

# **Preliminary Assessment of Singapore's Environmental Law**

**Alan K.J. Tan, Faculty of Law  
National University of Singapore**

## **1. INTRODUCTION**

The Republic of Singapore is a small island state lying at the tip of the Malayan Peninsula at the crossroads of South East Asia. Consisting of the main island of Singapore and some 60 islets, Singapore has a land area of 637 square kilometres and a coastline of 193 kilometres. Singapore features as the smallest country in South East Asia. The city-state is densely populated, with a population of 3,440,693 (July 1997 estimate).

Building upon its strategic location, deep harbour and excellent infrastructure, Singapore is a leading commercial and financial centre. The economy is dominated by the manufacturing and service industries, with the main income earners being computer equipment, petroleum products, processed agricultural products and tourism. Singapore serves as a major entreport centre serving the needs of the South East Asian hinterland. Trade is the lifeline of the country, and has brought a high living standard to the city-state with a per capita gross domestic product of US\$21,200 (1996 estimate). The port and airport facilities are amongst the busiest and most extensive in the world.

Singapore has virtually no natural resources, and the environmental issues which it faces are characteristic of a highly-urbanised city. There are no problems associated with mining, forestry, large-scale agriculture or indigenous peoples. The existing relevant issues pertain to pollution from industrialisation and urbanisation and the protection of nature areas. Pollution was recognised to be a problem since the 1960s, and significant steps have been taken since to alleviate industrial and urban pollution. Singapore today is a relatively clean, ordered and well-planned country, with extremely stringent regulation of industrial pollution. The country's acute land scarcity and high population density have meant that very few undisturbed natural areas remain. Water is in short supply, and Singapore's potable water needs are met through importing water from neighbouring Malaysia. Singapore's environmental challenges include maintaining a pollution-free urban centre, preventing encroachment of the few nature areas which remain and the prevention of marine pollution in its heavily-traversed waters.

## **2. INSTITUTIONAL ARRANGEMENTS**

### **2.1 Structure of Government**

Singapore is a republic within the British Commonwealth, and has administrative and legal systems similar to Britain's. The head of state is the President, who has limited executive powers and is elected by popular vote for six-year terms. Pursuant to the Constitution, the President exercises executive competence over certain fiscal matters and the appointment of key civil servants. The head of government is the Prime Minister, who is the leader of the political party securing the majority of Parliamentary seats in general elections conducted every five years. The Prime Minister is assisted by a Cabinet, whose Ministers are appointed by the President and who are responsible to Parliament.

## 2.2 Environmental Institutions

Overall management of the environment lies with the Ministry of Environment (ENV). The ENV was first established in the 1970s as a department within the Prime Minister's Office before eventually becoming a full-fledged Ministry. It is responsible for providing the infrastructure for waste management, as well as enforcing and administering legislation relating to pollution control and public health. The Pollution Control Department (PCD) within the ENV is in charge of environmental planning and building development control, air and water pollution control and the regulation of hazardous substances and wastes. Due to the government's strong commitment to pollution control and also to Singapore's small size, the ENV has been largely successful in implementing its pollution control programmes throughout Singapore.

The following is a list of government agencies with competence in environmental matters:

Ministry	Area of Competence
<b>Ministry of Environment (ENV)</b>	
Environmental Engineering Division	Sewerage, drainage, building management
Policy and Systems Division	Environmental training, prosecution
Environmental Public Health Division	General environmental health, quarantines, vector control, food hygiene, public education
Environmental Policy and Management Division	Pollution control, international policy
<b>Ministry of National</b>	

<b>Development (MND)</b>	
Urban Redevelopment Authority, URA	Urban development
Public Works Department, PWD	Public Works
National Parks Board	National Parks and nature conservation in general
Parks and Recreation Department	Recreational parks
Primary Production Department, PPD	Animal quarantine, control of trade in wildlife
<b>Ministry of Trade and Industry (MTI)</b>	
Economic Development Board, EDB	Foreign investment promotion
Trade Development Board, TDB	Trade promotion
Jurong Town Corporation, JTC	Management of industrial zones
Productivity and Standards Board, PSB	Standards and certification
National Science and Technology Board, NSTB	Science and technology development
<b>Ministry of Health</b>	
Department of Scientific Services	Food testing
<b>Ministry of Labour</b>	
Industrial Health Department	Worker safety
<b>Ministry of Communications</b>	
Maritime and Port Authority, MPA	Marine pollution
<b>Land Transport Authority</b>	Vehicular matters

