



ROUTLEDGE
HANDBOOKS



Routledge Handbook of Contemporary Malaysia

Edited by Meredith L. Weiss

Mainstreaming environment and sustainable development policies

Adnan A. Hezri

As a policy problem, sustainable development (or sustainability) is complex, unstructured and multilayered. It seeks to reconcile the ecological, social and economic dimensions of development, now and into the future. As such, the task of implementing sustainable development is somehow more comprehensive and demanding, and therefore more challenging, than implementing conventional development models.

Malaysia is no exception to the difficulty of implementing development from such a holistic framework. Over the last five decades, Malaysia has undergone rapid economic and social change, a process which is still continuing. While impressive economic achievement has advanced human development and reduced poverty, the pursuit of socio-economic progress has been accompanied by an unprecedented rate of change in the natural environment (Aiken and Leigh 1992; Kathirithamby-Wells 2005; Vincent and Ali 1997). This chapter describes Malaysia's approach in confronting the multifaceted challenges of sustainable development by surveying four thematic policy objectives. These are conserving the environment, merging environment and development, combating climate change, and building a green economy.

Conserving the environment

The earliest environmentalist thought revolved around forests and their preservation (Barton 2002). The forests are considered a wilderness area whose conservation is deemed important for scientific, aesthetic and economic values. The push for conservation was mainly sparked by rapid forest clearance for industrialisation in both the developed and developing countries in the early twentieth century.

By the late 1960s, the issue of environmental pollution and waste arising from industrial processes made the dramatic leap to the top of the political agenda in industrialised and industrialising countries. This shift set in motion the enactment of pollution control legislation to manage the release of chemicals into the natural environment. Malaysia has responded to calls both for nature protection and for pollution control.

Forests and wildlife protection

Until well into the nineteenth century, almost the whole of the Malay Peninsula, Sabah and Sarawak was covered in tropical forests (Aiken and Leigh 1992). These forests are a reservoir of biological diversity of rich flora and fauna (Shuttleworth 1981; Whitmore 1984), with more than 25,000 plant species (van Steenis 1971). Apart from serving as a habitat for wildlife, Malaysia's rainforests are a source of timber and other products – such as rattan and medicinal plants – that support the livelihoods of numerous communities. In view of its exceptional species diversity and richness, Malaysia is currently recognised as one of the world's twelve mega-diverse countries, where special attention is needed to arrest habitat loss (Myers 1988).

The country's rich natural endowment gives it a unique position on the global map of sustainable development discourse. Oftentimes, its rich biodiversity creates tension between conservation and development. The rapid loss of Malaysian rainforests over the past century has been closely linked to economic development. Not only were large areas of forested land cleared to make way for agriculture and rubber and oil palm plantations, but logging intensified in response to increasing demand for timber from overseas markets, especially after the 1970s. The area of arable land increased fivefold between 1900 and 1950 as forested land gave way to agriculture and rubber plantations, especially during the rubber boom of the early 1900s (UNEP 2002). New roads, tracks and settlements accompanied the development of plantations, which by 1940 covered 11 percent of Peninsular Malaysia (Aiken and Leigh 1992: 55). By the mid-1950s, rural development was being pursued with new vigour, involving ever larger conversions of forest.

The British colonial government established a professional forest service in 1901 with the creation of the Forestry Department. The Department was tasked to manage commercial forestry and to administer forest reservation areas for future timber production. The first wildlife reserve in Peninsular Malaysia was the Chior Wildlife Reserve in Kuala Kangsar, Perak, established in 1903 under the Wild Animals and Protection Enactment for the state of Perak. These policy instruments were put in place to control the rapid loss of forests in the early twentieth century. Following independence, the federal government established the National Forestry Council (NFC) in 1971 to coordinate development of the forestry sector in all the states. The National Forestry Policy was formulated and endorsed by the NFC and the National Land Council in August 1977. In 1972, the government passed legislation for fauna protection, the Protection of Wildlife Act. The Act had identified 700 mammals and bird species under 'totally protected' and 'protected' categories. This was an important decision because wildlife was increasingly being seen as pests by planters and therefore hunted and killed indiscriminately. The Act empowers the Department of Wildlife and National Parks (DWNP) to be responsible for the management and protection of Wildlife Reserves gazetted by the state governments under the Act, as well as those created under previous state ordinances, and to promote fauna protection on public as well as private land.

