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## Environmental Management of the Malacca/Singapore Straits: Legal and Institutional Issues

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# Environmental Management of the Malacca/Singapore Straits: Legal and Institutional Issues<sup>†</sup>

## INTRODUCTION

The constricted, shallow Malacca/Singapore Straits is a priority area for a coordinated international approach to environmental management by the principal bordering nations, Malaysia, Indonesia, and Singapore (Figure 1). Regionwide cooperation could yield a mutually beneficial distribution of activities, hence, optimal product mixes. Indeed, with the narrowness of the Straits and the transnationality of the ecosystems, resources, and activities, effective management strategies may depend upon the close cooperation of the three nations plus that of extraregional users. These nations, however, have different perspectives, policies, and legal systems. The spatial variability of legal regimes, products, and services may mean national specializations. An incentive system may result in the active discouragement of some individuals in favor of others, hence a difficult institutional arrangement. This article explores the transnational institutional and legal issues which must be resolved in order to enhance cooperation in environmental management.

The Malacca/Singapore Straits is a microcosm of the coastal activities and use conflicts in the region. The Straits are a major transport route for petroleum tankers. Coastal petroleum exploitation is ongoing off North and Central Sumatra with exploration off Southwest Thailand and the Western Malay Peninsula. Coastal depots and refineries are situated in Port Dickson, Sungei Pakning, Dumai, Singapore, and Batam. Bottom tin mining is ongoing from Phuket northwards, and exploration has been undertaken off Johor, Malacca, Negri Sembilan, and Penang. Terrestrial tin mining is scattered throughout the Thai isthmus and the Malay Peninsula, and logging activity is significant on Sumatra, all generating much sediment and contributing to coastal accretion.

In addition to Singapore, the west coast of the Malay Peninsula is rapidly becoming urbanized. Much of Malaysia's population and indus-

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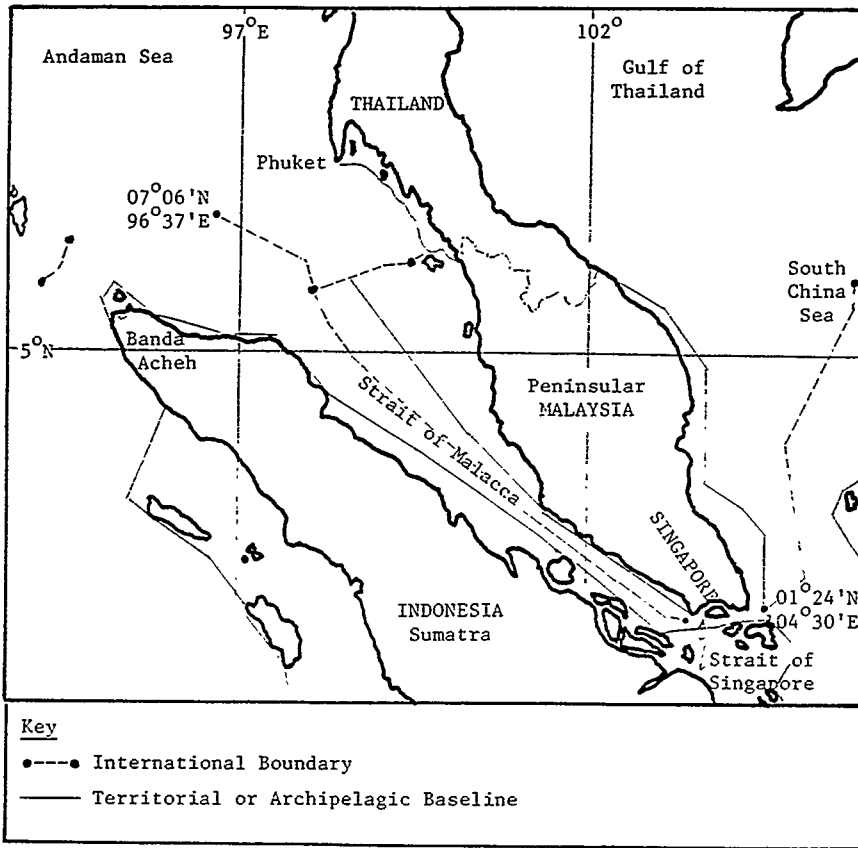


FIGURE 1.

## THE REGION: THE STRAITS OF MALACCA AND SINGAPORE

trial/agricultural processing activity is concentrated there, discharging wastes into the Straits, including those from disease control. The Malaysian ports of Penang, Port Klang, and Port Dickson, the Indonesian port of Dumai, and the port of Singapore are situated on the Straits. Aquaculture is being expanded in North Sumatra and may be developed in suitable locations along peninsular Malaysia's west coast. Mangrove harvesting is locally significant throughout the coastal area of the Straits. Much of the coastal plain of the western Malay Peninsula above the high-tide mark is under cultivation. Artisanal fishing, including shellfish harvesting, is widespread in the nearshore areas. Significant offshore fishing is conducted in the northern Straits. Tourism/recreation centers bordering the Straits include Phuket, Penang, Pangkor, and Sentosa. Marine research stations are located at Phuket, Penang, and Singapore.

Rapidly growing demand exists for the outputs of most of this region's economic activities. Some market destinations are remote, e.g., for shipping and tourism. Many are more localized, e.g., for fisheries and waste disposal. Demand growth rates differ so that optimal output mixes may change over time. Production possibilities are subject to rising marginal costs in all activities due in part to the compact size of the region. The Straits are shallow, hazardous to navigation, and characterized by narrow channels. The nearest substitute for most through navigation is the Sunda Strait between Sumatra and Java. For Very Large Crude Carriers (VLCCs), the Lombok Strait off Bali adds considerable mileage, but reduces hazards. The only substitute for fishing near home is to go farther out to sea, an extension that is now severely limited by maritime claims of other nations. Tourism, tin mining, hydrocarbons, and waste disposal may have substitute locations elsewhere but only at cost to the Straits region.

The outputs of the region are clearly competitive in small areas. Logging and agro-industrial waste disposal damage fisheries and tourism; cross-traffic and fishing vessels may create hazards for tankers in transit and vice versa. It is not clear, however, that the outputs must be competitive regionwide. Some zoning has already taken place in the form of different jurisdictional regimes and sea lanes. In reality, the optimal policy should call for a general reduction of some activities, a general increase in competing uses, and certainly some major reallocations within the region toward subregional specialization. The final measure of success lies in the positive net changes in the national income of each nation involved.

#### CURRENT ENVIRONMENTAL MANAGEMENT; LEGISLATION, CONTINGENCY PLANNING AND THE TRAFFIC SEPARATION SCHEME

##### *Environmental Policies and Regulations*

###### *Policies*

The Straits states have yet to harmonize their respective strategies or specific regulations for marine environmental protection and preservation. No state has introduced the necessary legislation required by the new Convention on the Law of the Sea.<sup>1</sup>

Singapore has adopted a single set of uniform effluent standards.<sup>2</sup> Also, polluters are encouraged to utilize the state-run waste-water treatment plants.<sup>3</sup> By utilizing these services, polluters are not required to fully

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1. United Nations Convention on the Law of the Sea, Doc. A/CONF. 62/122 7 October 1982, Part XII.

2. Jaafar & Valencia, *Marine Pollution: National Responses and Transnational Issues* in MARINE POLICY IN SOUTHEAST ASIA (Kent & Valencia eds.) (to be published by U. Cal. Press, Berkeley).

3. SCIENCE COUNCIL OF SINGAPORE, ENVIRONMENT PROTECTION IN SINGAPORE: A HANDBOOK (1980).

treat their waste-water and thus save some costs. Malaysia has introduced a mixed strategy, issuing two sets of uniform standards for treated sewage and industrial effluents, and prescribing its agro-based industries, namely, palm oil and rubber. "Prescribed premises" has a specific meaning under the Environmental Quality Act: the occupation or use of those premises or industries must be by a person who is holder of a license issued by the minister in charge of the Act.<sup>4</sup> By prescribing these industries, the Malaysian pollution control agency, the Division of Environment, has the power to exercise its many regulatory options, including the control of production or factory operations, in addition to specifying the conditions of discharge into watercourses or onto land. Other industries or sources of pollution must comply with standards applicable either to those discharges within drinking water catchments or to those discharges outside such areas.<sup>5</sup>

Indonesia has yet to introduce pollution control regulations. It has, however, contemplated adopting a multiple-set-of-uniform-standards strategy by issuing four sets of uniform standards for discharges into four types of water bodies.<sup>6</sup>

In short, each country has adopted a different pollution control strategy: Malaysia, mixed uniform standards; Indonesia, multiple uniform standards; and Singapore, single uniform standards (with treatment options). Table 1 compares the specific standards for effluents discharged into watercourses other than those used for water supply. In comprehensiveness and strictness, Singapore ranks generally higher than Malaysia which, in turn, ranks higher than Indonesia.<sup>7</sup>

### *Regulations*

Singapore does not have the need to develop pollution control laws to the extent of its neighbors because of its small size and limited natural resource base.<sup>8</sup> Singapore has been very effective, however, in controlling pollution in and into its waters. Singapore was one of the first countries in the region to attempt to control marine pollution, doing so before attempting to control land-generated pollution.<sup>9</sup> Singapore's response to the dangers of ship-generated pollution is perhaps the most comprehensive of the three states. By implementing its Prevention of Pollution of the Sea Act of 1971, Singapore has in effect ratified the 1954 International

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4. Malaysian Statutes, Environmental Quality Act of 1974 §2.