### 3. NON-GOVERNMENTAL ORGANISATIONS

The environmental NGO movement in Singapore is fairly active, and liaises closely with the government, media and industry. The NGOs consist primarily of nature groups such as the Nature Society, Singapore (NSS) and

also groupings of companies like the Singapore Association of Environmental Companies (SAFECO) and the Singapore Chemical Industry Council (SCIC). The umbrella organisation which coordinates the activities of environmental groups is the Singapore Environment Council (SEC), formerly known as the National Council for the Environment. The SEC aims to promote environmental awareness amongst the citizenry and constantly organises public education programmes on the environment, including seminars on the need for recycling and waste minimisation.

#### **4. ENVIRONMENTAL LEGISLATION IN SINGAPORE**

##### **4.1 Types of Legislation**

The hierarchy of legislation in Singapore is as follows:

1. The Constitution of the Republic;
2. Acts enacted by Parliament;
3. Subsidiary legislation (in the form of Regulations and Orders) issued by the Ministers.

##### **4.2 Framework Laws and Provisions**

The Singapore Constitution does not contain any provisions on the environment. Neither does Singapore have a framework law on environmental protection and management. There is no mandatory environmental impact assessment (EIA) system laid out in legislation. The present scheme of environmental management in Singapore is scattered throughout numerous Acts and Regulations. EIAs are required on an *ad hoc* basis at the discretion of the ENV. There has not been much judicial pronouncement or comment on environmental matters - in fact, environmental litigation is almost unknown in Singapore. The environmental protection effort in Singapore is almost exclusively administrative in nature - the relative success of environmental management in Singapore is primarily due to the administrative efficiency of the ENV and other government agencies operating within a relatively tiny country. Also, stringent planning and zoning laws ensure optimal usage of land and proper siting of pollutive industries.

Singapore's small size and high urban density spare it of the environmental problems commonly associated with larger countries with natural resource extraction activities. Thus, problems relating to mining, forestry, large-scale agriculture and indigenous peoples are non-existent. Two general categories of environmental legislation exist - that dealing primarily with the regulation of wastes and emissions from industries, hospitals, households and vehicles (pollution control laws), and that dealing with the protection of natural areas and wildlife (nature conservation laws).

The existing legislative framework has received some criticism for being too diverse and scattered throughout many Acts. There have been calls for a

single framework law, and it appeared at one time that such a document might be forthcoming. However, no progress seems to have been made in this direction as of mid-1998.

A selection of major legislation pertaining to the environment can be found in the [Appendix](#).

## **5. PROBLEMS AND ISSUES IN LEGISLATION AND IMPLEMENTATION**

### **5.1 Dispersed Authority and Centralised Planning**

Legislation related to the environment is found throughout at least two dozen Acts. Not all of these Acts come under the administration of the ENV - for instance, marine pollution matters under the Prevention of Pollution of the Sea Act fall within the responsibility of the Maritime and Port Authority of the Ministry of Communications, while nature conservation issues come under the departments of the Ministry of National Development. Planning issues are usually handled by the Urban Redevelopment Authority.

Fortunately for Singapore, the dispersed authority over matters related to the environment does not pose too severe a problem, for three reasons. First, there exists a comprehensive planning process which draws together representatives from all the relevant government agencies. Second, these agencies meet continuously to coordinate the formulation and implementation of their policies. Third, enforcement of laws by the relevant agencies is relatively quick and stringent - this is facilitated by Singapore's small size. In other words, planning and implementation are highly centralised activities in Singapore. This is made possible due to the unique circumstances of Singapore, where the small size of the city-state and the presence of a strong government allow for centralised planning and enforcement without being hampered by provincial authorities or sectoral interests.

