justify such investments. On a unit cost front, FGD investments are still cheaper than electricity produced by natural gas and fuel oil.

In 2001, five countries in ASEAN (where data is available) indicated that there were over 71.3 million tonnes of municipal solid wastes (MSW).⁶ Solid waste collection is expensive largely

because of the costs of transporting such wastes. The study by Antonio Corinthia Naz and Mario Tuscan Naz on Tuba Municipality in the Philippines explores how local government in the Philippines might organize and finance solid waste management to meet stricter new standards. In this instance, the choice modelling (CM) method was used to put a price on consumer's willingness to pay for solid waste collection and disposal. Households agreed that a user fee was a good way to finance the service and that solid waste disposal was the top environmental problem in the Philippines. They were, however, only willing to cover about 22 to 35 per cent of the costs. Policy-makers will need to make trade-offs between the provision of solid waste disposal and other social services like education, health care and infrastructure.

Concluding Remarks

The articles in this volume provide insights into the challenges of managing environmental resources. The difficulty of pricing such resources remains an important reason for market failure. Economists have developed methods to price such resources. Several of the studies here provided useful insights into how values can be attached to environmental resources in real world situations. They also reveal insights into the difficulties of putting policies into practice. It is hoped that this volume will lead to further research that proves practical solutions to the region's environmental problems.

NOTES

1. *Third ASEAN State of the Environment Report 2006: Towards an Environmentally Sustainable Community* (Indonesia: ASEAN Secretariat, 2006).
2. At least 27 per cent of their populations are below their respective national poverty line measures. See *ibid.*, p. 18.
3. *Ibid.*, p. 95.
4. *Ibid.*, pp. 56–57.
5. “In Bali, New Incentive for Developing Nations to Curb Emissions”, *Christian Science Monitor*, 14 December 2007. <<http://www.csmonitor.com/2007/1214/p01s03-wogi.html>> (Accessed 15 February 2008).
6. *Third ASEAN State of the Environment Report 2006: Towards an Environmentally Sustainable Community*, p. 70.

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