Despite legal and administrative consolidations in the 1970s, the magnitude of environmental impacts continued to worsen. Inevitably, the tension between short-term economic gains and conservation strategies for long-term productivity became clearer. As a result, civil society organisations began to voice their concerns nationally and internationally, marking the start of the non-governmental environmental movement and 'environmentalism' in Malaysia (see Consumer's Association of Penang 1978; Sham 1993; Singh 1979).

Pollution control

Apart from timber resources, the forests also provide ecosystem services, such as maintaining a steady supply of fresh water, protecting soil from erosion and nutrient loss, regulating local climates and serving as carbon sinks. The ecological effects of forest clearing include high sediment loads in rivers from soil erosion and the pollution of river systems with effluent discharged from rubber and palm oil mills. These pollutants have a high organic content, and have been estimated to account for 90 percent of the total industrial pollution load of local rivers (Abdullah 1995).

Guided by the idea of limits, the federal government formulated a legal framework for pollution control, the Environmental Quality Act (EQA) 1974. This statutory provision was supported by the following actions: the creation of a national environmental agency, the Department of Environment, and a council of environmental experts, the Environmental Quality Council, in 1975; and the establishment of an environment portfolio in 1976. By global comparison then, Malaysia can be considered as one of the pioneers in environmental policy institutionalisation (see Hezri and Hasan 2006).

From late 1977, in response to a growing pollution load, the Environmental Quality Act 1974 was amended several times, to provide more specific regulations for the implementation of its general framework. These amendments included sectoral command-and-control regulations for prevalent pollutants and discharge fees, applied since 1978 to contain water pollution from palm oil mills (Panayotou 1994). Regulation remained the main policy instrument under the EQA, amplified with, for instance, controls on noise pollution in 1988, scheduled toxic wastes in 1989 and marine pollution in 1993.

Despite its laudable efforts, the effectiveness of the DOE in enforcing the EQA was curtailed by its small operational budget, limited human and technical resources (only nine officers in 1977) and poor support from outside the bureaucracy. By 1985, however, the number of professionals had grown to fifty-five (Sharp 1983) and in recent years, it has grown to over one thousand. Enforcement has been complicated by the fact that while federal standards are set and water quality monitored by the DOE, enforcement has been left mostly to the states (Lowry and Carpenter 1985). Nevertheless, despite such shortcomings, some pollution problems have been satisfactorily curbed. Revenue figures from 'polluters pay principle' licensing indicate a decline in effluent discharge of 88 percent within twelve years for palm oil wastes, and 44 percent within ten years for rubber wastes (Sham 1997: 21).

Merging environment and development

The publication of *Our Common Future*¹ by the World Commission on Environment and Development (WCED) in 1987 resulted in sustainable development's becoming a powerful concept in public and political discussions. Even though lacking 'any official status' (Pallemaerts 2003: 279), the Report had more 'influence on global policy-making than the formal outcome of its consideration by an international process within the United Nations Environment Program, Governing Council and the United Nations General Assembly' (Pallemaerts 2003: 279).

Following the Report, the focus of environmentalism across the world shifted from crisis to a reform agenda for sustainable development. The Report suggested that economic growth can continue with a reduced impact on the environment. Decoupling development and environmental impact was then launched as a policy focus especially in terms of ecological modernisation. The prescription is widely known, that is, sustainable development demands

better policy integration. Malaysia has been trying since the 1980s to integrate principles of sustainability into its form and function of government.

