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Axel Michaelowa*

Economic Growth in South East Asia and its Consequences for the Environment

The debate on environmental policy generally focuses on the industrialized countries. It is often neglected that rapid economic growth in the newly industrializing countries is certain to lead to the rise of environmental issues on a large scale.

Especially Eastern and South East Asia will witness major environmental degradation in the next few decades unless appropriate environmental policy measures accompany further economic growth.

South East Asia encompasses the countries of the ASEAN: Brunei, Indonesia, Malaysia, the Philippines, Singapore, Thailand, as well as Cambodia, Laos and Vietnam. These countries are culturally, politically and economically very diverse – Thailand is a Buddhist kingdom, Brunei a wealthy oil sultanate,¹ Malaysia an Islamic federal monarchy, Singapore an authoritarian city state, the Philippines a predominantly Catholic landholder aristocracy and Vietnam a socialist state. Their per capita income also differs sharply (cf. Figure 1).

Western democracy has only superficially rooted in the region. So far the prevailing regime type is growth-oriented and technocratic-authoritarian, a type which only slowly changes towards more participatory structures. In such systems, environmental policy often takes a back seat. Nevertheless, when a regime recognizes that environmental policy is becoming very important, quick shifts occur and innovative approaches are taken, as the Singapore example shows.

The economic growth rate of the region has been on a high, sustained level for the last two decades. From 1983 to 1993, all countries with the exception of the Philippines and Laos achieved annual growth rates of more than 5%, with Thailand at 8.8% and Singapore at 6.9%.² In recent years, even double-digit rates have been achieved. Still, the GDP of the whole region is only a quarter of the German GDP. As population growth has never reached very high values in the region, per capita incomes have also risen quickly. With growing affluence, population growth rates have fallen drastically. Thailand reduced its rate

from 1.8% in the first half of the 1980s to 1.1% in the first half of the 1990s. Indonesia managed to reduce its rate by 0.5% and thus reached the world average of 1.6% though its per capita income is still very low. Even the Catholic Philippines have lowered their rate by 0.4% to 2.1%.³

Another indicator of overall progress is the rise in life expectancy. While the world average has risen by 6.8 years from the first half of the 1970s to the first half of the 1990s, in seven out of eight South East Asian countries this figure has been surpassed. Vietnam, Indonesia, Cambodia and Laos have even managed to raise life expectancy by more than 10 years.⁴

Strong Rise of Agricultural Production and Inputs

Agricultural productivity has risen dramatically – in both the food and nonfood sectors. While Malaysia doubled per capita food production between 1979-81 and 1992-1994, Indonesia raised it by 40%, Cambodia by 33% and Vietnam by 28%. Only Thailand and the Philippines remained below the world average rise of 5%.⁵ This success was possible only through an enormous intensification of agriculture. Average fertilizer use has exploded (cf. Figure 2).

This development has become possible through subsidies for fertilizers and pesticides. In Indonesia

¹ Brunei is very small (population 275,000 with a per capita GDP of about US\$ 17,000) and will therefore not be analyzed in the following text.

² See World Resources Institute: World Resources 1996-1997, Washington 1996, p. 167.

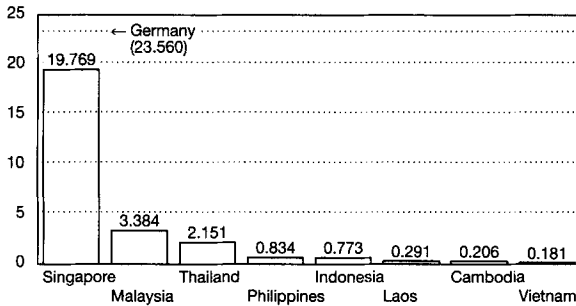
³ Ibid., p. 191.

⁴ Ibid., p. 193.

⁵ Ibid., p. 239.

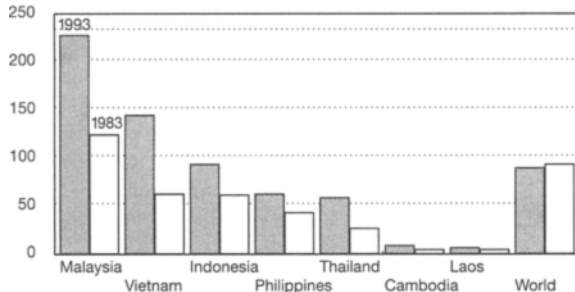
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Figure 1
Per Capita GDP 1993
(in thousand US\$)



Source: World Resources Institute: World Resources 1996-1997, Washington 1996, p. 167.