5. *Id.*

6. Karimoeddin, *National Report of Indonesia*, ONE WORLD ONLY: INDUSTRIALIZATION AND ENVIRONMENT (D. Dielenstein ed. 1973).

7. Jaafer & Valencia, *supra* note 2.

8. *Id.*

9. *Id.*

Table 1. Effluent Standards for Point Sources or Discharges into Rivers or Open Watercourses that Eventually Reach the Ocean.

Type of Waste	Item of Analysis	Unit	Indonesia <sup>a</sup>	Malaysia <sup>b</sup>	Singapore <sup>c</sup>
Oil	Oil and grease	mg/l	100	10	10
Organic	BOD <sub>5</sub> at 20°C	mg/l	300	50	50
	Total suspended solids	mg/l	ns	100	50
Metals	Tin	mg/l	ns	1.0	10
	Barium	mg/l	ns		5
	Manganese	mg/l	ns	1.0	5
	Arsenic	mg/l	1	0.10	1
	Metals in total	mg/l	ns		1
	Chromium (total)	mg/l	5*	0.05* 1	
	Nickel	mg/l	ns	1.0	1
	Zinc	mg/l	10	1.0	1
	Beryllium	mg/l	ns		0.5
	Selenium	mg/l	ns		0.5
	Cadmium	mg/l	1	0.02	0.1
	Copper	mg/l	5	1.0	0.1
	Lead	mg/l	5	0.5	0.1
	Silver	mg/l	ns		0.1
Mercury	mg/l	0.1	0.05	0.05	
Thermal	Temperature	°C	45	40	45
Others	Total dissolved solids	mg/l	ns	ns	2000
	Chloride (Cl)	mg/l	ns	ns	600
	Sulphate SO <sub>4</sub>	mg/l	ns	ns	500
	Chemical oxygen demand	mg/l	600	100	100
	Calcium	mg/l	ns	ns	200
	Magnesium	mg/l	ns	ns	200
	Iron	mg/l	10	5.0	20
	Detergents (as methylene blue)	mg/l	ns	ns	15

continued on next page

Table 1 (continued)

Type of Waste	Item of Analysis	Unit	Indonesia <sup>a</sup>	Malaysia <sup>b</sup>	Singapore <sup>c</sup>
	pH value		5.5-10.0	5.5-9.0	6-9
	Color (LU)		ns	ns	7
	Boron	mg/l	ns	4.0	5
	Chlorine	mg/l	ns	2.0	1
	Sulphide (S)	mg/l	2	0.50	0.2
	Phenolic compounds	mg/l	0.5	1.0	0.2
	Cyanide (as CN)	mg/l	ns	0.10	0.1
	Fluoride (F)	mg/l	2	ns	ns
	Ammonia (free)	mg/l	2	ns	ns
	Nitrate	mg/l	ns	ns	ns
	Nitrite	mg/l	ns	ns	ns

Note: ns = not specified

\* = Cr (VI)

Sources: <sup>a</sup>Badruddin Mahbub, *Kriteria Mutu Lingkungan Hidup Air*, RAPAT KERJA NASIONAL LINGKUNGAN HIDUP 4-5 JAN. 1979. KANTOR MENTERI NEGARA PENGAWASAN PEMBANGUNAN DAN LINGKUNGAN HIDUP (1979).

<sup>b</sup>GOV'T OF MALAYSIA, *supra* note 4 at 58-76.

<sup>c</sup>SCIENCE COUNCIL OF SINGAPORE, *supra* note 3 at 24.

Convention for the Prevention of Pollution of the Sea by Oil (MARPOL 54). The later amendments to this Convention (MARPOL 69) are effected by its Civil Liability (Oil Pollution) Act of 1973.<sup>10</sup>

Malaysia has not ratified any of the relevant international conventions.<sup>11</sup> Under the Environmental Quality Act of 1974, however, there are limited provisions for controlling pollution from vessels.<sup>12</sup> Indonesia has done little to control vessels which pollute its waters, other than introducing a specific regulation through the City of Jakarta<sup>13</sup> to prohibit the discharge of oil from tankers into waters around the Thousand Islands (Gugusan

10. SCIENCE COUNCIL OF SINGAPORE, *supra* note 3. These Acts are enforced by the Port of Singapore Authority (PSA). The authority also provides facilities for the reception, treatment, and disposal of slops, sludges, dirty ballast, and tank washings at the slop and sludge Reception and Treatment Centre on Pulau Sebarok.

11. Jafer & Valencia, *supra* note 2.

12. Malaysian Statutes, Environmental Quality Act of 1974 § 26(1). Section 26(1) of the Act, which specifically prohibits discharge of oil in the high seas ("or any part of the seas outside the territorial waters of Malaysia") is enforceable only for Malaysian-owned vessels and those flying the Malaysian flag. To what extent the Act may be invalid and unenforceable under international law remains an open question; Malaysia has yet to promulgate rules and regulations under the Act in order to effectively enforce Section 26.

13. JAKARTA, INDONESIA REG. No. Bd. 15/4/36/70 L.D. No. 19 (1970).

Kepulauan Seribu). Although the three states have made uneven progress in curbing pollution from vessel sources, relatively more progress has been made in legislation concerning pollution from land-based sources.<sup>14</sup> Also, Indonesia and Malaysia have promulgated regulations to control pollution from offshore exploration and exploitation.

*Singapore.* Singapore has the most effective measures in the region for regulating wastes that reach the marine environment.<sup>15</sup> Its sewage treatment program is illustrative. In 1978, 78 percent of Singapore's population of two million were served by sewers. The sewage is treated at the Sewerage Department's treatment works before discharge into the sea. Some portions of the effluent from the Ulu Pandan Treatment Works is further upgraded by the Jurong Industrial Works to provide a supply of industrial processing water to certain factories in the Jurong industrial area. The department also encourages the siting of new factories in areas where public sewers are available to receive effluents from the factories because it is less costly to discharge into public sewers than directly into watercourses.<sup>16</sup>

In Singapore, the amount of wastes from land-based sources which finally reach the ocean is regulated by the Director of Water Pollution Control and Drainage of the Sewerage Department.<sup>17</sup> In addition, Singapore has imposed restrictions on the marine transportation of radioactive materials under its Radiation Protection Act of 1973. The Act provides for the regulation and control of the importation, manufacture, sale, disposal, transport, keeping, and use of radioactive materials and irradiating apparatus.<sup>18</sup> With a narrow strip of territorial waters, Singapore has little prospect of discovering oil and gas offshore and thus no need for pollution regulations in this regard. Singapore is actively engaged, however, in near-shore excavation and coastal-land reclamation. Apparently, there are no environmental regulations governing these activities.

*Malaysia.* Malaysia has quite comprehensive legislative regulation of waste releases from land-based sources.<sup>19</sup> Malaysia has yet to develop, however, a complete set of regulations for controlling wastes flowing directly into the marine environment. Malaysia's Environmental Quality Act of 1974 (EQA) is a major piece of environmental legislation regulating

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14. Jaafer & Valencia, *supra* note 2.

15. *Id.*

16. SCIENCE COUNCIL OF SINGAPORE, *supra* note 3.

17. A maximum fine of S\$5,000 may be imposed for the discharge into a watercourse of industrial effluent or treated sewage which does not meet the minimum standard of quality specified in the Trade Effluent Regulations of 1976. Also, the discharged effluents must not contain pesticides or radioactive materials.

18. SCIENCE COUNCIL OF SINGAPORE, *supra* note 3. The Act is now administered by the Radiation Protection Department of the Ministry of Science and Technology.