In relation to planning, there exists a main document called the Concept Plan, which broadly outlines land use policies in Singapore. These policies are then translated into detailed proposals for local areas called "Development Guide Plans" (DGPs). There are over 50 DGPs to cover the whole area of Singapore. The implementation of the DGPs is coordinated by the Master Plan Committee (MPC), which is a collaborative effort by all the public authorities in Singapore. The MPC consists of representatives from the following agencies:

- The Urban Redevelopment Authority (URA), which is the national planning authority overseeing land use planning in Singapore;

- The Housing and Development Board (HDB), which is in charge of building public apartments/flats (these house 80% of Singapore's population);
- The Public Works Department (PWD), which is in charge of building infrastructure such as roads;
- The Jurong Town Corporation (JTC), which is in charge of building industrial areas;
- The National Parks Board, which takes charge of the two national parks and two nature reserves in the country;
- The Parks and Recreation Department, which is in charge of green areas, parks and landscaping;
- The Ministry of Environment (the Pollution Control Department and the Environmental Health Division), which takes care of pollution control and cleanliness in the city;
- The Ministry of Defence;
- The Ministry of Trade and Industry;
- The Economic Development Board.

The basic environmental concerns that were considered in the Development Guide Plans (DGPs) were:

- Identification of development constraints and major land uses that affect the environment, e.g. airports, live-firing areas for military training, areas for pollutive and hazardous industries;
- Projection of land needs for environmental infrastructure such as refuse facilities (incinerators and dumping grounds), sewage treatment plans, etc.;
- Identification of possible areas for major utility installations and infrastructural needs that may be pollutive e.g. gasworks, explosive storage, other hazardous goods storage;
- Identification of possible areas for nature conservation;
- Continued protection of water-catchment areas.

Urban planning and development are also facilitated to a large extent by the Land Acquisition Act, which allows the government to repossess land in a compulsory fashion at lower than market rate compensation. This enables the government to acquire land at a cheaper cost, and then conduct planning and development measures in an effective manner. Compulsory land acquisition is seen to be crucial in Singapore because the country is so small and short of land. In the 1960s and 1970s, the government used compulsory acquisition to great effect - it demolished many old structures on the land it acquired, and used the "new" land to build high-rise apartments, offices, recreational areas, public transport systems and roads, etc.

Given the relatively effective and efficient centralised planning mechanism in Singapore, the dispersed authority over environmental matters and the lack of a framework law do not appear to have severely hampered environmental management efforts. That being said, there have been calls from certain quarters to enact a framework, "umbrella" law for environmental matters. Such a law would conceivably improve upon the existing system and refine further the coordination of policy formulation and implementation. For one thing, the current system requires too many licenses and permits to be issued before factories can be operated - it would be advantageous if a framework, "omnibus" legislation could consolidate all these disparate requirements.

### **5.2 Land Scarcity and the Protection of Natural Areas**

In Singapore, a document known as the Singapore Green Plan establishes broad policies for nature conservation. Under the Green Plan, 5% of the land area is to be set aside for nature conservation. The Green Plan's subsequent Action Programmes identified 19 nature sites and 4 coral reefs as worthy of conservation. In addition, tremendous attention is paid in Singapore towards man-made greening, in the form of tree-planting and landscaping. The city-state prides itself as a "Garden City", and is today one of the greenest cities in the world.

To date, only 3% of the nature sites have legal protection under the National Parks Act (2 National Parks and 2 Nature Reserves), and there exists no protection of marine areas as entire ecosystems. Due to Singapore's acute shortage of land, conservation of huge swathes of biodiversity-rich areas beyond the existing nature areas has been viewed to be impractical. Priority is accorded instead, to man-made greening of highways, streets and residential areas. This effort is welcomed by most Singaporeans, but naturalists like members of the Nature Society, Singapore (NSS) feel that given the extremely built-up environment, there is all the more reason to guard and protect against the depletion of whatever little undisturbed natural areas and wildlife which remain in Singapore. Hence, it appears that the debate over the protection of nature areas will continue to feature prominently in the next few years.