Figure 2
Fertilizer Use, 1993 and 1983
(kg per hectare)



Source: World Resources Institute, op. cit., p. 240f.

they rose from US\$ 330 million in 1983 to US\$ 640 million in 1986. It is certain that nitrate pollution will play a major role in the region in the near future.

In the future, food production and self-sufficiency could be influenced by the growing demand for meat (cf. Table 1).⁶

Rise of Industrial Production

The extent of industrial growth can be illustrated by the following data: In the period from 1965 to 1990 industrial production in Indonesia multiplied by a factor of 15.7, in Thailand by 10.7, in Malaysia by 7.9

⁶ See N. Holloway: No pain, no grain, in: Far Eastern Economic Review, 16. 11. 1995.

⁷ See C. Brandon, R. Ramankutty: Toward an environmental strategy for Asia, World Bank Discussion Paper 224, Washington 1993, p. 65.

⁸ Ibid., p. 68.

⁹ See World Resources Institute, op.cit., p. 287.

¹⁰ See W. Barnes: Dash to dam the Mekong raises ecology fears, in: Financial Times, 14. 12. 1994.

¹¹ See T. Lefèvre et al.: Synthesis report on cross country comparisons of energy efficiency indicators in Asian countries, in: Revue de l'Énergie, No. 470, 1995, p. 608.

Table 1
Percentage of Cereal Production Fed to Animals

Country	1994	1974
Malaysia	46	3
Thailand	30	4
Philippines	25	12
Indonesia	9	2
World	38	38

Source: World Resources Institute, op.cit., p. 242f.

and even in the Philippines by 3.4, while in Germany it grew only by 50%.⁷ Moreover, industry is strongly centralized. In 1989, 62% of Indonesian industrial production took place on 10% of its area.⁸ In Thailand the centralization in the Bangkok area is even worse.

Energy Production and Consumption

In the last 20 years, the energy consumption of South East Asia more than tripled and its share of world energy consumption grew from 0.9 to 2.2%.⁹ In the same period the production of fossil fuels was stepped up on a massive scale. Natural gas has become an important energy source. "Modern" renewables play a minor role with the notable exception of the Philippines where the share of geothermal energy is three quarters of domestic energy production (which satisfies only 30% of energy consumption). Hydropower has been expanded, but only in Laos does it provide a major share of energy production. There are plans to build 58 dams on the Mekong and its tributaries by 2020 which are to generate 37 GW of power.¹⁰

Energy intensity has been rising in all South East Asian countries in recent years, especially after the oil price decline in 1986.¹¹ Moreover, electricity consumption grows at twice or triple the GDP growth rate as biomass is substituted by commercial energy.¹² This is enhanced by subsidies for electricity and fuels in all states except for the Philippines.¹³

Transportation

In Indonesia the car number grew almost fourfold from 1983 to 1993 while in Thailand it nearly tripled and in the Philippines it grew by 50%. Moreover, the energy intensity of transport grew quickly over the last

¹² For example in the last decade the Indonesian electricity consumption growth rate was 13%, double the GDP growth rate (see J.-Y. Garnier: Rapide panorama de l'énergie et des problématiques énergétiques de l'ASEAN, in: Revue de l'Énergie, No. 470, 1995, p. 498).

¹³ See V. Krishnaswamy: Financing of power energy investments in the Asia Pacific region, in: Revue de l'Énergie, No. 470, p. 542.