19. Malaysian Statutes, Environmental Quality Act of 1974.



releases of wastes from all sources except those of mining, offshore exploration and exploitation, agriculture, logging, and earthworks.<sup>20</sup> Under the Act, three sets of waste regulations (not listed above), namely, palm oil factories, natural rubber processing plants, and sewage and other onshore manufacturing industries, have been introduced.<sup>21</sup> Waste disposal from mining operations is regulated by state authorities but relegated to the Federal Department of Mines.<sup>22</sup>

The control of silts and sediments due to soil erosion and earthsurface runoff is exercised under four separate laws. The Land Conservation Act<sup>23</sup> has been adopted throughout peninsular Malaysia. The Act seems, however, to have been virtually without effect thus far because it vests broad discretion in state authorities to declare or not to declare a given tract of land should not be cleared or planted with shortterm crops.<sup>24</sup> The Local Government Act of 1976<sup>25</sup> also has provisions for the local authorities to prohibit certain discharges within their areas of jurisdiction. In addition, the Street, Drainage, and Building Act of 1974 empowers the authorities to issue city bylaws for the control of silt washed away due to improper drainage and improper maintenance of streets.<sup>26</sup>

Proper drainage and frequent maintenance of logging tracks are some of the practices required in accordance with various Forests Enactments enforced by respective state authorities. Also, in accordance with the Waters Enactment, the state authorities can alienate sufficient riparian reserves to prevent inroads of silt into receiving streams and rivers.<sup>27</sup>

The Pesticides Act of 1974 provides for the regulation of the import, manufacture, sale, and storage of pesticides but has no provision for regulating the use of pesticides.<sup>28</sup> In practice, however, the various state authorities can prohibit the use of certain pesticides which directly affect the beneficial uses of any inland waters, subterranean water resources,

20. *Id.*

21. These are Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations, 1977-P.U.(A)342; Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations, 1978-P.U.(A)338; and Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979-P.U.(A)12.

22. This is in accordance with the Mining Enactment—Federated Malay States (FMS) Ch. 147 (1929) and its counterpart state legislation. As a matter of practice, effluent limitations in terms of suspended solid content not to exceed 800 grains per imperial gallon (or equivalent to 11,320 parts per million, ppm) or grain size not to exceed 150 mesh are specified as conditions set forth in mining leases issued by state authorities following consultation with the Drainage and Irrigation Department and the Mines Department.

23. Malaysian Statutes, Land Conservation Act of 1960, No. 3, which was enacted under the authority of MALAYSIAN CONST. art. 76(3).

24. SHANE, LEGAL ASPECTS OF ENVIRONMENTAL MANAGEMENT IN MALAYSIA, UN TASKFORCE ON THE HUMAN ENVIRONMENT 44 (1977).

25. Malaysian Statutes, Local Government Act of 1976, §§ 69 & 70.

26. Jaaffer & Valencia, *supra* note 2.

27. Rashid, *The Environmental Law in Malaysia: A Survey*, ENVIRONMENTAL LAW AND POLICY IN THE PACIFIC BASIN AREA 12-14 (Kato, Kumamoto & Matthews eds. 1981).

28. Malaysian Statutes, Pesticides Act of 1974; SHANE, *supra* note 24.

and any water in an estuary or sea adjacent to the coast of their respective jurisdictions.<sup>29</sup> For instance, the State of Perak has banned the use of sodium arsenite as a herbicide.<sup>30</sup>

For controlling pollution arising from offshore exploration or exploitation activities, the Petroleum Mining Act of 1966 empowers PETRONAS, the Petroleum Authority, to specify conditions in any exploration license. The conditions provide that the licensee shall take all steps practicable to prevent the escape of oil or waste of petroleum discovered in the exploration area.<sup>31</sup> Although there is no legal requirement for stipulated oil content level in the effluent from the offshore platforms, standard industrial practice in other parts of the world has been adopted and imposed by PETRONAS.<sup>32</sup>

Radioactive waste disposal is not totally prohibited under the sewage and industrial effluents regulations because its limits are yet to be specified by the minister in charge of the environment.<sup>33</sup> Under the Radioactive Substances Act,<sup>34</sup> however, the Minister of Health is the authority in charge of regulating most aspects of the manufacture, storage, sale, and use of radioactive substances and the safe disposal of radioactive wastes.<sup>35</sup>

*Indonesia.* Indonesia has accomplished little in the control of wastes from land-based sources. Indonesia took the first step in 1936 with the issuance of a use of water resources regulation which encompassed the disposal of industrial wastes in public streams.<sup>36</sup> Other relevant laws<sup>37</sup> require further improvement, especially the disposal of harmful wastes, and standards to eliminate harmful wastes from established industries.<sup>38</sup>

Although the legislative standards have not been fully developed, Indonesia has taken other measures to handle the disposal of human waste. Except for Bandung, Jogjakarta, and Medan which all have waste treatment plants and sewage systems in certain parts of the cities, septic tanks connected to seepage pits are used widely in most urban areas.<sup>39</sup> Additionally, the Department of Industry, in collaboration with the Department

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29. This State's provision appears principally as a new section 7A of the Waters (Amendment) Enactment of 1970.

30. Jaafar & Valencia, *supra* note 2.

31. Revised in 1972; L.M. ACT 95, in accordance with its section 7(5).

32. The set limit for oil is 50 ppm, the level that is considered achievable and acceptable in Malaysia; Lau, *Oil Pollution Preventions and Controls in Hydrocarbon Exploitation, Offshore Malaysia*, TENAGA '80 THE MALAYSIAN NATIONAL COMMITTEE OF WORLD ENERGY CONFERENCE (1980).

33. Malaysian Statutes, Environmental Quality Act of 1974.

34. Malaysian Statutes, Radioactive Substances Act of 1968.

35. These rules are now known as the Radiation Protection Rules of 1974.

36. ALGEMEEN WATERREGLEMENT (PERATURAN PERAIRAN UMUM, 1936) Dat STABLE 1936 No. 489 jo. SIBLE. 1949, No. 98.

37. The Nuisance Ordinance (1926) and its Amendment (1940), and the Safety Law No. 1 of 1970. Karimoeddin, *supra* note 6.

38. Jaafar & Valencia, *supra* note 2.

39. *Id.*

of Health, uses established technical guidelines to evaluate alternative waste disposal systems for industrial wastes.<sup>40</sup> Pesticides are comprehensively regulated in Indonesia.<sup>41</sup>

Indonesia has the most detailed legislative and regulatory provisions dealing with oil pollution arising from offshore exploration and exploitation activities.<sup>42</sup> The existence of these comprehensive provisions in Indonesia is appropriate because Indonesia is a major offshore oil producer. The new anti-pollution supervisory unit within the Oil and Natural Gas Directorate of the Department of Mining is responsible for the enforcement of these provisions.<sup>43</sup> Oil pollution research is being done by a study group on pollution at the Institute of Oil and Gas and the State oil company, PERTAMINA. The company also coordinates all activities connected with oil pollution.

No provisions for mandatory environmental impact assessment for offshore exploration and exploitation activities exist on the remedial side. Little has been done to develop a system of civil liability for oil pollution damage resulting from these activities.<sup>44</sup> The apparent policy of the Indonesian government is that marine pollution by oil originating from offshore operations should not be covered by international conventions. The Indonesian government believes that such matters are of purely national concern and can be dealt with by the public authorities and the concerned oil companies.<sup>45</sup> Indonesia has introduced laws, regulations, and rules for controlling the transport and use of radioactive isotopes, and for preventing the danger of the associated radiation.<sup>46</sup>

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40. Karimoeddin, *supra* note 6.

41. Presidential Decree No. 7, 1973, concerning regulation of distribution, storage, and use of pesticides; Directive from the Minister of Agriculture No. 201/Kpts/Um/6/1973 concerning the application of procedure for pesticide registration and use approval; Directive from Minister of Agriculture No. 429/Kpts/Um/9/1973 concerning conditions for pesticide packaging and labelling; Directive from Minister of Agriculture No. 437/Kpts/Um/11/1975 concerning registration and approval of pesticide use; Directive from Minister of Agriculture No. 125/Kpts/Um/4/1975 concerning registration and approval of pesticide use; Directive from Minister of Agriculture No. 201/Kpts/MP/5/1975 concerning directory of offices regulating distribution, storage, and use of pesticides.

42. The earlier legislative measures against pollution were through the enforcement of the following laws and regulations: The Storage of Oil Ordinance of 1927; The Mine Policy Regulations of 1920; and The Basic Mine Law of 1967. The later provisions are Presidential Decree No. 17, 1974, concerning regulation of offshore oil and gas exploration and exploitation (LN No. 20, 1974, TLN No. 3031); and Directive from Minister of Mines No. 04/P/M/Pertamb/1973, concerning prevention and control of water pollution arising from exploration and/or exploitation of oil and gas activities.

43. Johnston, *Environmental Management in the South China Sea: Legal and Institutional Developments*, EAST-WEST ENVIRONMENT AND POLICY INSTITUTE RESEARCH REPORT 70 (1980).