Another issue of note is the protection of wildlife. Violations of wildlife conservation are largely unreported, and the general public is quite unaware of the laws which protect fauna and flora. While the smuggling of endangered species is judiciously monitored by the Primary Production Department of the Ministry of National Development, the fines imposed are inadequate and do not sufficiently deter potential offenders. There is significant public ignorance on matters related to the environment, and more public education is needed to redress this.

### **5.3 Environmental Impact Assessments (EIAs) in Singapore**

There is at present no legislation in Singapore making EIAs compulsory for major developmental projects. However, as and when the Ministry of Environment deems a particular project to have sufficient potential for pollution that may affect public health, an EIA may be required. The Master Plan Committee in practice, has required EIAs of developmental projects which have pollutive potential. EIAs have to date been required for petrochemical works, gasworks and refuse incineration plants, and detailed studies are made as to the feasibility of locating an industry in a particular site. The planning process under the Concept Plan and the DGPs ensure that pollutive industries are sited far away from residential and recreational facilities. With respect to foreign investments in Singapore, projects using or storing large quantities of hazardous substances are required to engage third-party consultants to conduct EIAs to support the establishment of a plant in Singapore. To this end, the Ministry of Environment has recommended a general format for EIA reports.

Hence, it can be seen that in spite of the absence of legislation requiring mandatory EIAs, a comprehensive planning process exists to ensure that industries are properly sited and environmental guarantees solicited from project proponents. However, there have recently been calls to enact EIA legislation to institutionalise the impact assessment procedure so as not to leave EIA decisions to administrative discretion. It appears that under the current system, EIAs are usually required, if at all, only of industries for pollution control purposes - the position is less clear in other situations, such as where a wooded or forested area with high biological diversity is to be cleared for specific projects. Indeed, suggestions have been made that the requirement for EIAs should not be confined to industries that have potential pollutive capacity. It remains to be seen if the government will take up this suggestion.

#### **5.4 Soil Contamination**

There are at present no laws to govern soil contamination, or to require that this be cleaned up. This inadequacy was highlighted by an incident in 1996 whereby an oil company's refinery and storage terminal was found to have contaminated the ground it was built upon over several years. The company had maintained that unless it could be shown to have contaminated the groundwater or cause wastes to be improperly stored, it had not broken any laws. Nonetheless, the company has promised that it would clean up the site. The Jurong Town Corporation (JTC), the body in charge of industrial estates in Singapore, has introduced a "decontamination" clause in its leases to "high pollution risk" industries. This requires the company to ensure at the end of its lease that no pollution had been caused to the site. If pollution had been caused, the company would have to clean up the site before returning the lease.



## 6. CONCLUSION

The experience of Singapore is largely unique, due to her small size, lack of natural resources, high population density and strong governance. Environmental laws and regulations are efficiently administered through a comprehensive planning process and stringent enforcement system. Calls have been made by various quarters to further improve on the existing system, such as enacting a framework law on the environment, formal EIA legislation and regulations on soil contamination, as well as providing greater emphasis on nature conservation. Pollution control has, by any measure, been a success story in Singapore - it now appears that nature conservation issues will feature increasingly on the environmental agenda in the years to come. This will be a potentially challenging issue to resolve, given the pressures imposed by land scarcity in densely-populated Singapore.

### APPENDIX

#### SELECTION OF MAJOR ENVIRONMENTAL LAWS

##### I. Pollution Control and Environmental Health

- Environmental (Public Health) Act, Chapter 95 (relating to public health in general)
  - Environmental Public Health (Markets) Regulations 1969
  - Environmental Public Health (Hawkers) Regulations
  - Environmental Public Health (Public Cleansing) Regulations 1970
  - Environmental Public Health (Food Handlers) Regulations
  - Environmental Public Health (Funeral Parlours) Regulations
  - Environmental Public Health (Crematoria) Regulations
  - Environmental Public Health (Food Establishment) Regulations
  - Environmental Public Health (Manufacture and Sale of Ice Cream) Regulations
  - Environmental Public Health (Swimming Pools) Regulations
  - Environmental Public Health (Toxic Industrial Waste) Regulations 1988
  - Environmental Public Health (General Waste Collection) Regulations
  - Environmental Public Health (Notice to Attend Court) Regulations
  - Environmental Public Health (Control of Noise from Construction Sites) Regulations
  - Environmental Public Health (Corrective Work Order) Regulations
  - Environmental Public Health (Composition of Offences) Rules
  - Environmental Public Health (Boundary Noise Limits for Factory Premises) Regulations