15 years in the Philippines and more slowly in Indonesia while it remained constant in Thailand.¹⁴

Motorization has become a major problem for the big cities of the region. As they have always been settled densely and never been planned for intense wheeled traffic, roads are inadequate. In Bangkok, there is only a third of the road space per square kilometer compared to European cities.¹⁵ So it is not surprising that average car speed in Bangkok is 5 km per hour. In Singapore it is still 30 km/h because of a very restrictive transport policy using very innovative measures.¹⁶ It is the world's strongest policy concerning the internalization of the externalities of car traffic. Since 1975, cars entering the city centre during the daytime have to pay a fee of, currently, US\$ 2. In 1997, a countrywide system of electronic road pricing will be introduced. If you want to buy a new car, you have to pay 100% luxury tax and bid for a certificate of entitlement, which is auctioned by the transport ministry. The number of certificates is limited to reduce the growth of car numbers to 2.7% per year. The price of a new car is thus about four times the price in car producing countries – e.g. a new Japanese compact car costs about US\$ 100,000 (cf. Figure 3).

Cars have to be equipped with a catalytic converter and must be scrapped after 10 years or sold abroad. The annual revenues of the transport ministry are almost US\$ 3 billion, which are invested in the extension of public transport. The target is to keep the ratio of cars to people, which is currently 0.1, below 0.14 in 2010.¹⁷

Air and Water Pollution and Waste

It is no surprise that the capitals of ASEAN countries are among the most polluted in the world. Concerning dust, in 1988 Jakarta, Bangkok and Kuala

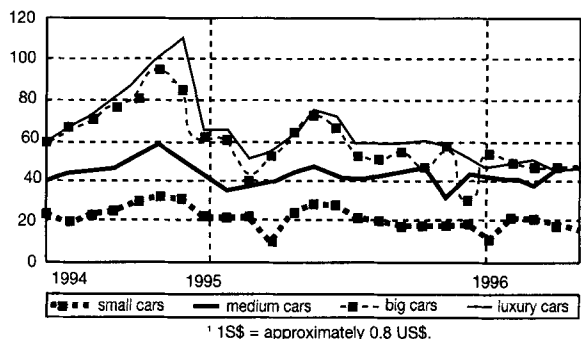
Lumpur belonged to the 15 worst polluted cities and concerning SO₂ Manila was on this list. Annual costs are estimated at US\$ 1-3 billion for Bangkok and US\$ 0.4-0.8 billion for Jakarta. Lead poisoning leads to an average decrease of the IQ ratios of Bangkok children by 3.5 points and annually kills 200 to 400.¹⁸

Generally, South East Asia is well-endowed with water resources. Nowhere is the utilization ratio at a dangerous level. Nevertheless, the available water is endangered by local overutilization and industrial and agricultural pollution. In Bangkok, the ground water table sank by 50 metres between 1955 and 1982, which led to a subsidence of 0.6 metres. Brack water enters existing wells and makes them unusable. Similar problems occur in Jakarta and Manila.¹⁹

Only 2% of Indonesian tanneries treat their effluents according to the legal standards.²⁰ Therefore, chromium emissions are 35 times greater than the legal standard. Similar conditions apply to other industries. In cases of catastrophic pollution, the authorities have managed to get the worst polluters to adhere to the standards. These measures were very discretionary, though, and did not improve the situation in the long run. In Malaysia, on the contrary, the introduction and stepwise increase of effluent charges led to a 90% reduction in effluents from the palm-oil industry. This was due to a strict effluent control which was accompanied by an intense dialogue with industry including research cooperation on filters.²¹

Solid waste is on the rise and in the major cities quantities are growing exponentially. In Singapore annual waste rose from 0.6 million t in 1972 to 1.2 million in 1982 and 2.3 million in 1992.²² In Bangkok, less than 50% of waste is collected by the

Figure 3
Prices for Certificates of Entitlement
June 1994-June 1996
 (in S\$' 1000)



Source: Singapore Department of Statistics: Monthly digest of statistics, February 1996, p. 77f., and June 1996, p. 78f.

¹⁴ See T. Lefèvre et al., op.cit., pp. 612, 617.
¹⁵ See T. Bardacke: Hell has gotten just a bit cooler, in: Financial Times, 26. 1. 1995.
¹⁶ See S. Rohmund, E. Krummheuer: Mit strenger Gebührenpolitik bremsst auch Singapur den Autostrom in die Innenstadt, in: Handelsblatt, 25. 1. 1994.
¹⁷ See P. Montagnon: Electronic pricing ahead, in: Financial Times, 8. 2. 1996.
¹⁸ See C. Brandon, R. Ramankutty, op.cit., pp. 22, 51f.
¹⁹ Ibid., p. 48.
²⁰ Ibid., p. 69.
²¹ Ibid., p. 83.
²² See R. Sathindrakumar: Environmental management for sustainable development: the Singaporean experience, Murdoch University Working Paper 99, Murdoch 1994, p. 9.

authorities.²³ So far, a lot of recycling takes place through the poor who sort the waste and try to find something they can sell. With rising incomes this type of recycling is likely to vanish.