44. Jaafar & Valencia, *supra* note 2.

45. *Id.*

46. Law No. 31 of 1964 concerning the basic decision for the development of atomic energy (LN No. 124 of 1964); Presidential Decree No. 33 of 1965 concerning the Atomic Energy Assembly and the National Atomic Energy Board (LN No. 88 of 1965); and Presidential Decree No. 5 of 1969 concerning the use of radioactive isotopes and radiation (LN No. 18 of 1969, TLN No. 2892). There is no mention, however, of how the used radioisotopes are to be handled.

In general, Indonesia has not developed supporting regulations to effectuate its existing laws.<sup>47</sup> The lack of any followup of its environmental laws, despite the fact that there have been some efforts to formulate rules and standards, is quite understandable. Indonesia has not changed its longtime position that the environmental problems of poverty are not less acute and certainly are more widespread than the environmental problems caused by affluence.<sup>48</sup> For this reason, there is no single central government agency in Indonesia that is wholly responsible for pollution control. Since the establishment of the Ministry of State for Development Supervision and Environment in 1978,<sup>49</sup> there has been some effort to integrate the environmental element in the country's socioeconomic development strategy. Unfortunately, the power of this ministry is limited to the coordination of environment-related activities and the formulation of general environmental policy and guidelines. The regulatory powers are still in the hands of sectoral agencies.<sup>50</sup>

### CONTINGENCY PLANS<sup>51</sup>

#### *National Plans*

In Indonesia, as an intermediate step prior to the establishment of a national contingency plan, the Directorates General of Sea Communication and of Oil and Gas cooperated in the formulation of "Permanent Procedures on Marine Pollution Control in the Malacca-Singapore Straits" (PROTAP). The procedures were effective September 18, 1975, within the limits of the Indonesian territorial sea in the Straits.

Singapore has developed an "Emergency Plan to Combat a Major Oil Pollution Disaster." Its principal function is to ensure that sufficient stocks of floating booms, skimming devices, and detergents are available and ready for delivery to the site of the emergency. Procedures are set forth to cover major pollution events, including collisions and groundings, as well as to deal with fire hazards. Operations of each unit have been defined and coordinated within the system, and a sophisticated manual for all personnel involved has been developed.<sup>52</sup>

The Malaysian plan assumes that daily traffic through the Straits will increase beyond the present level of 140-150 vessels. An anticipated

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47. Jaafar & Valencia, *supra* note 2.

48. Karimoeddin, *supra* note 6.

49. Renamed the Ministry of State for Population and Environment.

50. Jaafar & Valencia, *supra* note 2. For example, the Department of Industry, the Department of Public Works, Energy and Electricity, the Department of Agriculture, the Department of Transport, the Department of Mining, and the Department of Public Health.

51. For an expanded treatment of contingency plans, see the source of this information: Finn, Hanayama, Meimandi-Nejad, Piyakarnchana, Reeves, *Oil Pollution from Tankers in the Straits of Malacca: A Policy and Legal Analysis*, 6 East-West Center Open Grants Papers (1979) [hereinafter referred to as Finn].

52. Port of Singapore Authority, Marine Emergency Action Procedure (n.d.).

increase in oil volume transshipped through the Straits will raise the probability of casualty to more than 25 percent per year. The plan describes the serious consequences of accidents and sets forth a plan of action calling for the establishment of three area headquarters—at the port of Johore Bahru (South), Port Kelang (Center), and the port of Penang (North) each headed by an Area Coordinator (the Harbour Master).<sup>53</sup> Each area would be self-sufficient in equipment, facilities, and trained personnel. In case of a minor oil spill, the area coordinator would be responsible for all control efforts. When major oil spills occur, however, the Royal Malaysian Navy, assisted by the area coordinators as needed, would take charge. A plan of operation is spelled out, responsibilities are designated, and the required equipment is listed. An essential requirement of successful implementation of this plan is speed of action to prevent oil from reaching the vulnerable beaches and mangrove forests along the coastline.<sup>54</sup> Malaysia's contingency plan calls for handling and cleanup of oil by mechanical means. The use of dispersants is reserved for cases of absolute emergency because the chemicals used to disperse oil are considered hazardous to the aquatic biota.

#### *The Association of Southeast Asian Nations (ASEAN) Contingency Plan*

The intent of the ASEAN Contingency Plan was not to duplicate national efforts but to coordinate and integrate the efforts of the member countries. The plan provides for effective reporting to alert member countries, creating awareness of the antipollution capabilities of the member countries, and rendering assistance in operations where and when necessary. The capabilities of each member country are recorded, and contact points are established within each country so information can be disseminated rapidly and requests for assistance dealt with efficiently.<sup>55</sup> Potential pollution problem areas are described, including high density shipping lanes, offshore oil exploration and production centers, coastal tourist and recreational areas, fish spawning areas and fishing grounds. The plan also records the location of resources for marine oil pollution control and shore reception facilities, as well as information on winds, currents, tides, and

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53. Malaysia Ministry of Science, Technology and Environment, Straits of Melaka Contingency Plan at 2 (n.d.). The Ministries of Defense, Communication, Agriculture and Rural Development, and Foreign Affairs; the Departments of Royal Customs and Excise, Marine Police, and Immigration; and five resident oil companies (Esso, Shell, Caltex, BP, and Mobil) cooperated with the Ministry of Science, Technology, and Environment in formulating the contingency plan for the Malacca Strait. The plan was endorsed by the Malaysian Cabinet in June 1976.

54. Finn, *supra* note 51, at 92.

55. *Id.* at 91. The contact points are Jakarta: Directorate General of Sea Communications; Kuala Lumpur: Directorate General of Environment; Manila: National Operations Center for Oil Pollution; Singapore: Port of Singapore Authority; and Bangkok: National Environment Board.

other meteorological data. It describes operational procedures, recommends appraisal of operations after each incident, and provides for review and amendment of the plan with the concurrence of all member countries, as the need arises. Additional suggestions include the establishment of an ASEAN Marine Pollution Control Center at Manila or Singapore, and the opening of the plan to interested non-ASEAN parties as associate members.<sup>56</sup>

### *The Malacca-Singapore Straits Traffic Separation Scheme (TSS)*<sup>57</sup>

The Malacca TSS consists of three elements—Traffic Separation Schemes (TSSs), Deep-Water Routes (DWRs), and accompanying Rules.<sup>58</sup> TSSs, consisting of a separation zone and two traffic lanes, have been implemented at One Fathom Bank, in the Singapore Strait, and at the Horsburgh Light area. DWRs have been established within the eastbound lanes of the TSS in the Strait of Singapore (Figure 2). This scheme was approved

56. *Id.* at 92.

57. On November 14, 1977, the Traffic Separation Scheme for the Straits of Malacca and Singapore (Malacca TSS) was approved by the Intergovernmental Maritime Consultative Organization (IMCO) (now the Intergovernmental Maritime Organization) (IMO) and implemented on May 1, 1981; Finn, *supra* note 51.

58. IMCO Doc. MSC XXXVII/4 (16 Sept, 1977).

Rules implemented for all vessels include:

- 1) Deep-draft vessels, i.e., those with a draft of 15 m. or more, and VLCCs, i.e., tankers of 150,000 dwt and above, are to allow a UKC of at least 3.5 m. "at all times during the entire passage through the Straits . . ."
- 2) Masters of such vessels are to take all necessary safety precautions especially when within TSSs, and are advised to consider navigational constraints when planning their passage through the Straits.
- 3) Local pilotage services are recommended for such vessels when they are within the TSSs, when such services become available.
- 4) More specifically, COLREGS 72, Rule 70, requires:
  - a. Deep-draft vessels and VLCCs are required to use certain DWRs and other vessels are instructed to avoid them "as far as practicable;"
  - b. Deep-draft vessels are advised to use a DWR between Buffalo Rock and Batu Berhanti;
  - c. Deep-draft vessels in the DWR are instructed to avoid overtaking, "as far as practicable;"
  - d. All vessels in TSSs are required to move in the general direction of traffic in the lane and maintain as steady a course as possible consistent with safe navigation;
  - e. Westbound vessels approaching Raffles Lighthouse in the strait of Singapore are advised to take caution and required to give way to deepdraft vessels approaching from Phillip Channel;
  - f. VLCCs and deep-draft vessels are advised to maintain a speed of no more than 12 knots;
  - g. All vessels navigating in TSSs are required to maintain a safe speed, proceed with caution, and be in a maximum state of maneuvering readiness;
  - h. VLCCs and deep-draft vessels in the Straits are advised to participate in the voluntary ships' reporting system, in which they would give information concerning their characteristics, speed, and times of passage through critical areas eight hours prior to entry into the TSSs.