Environmental impact assessment

One of the most widely accepted and integrated tools for evaluating physical development projects is the environmental impact assessment (EIA) mechanism. EIA reports offer predictions of how the environment is expected to change if certain alternative actions are implemented. After many years of discussions, the requirement of conducting EIA reports in Malaysia was legally recognised in Section 34A of the Environmental Quality Act 1974, Amendment 1985. Prior to this amendment, thirty-nine EIA reports were submitted to the DOE on a voluntary basis (Malaysia 1986). Detailing the specifications for nineteen categories of activities requiring mandatory EIA, the EIA Order 1987 was gazetted and came into effect in April 1988. Between 1988 and 1995, it was reported that a total of 1,705 projects requiring EIA were monitored by the EIA Unit in the DOE (Vun and Latiff 1999). Even though the EIA process was introduced as a preventive approach to environmental management, its efficacy as a tool in actual practice is somewhat questionable. Problems associated with its implementation include (Memon 2000; Nor 1991): inaccuracy of predictions, lack of follow-up audits, ineffective devolution to state governments, tending to accommodate projects already approved rather than force changes in engineering plans and designs, and limited accessibility of EIA reports to allow public scrutiny.

More importantly, the input of ecological knowledge in many of these EIA reports has been inadequate and in many cases, inaccurate, as shown in a study of EIA for coastal resort development projects (Vun *et al.* 2004). Only 27 percent of the EIA reports reviewed were found to be satisfactory in their methods and emphasis given to studies of the ecology of the local area and areas adjacent to the project location. In addition, few EIAs have been prepared for large-scale logging, with only two out of 160 EIAs received between April 1988 and December 1990 originating from the forestry sector (Cooke 1999).

Environmental policy integration

Broadly, environmental policy integration entails the incorporation of environmental objectives into non-environmental policy sectors. Lafferty and Hovden (2003: 8–9) defined environmental policy integration from two dimensions. The first involves the ‘incorporation of environmental objectives into all stages of policymaking in non-environmental policy sectors’. Such development is observable in Malaysia with the incorporation of environmental objectives in sectoral policies and plans such as the National Spatial Policy, National Mineral Policy, and Third National Agriculture Policy. The incorporation of environmental objectives into non-environmental agencies and organisations has also flourished. The Department of Irrigation and Drainage, for example, expanded its focus on concepts such as integrated water resource management (Sharizaila *et al.* 2003).

The second dimension of environmental policy integration necessitates an attempt ‘to minimise contradictions between environmental and sectoral policies but with greater priority granted to environmental objectives’ (Lafferty and Hovden 2003: 9). This dimension is yet to become evident as a high priority for Malaysia. The Third Outline Perspective Plan (2001–2010) maintains that the nation will pursue ‘environmentally sustainable development to reinforce long term growth’ (Malaysia 2001). As in many countries, economic growth is still the overarching policy goal.

A major cabinet reshuffle in March 2004 revived the imperative of policy integration. The new Ministry of Natural Resources and Environment (NRE) was established as an outcome of a comprehensive reform by the then new Prime Minister Abdullah Badawi to deliver better services for the population. Compared with the former set-up of the Ministry of Science, Technology and the Environment, the NRE tackles policy fragmentation by combining more environmental portfolios under one ministry: forest management; irrigation and drainage management; wildlife management; minerals management; environmental conservation; marine park management; land management and administration; land surveying; and mapping processing.

In recent years, a number of integrated policy statements have been released, marking a step in the right direction of policy integration. The integrated sectoral policies include the National Biodiversity Policy (1998), National Policy on Climate Change (2010) and National Water Resources Policy (2012). Together, these policies underpin the choice of policy tools, such as voluntary approaches, information and awareness and tools, economic instruments, direct government expenditure and command-and-control mechanisms.

While efforts have been made to integrate the three pillars of sustainable development as well as to translate the international agenda into the local context, there is still insufficient convergence among various policy frameworks, both between levels of governments as well as among sectors. Indeed, there is a lack of clarity regarding what sustainable development actually means for government policy. This lack of clarity can mean that it is not apparent where the responsibility for sustainable development resides.

Combating climate change

By the turn of the century, stronger evidence of global warming had been made available by scientists and international organisations. Average global warming of more than 2°C from preindustrial levels could have dangerous climatic consequences (Schellnhuber *et al.* 2006). Soon after, climate change became firmly established as a critical global concern. Scientists argue that climate change could impede nations' abilities to find and achieve sustainable development pathways (Robinson *et al.* 2006). The needed solution is to mitigate greenhouse gas emissions to adapt to the inevitable impacts of climate change.