Deforestation

The environmental problem in South East Asia which is best known to people from the industrial countries is surely the deforestation of tropical forests. In contrast to countries in Africa or Latin America, the major cause of deforestation in South East Asia is timber production (cf. Table 2).

The annual rate of deforestation in the 1980s reached 2.8% in Thailand and the Philippines, 1.8% in Malaysia and 1% in Indonesia.

Timber is a politically very sensitive issue in these countries. For example, politicians in the Malaysian state of Sarawak who were critical of the central government are reported to have been silenced by the allocation of timber concessions. 60% of Sabah state revenue is earned through forestry, 95% of which is generated through export taxes.²⁴ When the opposition won the state election, the central government reduced the export quota for roundwood, thus deliberately reducing state revenue.²⁵ In Indonesia, state control of the big timber companies leads to a deficient enforcement of the existing, quite strong forest laws. High quantities of dead wood left

**Table 2
Timber Production 1981/83-1991/93**

Country	Timber production 1991/93 (million m ³) (% of global production)	Growth 1981/83-1991/93 (in %)
Indonesia	185 (5.4)	26
Malaysia	53 (1.6)	31
Philippines	39 (1.1)	12
Thailand	37 (1.1)	10
Vietnam	33 (1.0)	25
Cambodia	7 (0.2)	38
Laos	5 (0.1)	42
World	3412 (100)	15

Source: World Resources Institute, op.cit., p. 220f.

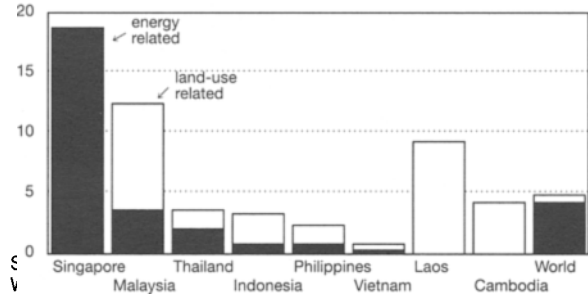
**Table 3
Soil Erosion**

Country	Eroded area (km ²)	Share of total area (%)
Indonesia	430,000	24
Thailand	172,000	34
Vietnam	159,000	50
Laos	81,000	35
Philippines	50,000	17

Source: C. Brandon, R. Ramankutty: Toward an environmental strategy for Asia, World Bank Discussion Paper 224, Washington 1993, p. 117.

Figure 4

Energy and Land-use Related per Capita CO₂ Emissions, 1992



by timber companies which have felled only a few valuable species, illegal extension of palm plantations, and slash-and burn agriculture led to disastrous forest fires on Borneo in 1982, 1987, 1991 und 1994. The biggest fires destroyed more than 50,000 sq.km. of primary forest.²⁶

Deforestation leads to soil erosion, the extent²⁷ of which is enormous. Often, the eroded lands are invaded by weeds, such as Alang-Alang in Indonesia, that prevent cultivation (cf. Table 3).

The overall environmental impacts of production and consumption in South East Asia can be seen in per capita CO₂ emissions (cf. Figure 4).

**Environmental Policy –
First Steps on a Long Road**

In recent years ASEAN heads of state have increasingly become active in the field of environmental policy. This is mainly due to pressures in the international negotiations leading to the Rio Conference in 1992. Moreover, reforms concerning environmental impact assessment in the lending rules of multilateral development banks in the late 1980s may also have had an influence. In 1994, a four-year environmental policy plan was passed which encompasses

- creation of environmental policy institutions,

²³ See C. Pilz: Ein grüner Masterplan ist nur ein Tropfen auf den heißen Stein, in: Handelsblatt, 14. 6. 1994.

²⁴ See M. Mohamed, T.-T. Chuan: Managing ASEAN's forests, in: M. Seda (ed.): Environmental management in ASEAN, Singapore 1993, p. 117.