by the Intergovernmental Maritime Organization (IMO).<sup>59</sup> Although the regional states initially opposed any IMO intervention in the creation of a TSS for the Straits, they are now apparently willing to pursue international avenues for resolution of the problems.<sup>60</sup> The method pursued by the regional states in adopting a TSS for the Straits is fully in accord with the provisions of the Convention on the Law of the Sea under which states are encouraged to make regional responses to environmental problems, subject to approval by relevant international organizations.<sup>61</sup> Adoption of the Malacca TSS by IMO creates an enforceable obligation for vessels to conform to the TSS.<sup>62</sup>

The Malacca TSS is an incomplete instrument for eliminating the problem of environmental pollution resulting from the transshipment of oil through the Straits by tankers, or even the more specific problem of casualties resulting from collisions and groundings. The TSS at One Fathom Bank is too narrow and runs through an area with a heavy concentration of fishing vessels.<sup>63</sup> Also, there is concern that shallows within the route in the Singapore Strait are dangerous for certain vessels. The Straits contain a significant volume of crossing traffic and fishing activity. Frequently vessels that do not conform to the general movement are present in the traffic lanes.<sup>64</sup> Even for those vessels moving in one direction within the defined lanes, the volume of shipping alone will result in many vessels in very close proximity, proceeding along slightly different courses at different rates of speed. Overtaking and crossing will, therefore, continue. Even in the case of Very Large Crude Carriers (VLCCs) and other deep-draft vessels navigating in DWRs, overtaking is not completely prohibited.<sup>65</sup> The under-keel clearance (UKC) concept may prove inadequate to prevent groundings because the movements of the bottom in the Straits will create unexpected shallows.

The rules of the Malacca TSS are qualified and, as such, unlikely to create consistent observance of clear standards. Overtaking and the presence of nondeep-draft vessels in the DWRs are to be avoided only "as far as practicable."<sup>66</sup> Strict observance of designated courses and bearings

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59. Jaafar & Valencia, *supra* note 2.

60. Finn, *supra* note 51, at 85.

61. UNITED NATIONS, *supra* note 1, at art. 41.

62. Finn, *supra* note 51, at 85; COLREGS 72 sets up a system for the establishment of obligatory traffic separation schemes and revises rules for safe navigation practices and navigational signals. The status of the Malacca TSS is, therefore, enhanced by its direct enforceability through the domestic legislation of the contracting states to the Convention on International Regulations Preventing Collisions at Sea (COLREGS 72), and by its indirect effect on liability in cases of nonobservance of the TSS.

63. Jaafar & Valencia, *supra* note 2.

64. Jaafar, *Prospects for Marine Regionalism in the Malacca and Singapore Straits* 117 (Ph.D. Dis., U. Hawaii 1984).

65. Finn, *supra* note 51, at 86.

66. *Id.*



is not required, even within traffic lanes. Masters are advised to be in a state of readiness for delicate maneuvering but no additional radio contact requirements have been adopted.<sup>67</sup> Reporting in the case of passage of VLCCs and deep-draft vessels is voluntary. Continuous reporting of position within the Straits is not required. No special equipment is required that would not otherwise be mandated under general international standards, and no special crew training or certification is necessary. Pilotage is voluntary.

Improvement of navigational aids in the Straits, although they have and presumably will continue to lower the frequency of casualties, will not ensure the elimination of major casualties. Even though there are both conceptual and practical difficulties in adopting more sophisticated systems of vessel regulation, such systems should be considered.

### LEGAL ISSUES

#### *Harmonization of Legal Regimes*

On November 16, 1971, the governments of Indonesia and Malaysia declared jointly that the Strait of Malacca was not an international waterway, while Singapore only took note.<sup>68</sup> Later, the coastal states established a common front in dealing with the maritime powers. An agreement between the littoral states on navigational safety in the Straits of Malacca and Singapore was reached on February 24, 1977. The joint declaration of 1971 and the Safety Agreement of 1977 raised critical questions of international law regarding the status of portions of the Straits.

Indonesia and Malaysia have declared 12 nautical mile (nmi) territorial seas and 200 nmi Exclusive Economic Zones (EEZs). Indonesia also has declared archipelagic waters.<sup>69</sup> Where the breadth of the straits is more than 24 nmi, the jurisdictional regime of the Straits is divided between territorial waters and EEZs (Figure 3). In the narrow parts of the Straits, Indonesia might consider its parts as archipelagic waters. These regimes may apply to navigation until the Convention on the Law of the Sea becomes international law. Thus for navigation, two legal regimes may apply in three different regions: innocent passage in territorial seas,<sup>70</sup> transit passage in the EEZ,<sup>71</sup> and innocent passage or sealane passage in archipelagic waters.<sup>72</sup> The new Convention, when ratified, will defini-

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67. *Id.*

68. Leifer & Nelson, *Conflict of Interest in the Straits of Malacca*, 49 INT'L AFFAIRS 190, 191, 194 (1973).

69. On the basis of the 13 December 1957 Djuanda Declaration, Indonesia promulgated its archipelagic baselines in 1960. See UNITED NATIONS, *supra* note 1, at Parts II, IV, and V for a full explanation of States rights and duties in these zones.

70. UNITED NATIONS, *supra* note 1, at art. 45.

71. *Id.* at art. 41.

72. *Id.* at art. 52-53.

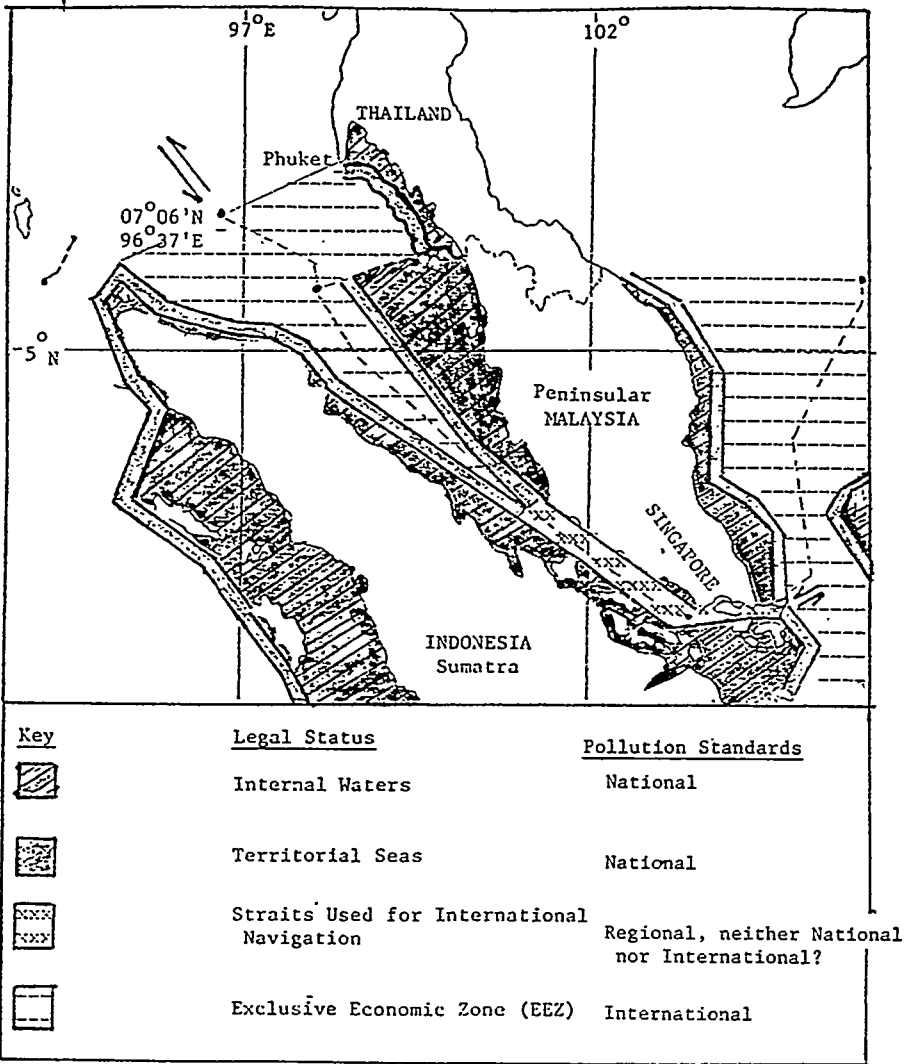


FIGURE 3.

THE LEGAL STATUS AND THE POLLUTION STANDARDS OF THE REGION

tively change from innocent passage to transit passage the navigational regime of the parts of the Straits less than 24 nmi wide.<sup>73</sup> The geographic extent of the transit passage regime depends on the geographic definition of the Straits and not on distance from baselines.