- Water Pollution Control and Drainage Act, Chapter 348 (water pollution, sewerage, drainage matters)
  - Sanitary Plumbing and Drainage Systems Regulations 1976
  - Surface Water Drainage Regulations 1976
  - Trade Effluent Regulations 1976
  - Sewage Treatment Plants Regulations 1976
  
- Clean Air Act, Chapter 45 (air quality)
  - Clean Air (Standards) Regulations 1972, as amended 1978
  - Clean Air (Prohibition on the Use of Open Fires) Order 1973
  
- Factories Act, Chapter 104 (regulation of factories and working conditions within)
  - Factories (Abrasive Blasting) Regulations
  - Factories (Asbestos) Regulations 1980
  - Factories (Permissible Exposure Levels of Toxic Substances) Order 1996
  - Factories (Medical Examinations) Regulations
  - Factories (Noise) Regulations
  
- Hydrogen Cyanide (Fumigation) Act, Chapter 132 (handling of hydrogen cyanide)
  - Hydrogen Cyanide (Fumigation) Regulations
  
- Petroleum Act, Chapter 229 (handling, transport and storage of petroleum)
  - Petroleum (Transport and Storage) Rules
  - Petroleum (Storage License Fees) Rules
  - Petroleum (Transport by Land - Fees) Rules
  
- Road Traffic Act, Chapter 276 (vehicular pollution and traffic congestion)
  - Road Traffic (Public Service Vehicles) Rules
  - Road Traffic (Motor Vehicles) (Construction and Use) Rules
  - Road Traffic (Restricted Zone and Area Licenses) Rules
  - Road Traffic (Motor Vehicles, Quota System) Rules
  - Road Traffic (Composition of Offences) Rules
  
- Sand and Granite Quarries Act, Chapter 284
  - Sand and Granite Quarries Regulations
  
- Control of Imports and Exports Act, Chapter 56 (import and export of controlled substances)
  - Control of Imports and Exports (Montreal Protocol) Order 1989
  - Control of Imports and Exports (Chewing Gum) Order

- Hazardous Waste (Control of Export, Import and Transit) Act, Chapter 122A (implementation of the Basel Convention on the Transboundary Movement of Hazardous Wastes)
  - Hazardous Waste Regulations 1998
- Control of Plants Act, Chapter 57A
- Destruction of Disease-Bearing Insects Act, Chapter 79
  - Destruction of Disease-Bearing Insects (Prescribed Form) Regulations
- Infectious Diseases Act, Chapter 137 (control of infectious diseases)
  - Infectious Diseases (Quarantine) Regulations
  - Infectious Diseases (International Certificates of Vaccination) Regulations
  - Infectious Diseases (Diphtheria and Measles Vaccination) Regulations
  - Infectious Diseases (Prescribed Form) Regulations
- Poisons Act, Chapter 234 (handling of poisonous substances)
  - Poison Rules
  - Poison (Hazardous Substances) Rules 1986
- Smoking (Control of Advertisements and Sale of Tobacco) Act, Chapter 309
- Smoking (Prohibition in Certain Places) Act, Chapter 310 (banning of smoking in public places)
- Radiation Protection Act, Chapter 262
  - Radiation Protection (Non-Ionising Radiation) Regulations
  - Radiation Protection Regulations
  - Radiation Protection (Transportation of Radioactive Materials) Regulations 1974
- Sale of Drugs Act, Chapter 282
  - Drug Regulations
  - Sale of Drugs (Prohibited Substances) Regulations
  - Sale of Drugs (Prohibited Drugs) (Consolidation) Regulations