²⁵ See P. Triantafyllou: Environmental politics in Asia, CDR Working Paper 95.3, Copenhagen 1995, pp. 9, 13.

²⁶ See K. Cooke, M. Saragosa: Indonesia's forest fires fan fury in Malaysia, in: Financial Times, 17. 10. 1994.

²⁷ See M. Mohamed, T.-T. Chuan, op.cit., pp. 120ff.

- harmonization of standards and regulations
- intra-regional cooperation (especially on bio-diversity),
- creation of an environmental data base
- special tariffs for environmental technology.

1995 was declared the ASEAN year of the environment. In 1997, a summit of ministers of the environment is to take place.

Environmental policies differ from country to country. Often laws sound good but enforcement is lacking. The role of the judiciary often is restricted.²⁸ Clientelist relations are often more important than written law.

Singapore is the most advanced of the ASEAN countries with regard to environmental policy. Its Ministry of the Environment was founded in 1972. In 1979 it was the first country of the region to specify energy efficiency standards for buildings, which resulted in savings from 6 to 10%.²⁹ Emissions are

monitored closely. Water treatment is complete. There has been the formulation of a decadal environmental protection plan which stresses environmental education, the setting up of a regional centre for environmental technology and the introduction of recycling.

Indonesia also started quite early in formulating its environmental policy. One reason is that the Dutch colonial government had already created many nature reserves in the 1920s and 1930s. In 1972 a commission was founded to tackle marine pollution. Six years later, the Ministry of the Environment was established, which worked out a basic environmental law which came into force in 1982. It states that growth and environmental protection shall be balanced. The law structures one of the most detailed and extensive environmental regimes in the Third World.³⁰ A positive sign of environmental policy is the cancellation of the pesticide subsidy in the late 80's and the introduction of integrated pest management.

Nevertheless, there are huge implementation problems. For example, in 1994 US\$ 175 million were taken out of the state reforestation fund to prop up the fledgling national aircraft industry. A suit to contest this by an environmental NGO was dismissed by the court of appeal. Many NGOs try to save at least something by quietly collaborating with the government.³¹ In the energy sector, an autonomous and commercially operating energy efficiency consultancy was founded in 1987 but almost bankrupted by 1992 because of management failures and low interest in energy efficiency because of low energy prices. In 1993 it was taken over by the

²⁸ Just recently, the Malaysian High Court ruled that there had not been a proper environmental impact assessment of the controversial Bakun dam in Sarawak, which will destroy 700 sq.km. of primary forest. Nevertheless the government and the contractor stated that there would be no delays in building the dam (see S. Kynge, S. Wagstyl: Court setback for \$ 5.5.bn Malaysian dam project, in: Financial Times, 20. 6. 1996.

²⁹ See B. Mohanty: Institutional experience of energy efficiency promotion in Asia, in: Revue de l'Énergie No. 470, 1995, p. 602.

³⁰ R. Boardman, T. Shaw: Protecting the environment in Indonesia: policies and programs, in: O. Dwivedi, D. Vajpeyi (eds.): Environmental policies in the Third World, London 1995, p. 98.

³¹ See M. Cohen: Cautious cooperation, in: Far Eastern Economic Review, 16. 11. 1995, pp. 67ff.

Thomas Wernicke

Privates Bankvertragsrecht im EG-Binnenmarkt

The European Community is increasingly developing into a Community of commercially relevant civil law. The focus of scholarly and practical interest is now on the structures of the "European civil law" which is developing in the form of a synthesis of national and European law. This monograph provides a thorough analysis of the law applicable as regards the law of contract on the banking industry, and particularly the law on card-controlled payment transactions, which is a highly advanced sector. Guidelines for the future development of the law of contract in the banking industry are developed on this basis, and they have a general importance, which goes beyond this particular field, for the future shape of civil law in the Community can scarcely be overestimated. This volume offers both guidance for the practitioner of banking law and suggestions for scholarly discussion on this important field.

1996, 184 pp., softback, 58,- DM, 423,- öS, 52,50 sFr, ISBN 3-7890-4130-0
(Studien zum Handels-, Arbeits- und Wirtschaftsrecht, Bd. 42)



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Ministry of Mining and Energy which had by 1991 assumed responsibility for energy saving.³² In 1991 an energy conservation master plan specified the target of reducing national energy consumption by 17% by 2000.