Thus, under the new Convention, the Straits of Malacca and Singapore could qualify as "straits used for international navigation" with the regime of transit passage. Part III of the Convention, however, provides that transit passage is the freedom of navigation and overflight solely for the purpose of continuous and expeditious transit of the strait between one area of the high seas or an EEZ and another area of the high seas or an EEZ.<sup>74</sup> Part III does not apply to straits used for international navigation if the high seas route or a route through an EEZ of similar convenience exists through the straits. The Malacca/Singapore Straits do link the EEZs of Indonesia and Malaysia in the northern half of the Straits and the South China Sea (Figure 3). Vessels transiting the Straits immediately after leaving the Horsburgh Lighthouse area, however, may be heading for Indonesia's archipelagic waters, not Malaysia's EEZ. The maritime powers argue that there is no alternative route through the maritime region of similar navigational and hydrographical convenience.<sup>75</sup>

According to the Convention, in the EEZ and straits used for international navigation, states bordering the straits cannot suspend passage which is continuous and expeditious.<sup>76</sup> The Straits states may be able, however, to introduce regional regulations to enhance navigational safety in the Straits and to safeguard the marine environment from vessel pollution as long as the regulations do not affect vessel design or construction.<sup>77</sup> Such regulations should be worked out first by the states concerned, in consultation with the competent international organization such as IMO. Passage of vessels which are likely to cause or threaten major damage to the marine environment may be suspended by coastal states because the passage of such vessels may be considered "not innocent." To what extent violations of any of the regulations jointly introduced by the Straits States constitute threats of "major damage to the marine environment" will depend on the interpretation of Convention Article 233: "if a foreign ship . . . has committed a violation of the laws and regulations . . . causing or threatening major damage to the marine environment of the straits, the States bordering the straits may take appropriate enforcement measures. . . ."<sup>78</sup>

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73. *Id.* at art. 35.

74. *Id.* at art. 38.

75. Finn, *supra* note 51, at 127.

76. UNITED NATIONS, *supra* note 1, at art. 38.

77. *Id.* at art. 43.

78. *Id.* at art. 233.

The littoral states have attempted to establish a Memorandum of Understanding with the major maritime states to interpret Convention Article 233. For the Straits of Malacca and Singapore, any violation of the 3.5 meter under-keel clearance (UKCV)<sup>79</sup> constitutes a "threat that can cause major damage to the marine environment." The Memorandum, however, is silent on the other rules adopted by IMO in its resolution relating to the safety of navigation in the Straits of Malacca and Singapore.<sup>80</sup> Certainly the coastal states have "no power to prohibit the passage of any tanker for violating the [under-keel clearance] (UKC) requirement."<sup>81</sup> Nevertheless, the legal status of this interpretive statement is presently unclear because the Convention is not yet in force.

The right to regulate pollution from vessels in the EEZ falls to flag states.<sup>82</sup> According to Convention Article 211, however, coastal states may designate special areas in the EEZ for the protection of the marine environment against pollution. In such areas, coastal states may exercise three options: complete prohibition of passage, detour, or through passage with complete prohibition of any discharge.<sup>83</sup>

### *Harmonization of Coastal State Perspectives*

Although the joint declaration that the Straits were not an international waterway reflected common interests, "the initiative was more a product of Indonesian than of Malaysian priorities."<sup>84</sup> Indonesia was more concerned with questions of national integration and internal security as manifested by its archipelagic declaration, often challenged by extraregional entities, than with that of pollution from foreign vessels in the Straits.<sup>85</sup> Sukarno had long argued that Indonesia would not become strong or secure unless the whole Strait was under Indonesian jurisdiction.<sup>86</sup> The Djounda declaration on the archipelagic concept included the Malacca Strait. Indeed, Indonesia may have considered it a sacrifice to treat the Straits of Malacca and Singapore as a unit because Singapore would have some input in Malacca Strait management which it previously did not have.

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79. The distance between the lowest part of the hull of the ship and the channel bottom.

80. Finn, *supra* note 51, at 85.

81. Yatim, *Problems of Pollution in Malaysia*, 2 MALAYAN L.J. (1978); Yatim, *Law of the Sea and Related Legislations*, paper presented at the National Seminar on the Protection of the Marine Environment and Related Ecosystems, Kuala Lumpur (1979); Yatim, *Straits of Malacca and Singapore in International Law* (Ph.D. Dis. Univ. of Kent, 1979).

82. UNITED NATIONS, *supra* note 1 at art. 217.

83. *Id.* at art. 211(6).

84. Liefer & Nelson, *supra* note 68, at 191.

85. Finn, *The Marine Environment and Maritime Security in Southeast Asia: Controlling Oil Tanker Traffic in the Strait of Malacca*, XXXIV NAVAL WAR COL. REV. 49 (1981).

86. YAMIN, *NASKAN PERSIAPAN UNDANG-UNDANG DASAR 1945 I.* (Jakarta, 1959).

To Malaysian negotiators and some others at the Third United Nations Conference on the Law of the Sea (UNCLOS III) it has always been clear that Indonesia would rather concentrate on pursuit of international recognition of its archipelago principle than on negotiating an innocent passage regime for the Malacca/Singapore Straits. Throughout the nine long years of negotiations at UNCLOS III, Indonesia did not insist on innocent passage provisions in archipelagic waters, and remained for a long time contented with the newly introduced concept of transit passage in archipelagic waters as well as in straits used for international navigation.<sup>87</sup>

Non-archipelagic states, like Malaysia and other straits states, were left with the task of clarifying the exact rights of coastal states in straits used for international navigation under the new regime of transit passage. For the Malacca/Singapore Straits, Malaysia took the lead as coordinator of the "straits states." Japan acted on behalf of the major maritime states,<sup>88</sup> holding a series of meetings for the purpose of interpreting the meaning of Article 233 in its application to the Straits of Malacca and Singapore.

"Malaysia was more directly concerned with the [control of] navigation and the prevention of pollution" in the Straits.<sup>89</sup> According to Malaysia's former Solicitor General Zakaria, "the problem confronting the Straits is basically the question of the safety of navigation."<sup>90</sup> At the Second Session of Plenary Meetings of UNCLOS III, the Chairman of Malaysia's delegation to the Conference reiterated that Malaysia "was very conscious of the grave danger of marine pollution . . . so little importance seemed to be attached to the security and other legitimate interests and concerns of coastal states, which should not be expected to bear the cost of damage to their marine environment caused by pollution and accidents."<sup>91</sup>

Singapore's concerns were for local defense, security, and navigational freedom for all big powers. Such navigational freedom would effectively neutralize individual great power influence and also the power of any potentially dominant regional state. Second, the oil refining industry in Singapore was built on the assumption of free transit for the most modern tankers of any size.<sup>92</sup> This is why the Singapore government only took note of the common position of Indonesia and Malaysia when the Indonesian and Malaysian governments agreed that the Straits of Malacca

87. POLOMKA, *OCEAN POLITICS IN SOUTHEAST ASIA* (1978); Jaafar, *supra* note 64, at 199.

88. France, the Federal Republic of Germany, Norway, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America.

89. Leifer & Nelson, *supra* note 68, at 193.

90. Yatim, *supra* note 81.

91. UNITED NATIONS, *THIRD UN CONFERENCE ON THE LAW OF THE SEA. I OFFICIAL RECORDS*. (New York, 3-15 Dec. 1973; Caracas, 20 June-29 Aug. 1974); the Straits are fast becoming one of the world's dirty maritime backlanes, remarked a Malaysian delegate to the Conference.

92. Logaraj, *Navigational Safety, Oil Pollution, and Passage in the Strait of Malacca*, 20 *MALAYAN L. J.* 287-307 (1978).

and Singapore are not international straits. The original positions of the states on the UKC were consonant with those different perspectives (Table 2).

Table 2. Proposals for Limiting the Under-Keel Clearance for Deep Draft Vessels.

Factor	Indonesia	Malaysia	Singapore
Squat (m)	1.9	2.0	1.0
Wave action or swell	0.5	0.5	0.5
Safety margin	1.0	1.0	1.0
Human error	1.0	1.0	nil
Necessary clearance required	4.4	4.5	2.5

Source: April PETROLEUM NEWS [SEA] 11 (1976). GOV'T OF SINGAPORE, *Safety of Navigation in the Malacca-Singapore Straits*. TECHNICAL GROUP MEETING OF EXPERTS (1975).

### *National vs. International Priorities and Standards*

The development of specific legal regimes to implement the Convention on the Law of the Sea has moved from the global (Table 3) to the regional and bilateral level. Some regimes possibly could be discriminatory and in excess of those required by international agreement. Although there is some danger that a regional approach will lead to excessive regimes, a regional approach may be preferable to a proliferation of individual excessive claims. A regional scheme may lead to the development of effective and efficient marine management more responsive to regional needs.