On the 2010 Climate Change Performance Index, which rates the emission levels, emission trends and climate policies of the world's fifty-seven largest carbon dioxide emitters, Malaysia appeared in the bottom-ranked group of countries, alongside countries like Canada, Australia, the United States and Saudi Arabia (Burck *et al.* 2009).

Climate change will affect all economic sectors and levels of society in Malaysia, and will also have a multiplier effect exacerbating environmental problems. As such, the country needs to embark on a path of climate-resilient development, both to respond to these impacts and to reduce Malaysia's contribution to greenhouse gas emissions. Disaster risk reduction, ensuring adaptation and meeting the economic and social costs of increasing risks will be major challenges for the future.

Energy issues occupy a central place in the debate on climate change and sustainable development (Najam and Cleveland 2003). Malaysia has been introducing incremental reforms in its energy policy to respond to the sustainability principles. The Five Fuel Policy was formulated under the 8th Malaysia Plan (2001–2005) to encourage the utilisation of renewable resources such as biomass, solar, mini hydro, etc. as an additional source for electricity generation. This policy was introduced in 2001 to encourage the utilisation of renewable energy (RE) resources for power generation. To fast-track the implementation of the Five Fuel

Policy, the Small Renewable Energy Power Program (SREP) was introduced in the same year. This programme allowed utilisation of all types of RE sources, including biomass, biogas, municipal solid waste, solar, mini hydro and wind. The low take-up rate² of RE development under the SREP, however, led to the formulation of the Renewable Energy Act 2010 which provides for the establishment and implementation of a Feed-in-Tariff (FiT) system to catalyse the generation of renewable energy. The FiT scheme encourages adoption of RE sources by bridging the gap between the cost of fossil fuel and renewable sources. The Act ensures participants have guaranteed access to the grid, through long-term contracts to sell electricity to power distributors. A new agency, the Sustainable Energy Development Authority (SEDA), was established to administer the Act.

In 2009, at the Climate Change Conference in Copenhagen (or COP 15), Prime Minister Najib Razak announced a conditional voluntary target of 40 percent reduction in the emissions intensity of Malaysia's Real GDP by 2020, measured against a 2005 baseline. Achieving this aspirational target in a rapidly developing society like Malaysia will require deeper energy reforms in the structure and operations of its institutions. Apart from diversifying the fuel mix to include alternative energy, Malaysia needs policy measures that include improving demand management and rationalising energy pricing and subsidy structures. Malaysia is studying the option of adding 2 gigawatts of nuclear capacity on the peninsula in 2021 or after. This quantity amounts to less than 10 percent of Malaysia's total generation capacity in 2008; as such, this addition would not drastically improve energy diversity at the national level.

In addition, there is a need to make major improvements in energy efficiency and conservation, in both the supply and demand sectors. Initiatives that have been undertaken to improve energy efficiency are categorised into three sectors, namely, industry, commercial and residential. For the industry sector, enforcement of the Efficient Management of Electrical Energy Regulations 2008 under the Electricity Supply Act will ensure that any installation which consumes more than 3 million units (kWh) of electricity over a period of six months will be required to engage an electrical energy manager responsible for efficient utilisation of energy in the installation. As for the commercial sector, the government of Malaysia has taken several proactive measures in promoting energy efficiency through the construction and operation of low-energy buildings, such as the Low Energy Office (LEO) building of the Ministry of Energy, Green Technology and Water, opened in 2004, and the Green Energy Office (GEO) of Malaysia Green Technology Corporation (MGTC) in 2008. In the residential sector, EE initiatives include the introduction of 'Star Labelling' in 2002, with five-star products being the most efficient and one-star being the least efficient. Finally, the Malaysian government seeks to mitigate demand growth by gradually moving towards market pricing for oil and gas supply by 2016. According to a recent simulation, the liberalisation of gas pricing would increase gas prices by 30 percent above the regulated price by 2020 and another 4 percent by 2030; it would also reduce demand by 4 percent (compared with demand projection absent price liberalisation).