Thailand, which for a long time did not develop a domestic environmental policy, became very active after landslides and floods exacerbated by deforestation had killed hundreds of people in 1988. In 1989 commercial timber production was made illegal.³³ A new forest management plan has been developed which contains participatory elements, allocates forest revenues to the villages and sets high fees on deforestation.³⁴ A five-year plan allocates US\$ 1 billion to build waste incineration and water treatment plants. In 1992 catalytic converters were made compulsory for new cars. Nevertheless, Bangkok's traffic problems are becoming even worse as public transport plans have been delayed by financial and political problems. A ban on new cars has just been introduced. In the energy sector, there is a very promising demand-side management programme established by the Energy Conservation Act of 1992, which even extends to education. Its precursor began as early as 1982 but despite over 1000 company audits it achieved only a third of the economically appropriate savings. Therefore, in 1987 an Energy Conservation Centre was founded. The 1992 law provided for an Energy Efficiency Promotion Fund which is financed by a charge on petroleum products and generates about US\$ 100 million per annum.³⁵ Innovative approaches have evolved through a partnership between Thailand and the International Institute for Energy Conservation which has managed to introduce advanced lamp production technology.³⁶ Thailand also benefits from German technical aid.³⁷

The Philippines have pursued an active energy conservation policy from the beginning of the 1980s

³² See B. Mohanty, *op. cit.*, p. 596.

³³ Timber companies have moved to Myanmar, where they are engaged in clear-felling activities (see M. Seda: Global environmental concerns and priorities, in: M. Seda (ed): *Environmental management in ASEAN*, Singapore 1993, p. 4).

³⁴ See C. Erni: Neuer Plan zum Schutz von Thailands Wäldern, in: *Neue Zürcher Zeitung*, 30. 3. 1996.

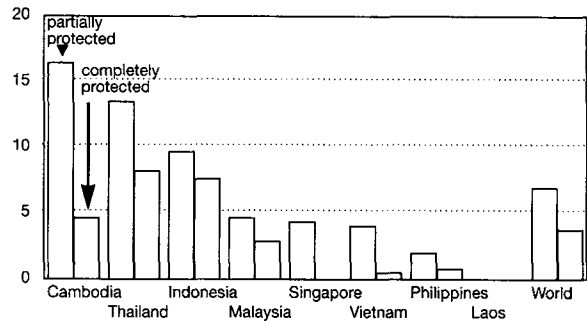
³⁵ See B. Mohanty, *op. cit.*, p. 599.

³⁶ See D. Lord, K. Opheim: The dealmaker model: opening doors and closing deals, in: *E-notes*, No. 2, 1994, p. A 4.

³⁷ See: Anonymous: Thai-German cooperation: helping the Thais help themselves, in: *E-notes* No. 1, 1995, pp.1, 4.

³⁸ See B. Mohanty, *op. cit.*, p. 598.

Figure 5
Nature Reserves
(% of Land Area)



Source: World Resources Institute: *op. cit.*, p. 262f.

and been relatively successful. Over 600 companies have been audited. Nevertheless, acceptance of energy conservation has been limited outside these companies. Therefore, a strong energy conservation act has recently been approved including the labelling of household appliances, the setting of building efficiency standards, the restructuring of electricity tariffs and the introduction of demand-side management. If the law is well-enforced, its effects could be considerable.³⁸

Concerning nature reserves, the ASEAN countries have set aside huge tracts of land – but whether nature protection is really implemented in the reserves remains an open question (cf. Figure 5).

Conclusion

On their way to industrialization, the South East Asian countries are starting to realize that environmental protection is not an unnecessary luxury. Several countries, especially Singapore and Thailand, have begun to implement vigorous environmental policies. Nevertheless, authoritarian structures reduce the accountability of governments to the general public and therefore favour interest groups from industry and forestry. Thus, the exploitation of forests and the violation of existing environmental regulations are accepted by the governments, whose members often directly profit from these activities. Even if these conditions are set to change with future democratization, income and production growth will face these countries with an enormous environmental challenge. Whereas domestic pollution is likely to be tackled in the medium term, contributions to global areas of concern such as climate change and destruction of biodiversity will increase strongly.