The Convention appears to bar any action, unilateral or regional, by coastal states to impose requirements in excess of those of the vessels' flag states on vessels in passage near their shores. A number of developments, however, suggest that in the future reasonable action against vessel-source pollution may be possible for coastal states, especially when acting in regional groups. There have already been a number of unilateral assertions of jurisdiction over vessel polluters, both by coastal (Canada) and port states (United States).<sup>93</sup> Many states have made unilateral claims to special purpose zones which exceed those recognized by the Convention.<sup>94</sup> "Creeping jurisdiction," by which stricter regimes and total claims are extended further from shore, has been the trend of the decade. It is not certain that this trend has been forestalled by the Convention. Such

93. Finn, *supra* note 51, at 106.

94. E.g., the military warning zones of Vietnam and North Korea, territorial seas beyond 12 nmi by the Philippines and Peru.

Table 3. Important Global Treaties Dealing with Ship-Generated Marine Pollution and the Marine Environment.

Convention	Description
Jamaica Convention	Stipulates obligation of States to protect and preserve the marine environment. Also, various articles elaborating provisions for global and regional cooperation, technical assistance, monitoring and environmental assessment, international rules, and national legislation to prevent, reduce, and control pollution of the marine environment, enforcement, safeguards, and responsibility and liability.
1954 OILPOL and its 1962, 1969, 1971 Amendments	Provides for prevention of pollution of the sea by oil; will be replaced by MARPOL 1973.
MARPOL 1973 and its 1978 Protocol	Comprehensive attempt to control operational discharge from shipping, establishes operational discharge standards for all substances except radioactive materials and requires certain equipment to achieve them, e.g., segregated ballast, and record keeping and enforcement.
1969 Civil Liability Convention and its 1976 Protocol	Provides for liability of a ship owner for all pollution damage caused in the territory or in the territorial waters of another contracting state by oil which has escaped or has been discharged from his ship.
1971 Fund Convention and its 1976 Protocol	Provides for compensation for damages not compensated by Civil Liability Convention.
1972 London Dumping Convention and its 1978 Amendments	Prohibits discharge of oil within certain zones from ships over a certain size and completely for ships over 20,000 dead weight tons (DWT), and calls for waste reception facilities in ports and the installation of equipment to prevent operational pollution.
CL??? Explore and Exploit 1977	Provides for civil liability for oil pollution damage resulting from the exploration and exploitation of submarine resources.
COLREGS 1972	Sets up a system for the establishment of obligatory traffic separation schemes and revises rules for safe navigation practices and navigational signals.
STWC 1978	Establishes standards of training.

extensions of jurisdiction for, e.g., fisheries management, may become more acceptable when they are accompanied by a genuine regionalization of resources or when they do not simply amount to a restrictive claim unaccompanied by sound management practices and efficient utilization of the resources in question.<sup>95</sup> When pollution problems are involved, especially those regional in nature or amenable to regional solutions, jurisdictional regimes stricter than those provided for in the Convention may become acceptable if linked to a sound regional program of environmental management. Following are some specific examples of legal issues which may arise:

95. Finn, *supra* note 51, at 108.

### 1. *Spatial Interference with Transit Passage*

To what extent do offshore mining rights prevent freedom of navigation, and do states' rights over the resources of the continental shelf prevail over other states' rights in the water column? Exploration and exploitation by Malaysia for offshore tin and by Indonesia for offshore hydrocarbons could reduce the area necessary for transit passage in the Straits. Article 78(2) of the Convention says that coastal States must not cause "any unjustifiable interference with navigation and other rights and freedoms of other States. . . ."<sup>96</sup> The interpretation of "interference with navigation" may be developed cooperatively by the Straits States.

### 2. *Innocent Passage and Transit Passage: Where do they Apply?*

Where is the regime of innocent passage applicable, and where is the transit passage regime applicable? For example, a Burman boat operated by Thai nationals smuggling tin ore was caught by Malaysian Customs officials outside the designated lanes of the traffic-separation scheme at the One Fathom Bank. The case was brought before a magistrate in the District of Klang, Selangor.<sup>97</sup> The magistrate must first establish whether the passage was innocent. The prosecution's argument hinges on the geographical position of the boat at the time of arrest. The boat should have been proceeding expeditiously in the lanes if the intention was to transport in transit passage the ore from Thailand to Singapore. The coastal State does not have the right to impede transit passage.<sup>98</sup> The coastal State may maintain, however, that innocent passage applies outside the traffic lanes. The case should help clarify where in the Straits the rights of coastal states end and those of flag states begin.

### 3. *Extension of the Traffic Lanes*

Because the traffic scheme exists only in critical places,<sup>99</sup> should the traffic lanes be extended throughout the whole length of the Straits? The coastal states are wary of establishing continuous traffic lanes as these might be construed by the maritime powers as "high seas corridors" in the Straits. Also, such a scheme might adversely affect cross-channel traffic. On the other hand, it might provide coastal states an opportunity to establish, based on vessel position in the Straits, dual-pollution standards for vessel discharges. Under such a scheme, all vessels outside the traffic lanes and all occasional users would have to comply with national standards, whereas international standards would apply to those vessels

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96. UNITED NATIONS, *supra* note 1, at art. 78(2).

97. New Straits Times 9 (Sept. 12, 1982).

98. UNITED NATIONS, *supra* note 1, at art. 38.

99. One Fathom Bank, Philip Channel, and Horsburgh Lighthouse.



in the traffic lanes or to those vessels which continuously use the Straits for through passage. A violation of national standards could constitute "a threat to the marine environment." Such passage might not be considered innocent and could be suspended.<sup>100</sup>

#### 4. Duties of Port States

Port states have full control over all vessels within their port limits.<sup>101</sup> A difficulty arises when a port state refuses to admit a vessel that is not clean. The tendency is for these vessels to leave the port area and to discharge their dirty ballast in the Straits where the rights of flag states prevail over those of coastal states, or where the enforcement capability of the coastal states is deficient. A second difficulty arises when the port state refuses to take action against a vessel which has violated international law or the laws of another coastal state, for instance, by willful pollution.

#### 5. Traffic Management

Although it may reduce the incidence of vessel casualties, the Malacca Traffic Separation Scheme (TSS) is unlikely to eliminate casualties because the Straits are so narrow, congested, and shallow in spots. Additionally, traffic will steadily increase.<sup>102</sup> Coastal states' efforts to promote more sophisticated systems, however, may be met by user objections regarding cost, reliability, effectiveness, and safety. Their legality also may be challenged, due to interference with flag state jurisdiction, imposition of charges, and invalid equipment requirements.

Advanced vessel traffic systems (VTS) impose external supervision and control on vessel movements, ranging from surveillance and monitoring of position to actual control of courses, speeds, and other vessel movements. Under VTS, navigational instructions are issued to the vessel master, but the actual navigation of the vessel remains the responsibility of the master, subject to the advice received from VTS dispatchers.<sup>103</sup> Arguably, VTS could be imposed on vessels in transit passage because such systems could actually enhance the passage rather than interfere with it, and also protect the environment. The cost of additional equipment and the required crew time may not be unreasonable when compared to the safety and environmental problems of the Straits.

VTS, however, could require communicational capacity and other equipment in excess of that presently carried by vessels and required by general international agreements.<sup>104</sup> Language difficulties could muddle

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100. UNITED NATIONS, *supra* note 1, at art. 233.

101. *Id.* at art. 218.

102. Finn, *supra* note 51, at 108-09.

103. *Id.* at 110.

104. *Id.* at 109.

the communication necessary for reliable VTS. Traffic in the Straits is dense and complex in pattern and vessel types; an inadequate or unreliable VTS could produce chaos in crowded traffic conditions. VTS could require a level of coastal state control over vessel movements and a level of disclosure of possible sensitive information about vessel activities, cargo, and characteristics which might be unacceptable to major private users. Also, VTS may be perceived as a prelude to further restrictions such as statements of ownership prior to use, and financial responsibility requirements.

Imposition of VTS costs on users would also present a legal problem. Under existing international law, charges may not be levied on foreign ships for the privilege of passage.<sup>105</sup> The Convention, however, provides that charges may be imposed on ships passing through territorial waters as payment for specific services rendered to those ships.<sup>106</sup> Imposition of costs for VTS services which are provided from a remote point could result in navigational interruptions if a payment scheme did not involve contact between coastal authorities and the vessel master.