Building a green economy

The green economy or green growth model is largely a reaction to the 'Triple F' crises (fuel, food and finance) which struck the globe from 2006 to 2009. It demands a sharp reduction in carbon intensity in order to revitalise the ailing world economy on a more sustainable basis. Across the developed world, there is increased public investment not only in energy conservation, but also in urban public transport, housing rehabilitation and organic agriculture

(United Nations 2011). The United Nations Environment Programme report *Towards a Green Economy* (UNEP 2011: 2) presents a working definition of a green economy 'as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities'. For UNEP, a green economy is 'one which is low carbon, resource efficient and socially inclusive'.

Consistent with international trends, Malaysia has also introduced a systemic architecture to respond to the green economy agenda. This action was necessary largely because Malaysia's per capita carbon dioxide emissions from fuel combustion had increased by 32 percent from 2000 to 2006 (United Nations Country Team 2011). This figure is higher than those for Indonesia, the Philippines and Thailand, although lower than for some developed economies. Since 2009, a hotchpotch of policy statements and instruments has been introduced to loosely constitute Malaysia's green economy objectives and the means to achieve them.

In line with international trends, the country has embraced the goal of a low-carbon economy, which is dependent on the development of green technology and its adoption across all spheres of life. In 2009, Malaysia established the basic architecture for responding to a low-carbon agenda by incorporating the green technology portfolio into a newly established Ministry of Energy, Green Technology and Water. The central role of green technology was emphasised by the release shortly afterwards of a National Green Technology Policy and the restructuring of the National Energy Centre as the Malaysian Green Technology Corporation, tasked to implement the new policy area. The administration of Prime Minister Najib Tun Razak clearly aims to create a policy environment that will attract innovators and users of green technology. The policy was launched within one hundred days of the ministry's being established.

Also in 2009, Malaysia announced a new development policy framework called the New Economic Model (NEM). It outlined the three-pronged goals of inclusiveness, high income and sustainability in powering the nation to graduate to high-income status by 2020. Green technology is earmarked as an important driver for the twin goals of high income and sustainability. Evidence of convergence among the three goals includes Malaysia's success in attracting US\$4 billion worth of foreign direct investment to the solar photovoltaic industry (MEGTW 2011). The emphasis on green technology is expected to increase the GDP contribution from green business from the current 2 percent to 8 percent by 2020. This growth would involve the creation of about 500,000 green jobs by 2020, from 95,000 green jobs in 2009 (Hezri and Ghazali 2011).

Conclusion

By addressing the objectives of combating climate change and building a green economy, Malaysia is acting as a responsible citizen of the planet. More urgent, however, is that Malaysia put more effort into dealing with the policy challenge of conserving the environment. Urbanisation, population and industrialisation pressures continue to threaten the remaining natural areas and environmental quality in Malaysia. In 2011, the Department of Environment reported that thirty-nine rivers were polluted, 3,177 open burning cases had been lodged, and about twelve illegal disposals of scheduled wastes had still been committed by unscrupulous offenders (DOE 2012). Throughout 2012 and 2013, environmental degradation received wide press coverage in mainstream news outlets in Malaysia.

Despite the government's constellation of policies and programmes on the environment, in reality it is extremely hard to bridge the gap between stated policy goals and practical

strategies to achieve those goals. Inevitably, the gap had allowed environmental degradation to persist against the background of increasing land scarcity. In response to the increasing number of threatened forests, a coalition of twenty-four non-governmental organisations (NGOs) jointly released *Eco-Manifesto 2013: Forests, People and Sustainability in Malaysia* (Transparency International-Malaysia 2013). This manifesto, which declared a national deforestation and forest degradation 'eco-emergency', was launched before Malaysia's thirteenth General Election in May 2013, in the presence of both ruling and opposition political parties.

Scholars and scientists alike echo the sense of urgency to address regressive environmental conditions with new policy instruments (Aiken and Leigh 2011; Chan 2012; Anuar 2012; Khalid *et al.* 2013). For them, residual natural areas should be considered as the 'critical natural capital' essential for the functioning of life-support systems, and for that reason must be duly protected. To accommodate concurrent demands for human settlements, industries and conservation, scarce land resources require a better trade-off mechanism whose foundation is one of perception – that Malaysia is no longer the resource-abundant nation that it once was.