## **II. Laws Relating to Planning and Land Use Management**

- State Lands Act, Chapter 314
- State Lands Encroachment Act, Chapter 315
- Urban Redevelopment Authority Act, Chapter 340
- Building Control Act, Chapter 29

- Planning Act, Chapter 232

### **III. Laws Relating to Nature Conservation**

- Fisheries Act, Chapter 111 (regulation of fishing activities)
  - Fisheries (Fishing Vessels) Rules
  - Fisheries (Piranha) Rules
  - Fisheries (Fishing Harbour) Rules
  - Fisheries (Fish Processing Establishment) Rules
  - Fisheries (Fishing Gear) Rules
  - Fisheries (Fish Culture Farms) Rules
  - Fisheries (Riverine Fishing) Rules
- Endangered Species (Import and Export) Act, Chapter 92A (handling of endangered fauna and flora)
  - Endangered Species (Import and Export) (Fees) Rules
  - Endangered Species (Import and Export) (Amendment of Schedules) Notification
  - Endangered Species (Import and Export) (Prohibition of Sale) Notification
- National Parks Act, Chapter 198A
  - National Parks Regulations 1990
- Parks and Trees Act, Chapter 216 (parks not gazetted as national parks)
  - Parks and Trees Rules
  - Parks and Trees (Preservation of Trees) Order
  - Officers to Exercise Powers of Police Officers within Public Park Notification
- Wild Animals and Birds Act, Chapter 351
  - Wild Animals and Birds (Bird Sanctuaries) Order 1970
  - Wild Animals (Licensing) Order 1975
  - Wild Animals and Birds (Amendment of Schedule) Notification
- Animals and Birds Act, Chapter 7
  - Animals and Birds (Dog Licensing & Control) Rules
  - Animals and Birds Shop, Poultry Shop, Hatchery (Licensing & Control) Rules
  - Animals and Birds (Licensing of Farms) Rules
  - Animals and Birds (Pigeon) Rules
  - Animals and Birds (Infirmary Fees) Rules
  - Animals and Birds (Quarantine Rules)
  - Animals and Birds (Pullorum Disease Eradication) Rules
  - Animals and Birds (Veterinary Fees) Rules

- Animals and Birds (Importation) Order
- Animals and Birds (Prohibition on the Importation of Pigs) Order
- Public Utilities Act, Chapter 261 (water catchment areas)
  - Public Utilities (Composition of Offences) Regulations
  - Public Utilities (Water Supply) Regulations
  - Public Utilities (Central Water Catchment Area and Catchment Area Parks) Regulations
- Cattle Act, Chapter 34 (regulation of cattle)
  - Cattle Regulations
  - Cattle (Licence Fees) Regulations
  - Cattle (Restricted Areas) Notification 1986
  - Cattle (Restricted Areas) Notification 1987
- Preservation of Monuments Act, Chapter 239
  - Preservation of Monuments (Consolidation) Order

#### **IV. Laws Relating to Marine Pollution**

- Prevention of Pollution of the Sea Act, Chapter 111
  - Prevention of Pollution of the Sea (Oil) Regulations S 59/1991
  - Prevention of Pollution of the Sea (Noxious Liquid Substance in Bulk) Regulations
  - Prevention of Pollution of the Sea (Reporting of Pollution Incidents) Regulations
  - Prevention of Pollution of the Sea (Reception Facilities) Regulations
  - Prevention of Pollution of the Sea (Detergent and Equipment) Regulations
  - Prevention of Pollution of the Sea (Composition of Offences) Regulations
- Merchant Shipping (Oil Pollution) Act, Chapter 180 (civil liability arising out of oil pollution)
  - Merchant Shipping (Oil Pollution) (Compulsory Insurance Certificate) Regulations
  - Merchant Shipping (Safety Convention) Regulations 1984
- Port of Singapore Authority Act, Chapter 236 (regulation of port activities)
  - Port of Singapore Authority (Dangerous Goods, Petroleum and Explosives) Regulations
  - Singapore Port Regulations 1977

Source: <http://sunsite.nus.edu.sg> 2007