To deal with the situation of 'new scarcity', a new institutional design is needed, one which is based on integrated policy- and decision-making. At the risk of stating the obvious, policy formulation alone will not help in prompting institutional change. It is imperative to move from articulation of policy statements to an implementation stage which is backed up by adequate resources.

Notes

- 1 Also known as the Brundtland Report after the WCED's chairperson, Gro Harlem Brundtland.
- 2 After almost nine years since its launch, only ten SREP projects are in operation, amounting to 56.7 MW install capacity.

Bibliography

- Abdul Rani Abdullah (1995) 'Environmental pollution in Malaysia: trends and prospects', *Trends in Analytical Chemistry*, 14(5): 191–98.
- Aiken, S. Robert and Colin H. Leigh (1992) *Vanishing Rain Forests: The Ecological Transition in Malaysia*, New York: Oxford University Press.
- Aiken, S. Robert and Colin H. Leigh (2011) 'In the way of development: indigenous land-rights issues in Malaysia', *The Geographical Review*, 101(4): 471–96
- Anuar, Mustafa K. (2012) 'Reporting the environment: human rights, development, and journalism in Malaysia', *Asia Pacific Media Educator*, 22(2): 253–62.
- Barton, Gregory Allen (2002) *Empire Forestry and the Origins of Environmentalism*, Cambridge: Cambridge University Press.
- Burck, Jan, Christoph Bals and Verena Rossow (2009) *The Climate Change Performance Index: Results 2010*, Bonn and Brussels: Germanwatch and Climate Action Network.
- Chan Ngai Weng (2012) 'Managing urban rivers and water quality in Malaysia for sustainable water resources', *International Journal of Water Resources Development*, 28(2): 343–54.
- Consumer's Association of Penang (1978) *The Malaysian Environment in Crisis: Selections from Press Cuttings*, Penang: Consumer's Association of Penang.
- Cooke, Fadzilah Majid (1999) *The Challenge of Sustainable Forests: Forest Resource Policy in Malaysia, 1970–1995*, Sydney: Allen & Unwin.
- Department of Environment (DOE) (2012) *Environmental Quality Report 2011*, Kuala Lumpur: Department of Environment Malaysia.
- Hezri, Adnan A. and Hasan Mohd Nordin (2006) 'Towards sustainable development? The evolution of environmental policy in Malaysia', *Natural Resources Forum*, 30(1): 37–50.

- Hezri, Adnan A. and Rospidah Ghazali (2011) *A Fair Green Economy? Studies of Agriculture, Energy, and Waste Initiatives in Malaysia*, Occasional Paper 2 Social Dimensions of Green Economy and Sustainable Development, Geneva: United Nations Research Institute for Social Development.
- Kathirithamby-Wells, Jayamalar (2005) *Nature and Nation: Forests and Development in Peninsular Malaysia*, Honolulu: University of Hawai'i Press.
- Lafferty, Illiam M. and Eivind Hovden (2003) 'Environmental policy integration: towards an analytical framework', *Environmental Politics*, 12(3): 1–22.
- Lowry, Kem and Richard A. Carpenter (1985) 'Institutionalizing sustainable development: experiences in five countries', *Environment Impact Assessment Review*, 5(3): 239–54.
- Malaysia (1986) *The Fifth Malaysia Plan, 1986–1990*, Kuala Lumpur: National Printing Department.
- Malaysia (2001) *The Third Outline Perspective Plan, 2001–2010*, Kuala Lumpur: Government Printer.
- Memon, Ali (2000) 'Devolution of environmental regulation: environmental impact assessment in Malaysia', *Impact Assessment and Project Appraisal*, 18: 283–93.
- Ministry of Energy, Green Technology and Water (MEGTW) (2011) *Green Impact: Low Carbon Green Growth*, Putrajaya: Ministry of Energy, Green Technology and Water.
- Myers, Norman (1988) 'Threatened biotas: "hot spots" in tropical forests', *The Environmentalist*, 8(3): 187–208.
- Najam, Adil and Cutler J. Cleveland (2003) 'Energy and sustainable development at global environmental summits: an evolving agenda', *Environment, Development and Sustainability*, 5(1–2): 117–38.
- Nor, Y.M. (1991) 'Environmental policy making: problems and perspectives in Malaysia', *Environment Impact Assessment Review*, 11: 129–42.
- Pallemaerts, Mark (2003) 'Is multilateralism the future? Sustainable development or globalisation as a "comprehensive vision of the future of humanity"', *Environment, Development and Sustainability*, 5: 275–95.
- Panayotou, Theodore (1994) *Economic Instruments for Environmental Management and Sustainable Development*, United Nations Environmental Programme's Consultative Expert Group Meeting on the Use and Application of Economic Policy Instruments for Environmental Management and Sustainable Development, Nairobi.
- Rasyikah Md Khalid, Suhaimi Ab Rahman and Mazlin Mokhtar (2013) 'Legal perspectives on development policies for sustainability of water in Malaysia', *Sustainable Development*, 21(3): 144–51.
- Robinson, John, M. Bradley, P. Busby, D. Connor, A. Murray, B. Sampson and W. Soper (2006) 'Climate change and sustainable development: realising the opportunity', *Ambio*, 35(1): 2–8.
- Schellnhuber, Hans Joachim, Wolfgang Cramer, Nebojsa Nakicenovic, Tom Wigley and Gary Yohe (eds) (2006) *Avoiding Dangerous Climate Change*, New York: Cambridge University Press.
- Sham Sani (1993) 'Economic development and environmental management in Malaysia', *New Zealand Geographer*, 49(2): 64–68.
- Sham Sani (1997) *Environmental Quality Act 1974: Then and Now*, Kuala Lumpur: Lestari.
- Sharizaila, A., Low Kwai Sim and S. Zakaria (eds) (2003) *Capacity Building for Integrated Water Resources Management in Southeast Asia*, Kuala Lumpur: Department of Irrigation and Drainage.
- Sharp, T. (1983) 'Malaysia's environment in danger', *Ambio*, 12: 275–76.
- Shuttleworth, Charles (1981) *Malaysia's Green and Timeless World: An Account of the Flora, Fauna and Indigenous Peoples of the Forests of Malaysia*, Kuala Lumpur: Heinemann Asia.
- Singh, Gurmit (1979) 'Some environmental threats in Malaysia', *Environmental Conservation*, 6(3): 242–43.
- Transparency International–Malaysia (2013) *Eco-Manifesto 2013: Forests, People and Sustainability in Malaysia*, Petaling Jaya: TI-M.
- United Nations (2011) *World Economic and Social Survey 2011: The Great Green Technological Transformation*, New York: United Nations Department of Economic and Social Affairs.
- United Nations Country Team (2011) *Malaysia: The Millennium Development Goals at 2010*, Kuala Lumpur: UN Country Team and Economic Planning Unit, Prime Minister's Department.
- United Nations Environment Programme (UNEP) (2002) *Global Environment Outlook 3*, New York: United Nations Environmental Programme.
- United Nations Environment Programme (UNEP) (2011) *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication, A Synthesis for Policy Makers*, New York: United Nations Environmental Programme.

- van Steenis, C. (1971) 'Plant conservation in Malaysia', *Bulletin du Jardin Botanique National Belge*, 41: 189–202.
- Vincent, Jeffrey R. and Rozali M. Ali (1997) *Environment and Development in a Resource-Rich Economy: Malaysia Under the New Economic Policy*, Cambridge: Harvard University Press.
- Vun, L.W. and A. Latiff (1999) 'Preliminary ecological impact assessment and environmental impact assessment for coastal resort development in Malaysia', *Impact Assessment and Project Appraisal*, 17: 133–40.
- Vun Leong-Wan, Abdul Latiff and Mohd Nordin (2004) 'Review of ecological input in preliminary EIAs for coastal resort development projects in Malaysia', *Journal of Environmental Assessment Policy and Management*, 6(3): 385–401.
- Whitmore, Timothy Charles (1984) *Tropical Rainforests of the Far East*, London: Oxford University Press, available at www.unep.org/greenconomy (accessed 27 September 2011).