#### 6. *Restrictions on Tanker Operations: Prohibited Zones*

Restrictions on tanker movements and operations could be employed to prohibit tankers altogether from hazardous or sensitive areas, to restrict their navigation in such areas, or to impose more stringent requirements concerning operational discharges in sensitive areas. The Convention validates these procedures when they are undertaken to prevent damage to waters where ecological conditions create "special circumstances."<sup>107</sup> In the Malacca/Singapore Straits, the TSS already significantly defines the appropriate traffic lanes for tankers. There is little room in the narrow portions of the Straits to restrict tanker operations any further.<sup>108</sup>

Nevertheless, tankers navigating through hazardous or key ecological areas could be required to carry local pilots, have tug escorts, or continuously report their positions. Technically, such restrictions on tanker movements and operations could not be imposed unilaterally. Requiring tugs or local pilots in certain areas of the Straits probably would be opposed because of the costs and administrative and navigational inconvenience.<sup>109</sup>

Operational discharges already are illegal in most parts of the Straits<sup>110</sup> because the International Convention on the Pollution of the Sea by Oil

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105. *Id.* at 110.

106. UNITED NATIONS, *supra* note 1, at art. 26(2).

107. *Id.* at art. 211(6).

108. Finn, *supra* note 51, at 110.

109. *Id.* at 111.

110. *Id.*

(MARPOL 69) continues the MARPOL 54 requirement that discharges cannot be made within 50 miles of land.<sup>111</sup> Additional restrictions on operational discharges could be considered for those places where discharges are still allowable. Additionally, discharge regulation in areas outside the Straits where discharges would be likely to influence the environment of the Straits, including some parts of the Andaman and South China Seas, could be supplemented.

### 7. *Tanker Safety Standards: Special Design and Equipment Requirements*

The possibility that coastal states might attempt to impose tanker design and equipment requirements has been one of the main concerns of maritime powers.<sup>112</sup> Nevertheless, valid design and equipment issues exist. The Crude Oil Washing System (COW) has been accepted as an adequate substitute for Segregated Ballast Tanks (SBT) on existing vessels, even though COW will lead to continuing operational discharges which would have been eliminated by requiring SBT.<sup>113</sup> The world oversupply of tanker tonnage makes it probable that vessels without SBT will continue to operate for the foreseeable future. In addition, the 1978 Convention on Safety of Life at Sea, which is not yet in effect, provides for collision avoidance radar systems (CAS) that will significantly enhance the navigational capacity of tankers in congested traffic.<sup>114</sup>

The primary objection to regional implementation of such requirements has been that conflicting standards could be created by allowing different regions to impose unilateral design and equipment requirements.<sup>115</sup> States which are contemplating unilateral imposition of such requirements probably would examine the provisions enacted by other states and confer with these states to develop adequate and uniform standards. Even if there were conflicting standards, a vessel equipped with the best available technology would probably meet all of the standards, or at least could demonstrate that its design and equipment features would be adequate to comply with the differing regulations.

### 8. *Double-standards*

If the same vessels pursue the same routes on a continuous basis, and meet the strictest standards along the route, the vessels would satisfy all

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111. *Id.*

112. Alexander, *The Costs of Failure at the Third Law of the Sea Conference*, 9 J. MARIT. L. & COMM. 1, 27 (1977).

113. Carter, *Amoco Cadiz Incident Points Up the Elusive Goal of Tanker Safety*, 200 SCI 514,515 (May 5, 1978).

114. Finn, *supra* note 51, at 111.

115. *Id.*

standards along the route. Such standards might be applied only to vessels that regularly navigate through the Straits; vessels that only occasionally transit the Straits could be exempted altogether. If fear of a mosaic of different standards could be removed, the validity of imposing such standards may hinge on their reasonableness. A modification of the double-standards approach would be to combine design and equipment standards with alternatives for vessels which do not or cannot conform to the regulations, such as requiring a tug escort having specified aggregate horsepower in relation to the tonnage of the tanker. This tug escort requirement might not significantly increase the costs of navigation.

### *9. Imposition of Charges*

Because oil pollution in the Straits is supposedly largely the result of activities of extraregional interests,<sup>116</sup> the coastal states may eventually wish to impose pollution costs on the users. Under the risk-assessment approach, vessels are charged fees based on the chance they will pollute and the probable extent of that pollution.<sup>117</sup> Both are functions of vessel design and equipment. Thus, the risk-assessment method of charges would allow vessels exemption from special design and equipment standards, and would also encourage compliance with such standards because of the costs of nonconformance.<sup>118</sup>

Imposition of a charge is of dubious legality if the charge is not related to services provided by the coastal states.<sup>119</sup> Because there is a risk that vessels will cause significant pollution in the Straits, the Straits states do, or will, provide a range of services including navigational aids, contingency capacity in case of spills, and various administrative functions.<sup>120</sup>

### *10. Increased Liability and Compensation Requirements*

Virtually all oil tankers which use the Malacca/Singapore Straits are covered for losses by the Tanker Owners' Voluntary Agreement on Liability for Oil Pollution (TOVALOP) and the Contract Regarding Interim Supplement to Tanker Liability for Oil Pollution (CRISTAL). A significant number also are covered by the Civil Liability Convention (CLC), and will be covered by an International Fund for Compensation of Oil Pollution Damage (FUND) as well.<sup>121</sup> Whereas CRISTAL and FUND cover costs not recoverable under TOVALOP and CLC, injuries resulting from

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116. *Id.* at 115.

117. *Id.* at 112.

118. *Id.*

119. *Id.*

120. *Id.*

121. *Id.*

damage to resources that are not privately owned<sup>122</sup> are not recoverable. The coastal states might enact alternative or supplemental liability and compensation regimes.

Special national liability rules and limits, as well as compensation systems which differ from the international ones, would cause difficulties for vessel operators. Insurers may be unwilling to provide coverage in amounts above the general international limit. They may hesitate to write strict liability policies or policies covering situations in which liability would not arise under the existing international regimes. A provision under the pending amendment to CRISTAL would indemnify operations for liability imposed under local law which exceeded international limits. In addition, an amended CRISTAL provision would provide for doubling of the CRISTAL fund to \$72 million upon agreement of the parties to CRISTAL, although this money could not be applied to previous incidents.<sup>123</sup> Also, the CRISTAL fund could be supplemented as necessary by "calls" for oil company contributions to cover claims which would significantly reduce the available fund.

Legally, regional adoption of special rules or limits of liability must be considered separately from the creation of a special regional compensation fund. Enforcement of special rules or limits of liability would be difficult to achieve without direct action against vessels,<sup>124</sup> including their seizure and subjection to the regional states' domestic court jurisdiction. In the absence of an international agreement, under which these states agree to apply such special circumstances, courts in flag and port states would be unlikely to recognize special rules or limits of liability applying to their vessels or to vessels which are found in their ports.<sup>125</sup>

Special rules or limits of liability could be applied indirectly, however, by keying payments out of a special compensation fund to the rules and limits of liability that are adopted regionally. The chief problem in the creation of a special compensation fund again would be that present international law does not recognize the competence of coastal states to impose charges for passage.<sup>126</sup> Arguably, such charges would, in effect, be charges for future services such as cleanup operations, or indemnification of pollution victims. The charges would be keyed to operational plans which do not exceed international standards. Creation of a special fund to receive such fees would lessen the suspicion that such charges were being used merely to raise revenue or for an invalid regulatory purpose. Special regional liability rules, enforcement of a higher limit of

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122. Open seas fisheries, or general ecological damage.

123. Finn, *supra* note 51, at 113.

124. *Id.*

125. *Id.*

126. *Id.*

liability, and a special fund to pay cleanup costs and indemnify damages would be difficult. The higher limits would provide bargaining power to encourage more rapid and satisfactory payment of claims.

Such problems are illustrated in the case of the Showa Maru.<sup>127</sup> After the Showa Maru accident on March 8, 1975, the Singapore government claimed that the Taiheiyo Shipping Company, owner of the tanker, owed it 3.6 million Singapore dollars (\$1.4 million, U.S. dollars) for the damage it had suffered. On April 7, 1975, the company paid S\$1 million for direct governmental expenditures for oil removal, and in late June 1975 paid an additional S\$.52 million for the cost of oil removal by the private sector. Claims amounting to S\$2.1 million for compensation of private damage, however, never were settled. The Indonesian government claimed the company owed it U.S.\$24 million, and the Malaysian government claimed U.S.\$9.5 million. At the beginning of 1977, the company paid U.S.\$1.2 million to Indonesia, and U.S.\$0.5 million to Malaysia. Most of the unsettled claims are earmarked for damage to fisheries. The tanker company and insurance company do not acknowledge that the damage was as large as claimed.

### *11. Required Contingency Plans*

A great part of the Straits oil pollution problem is attributable to the activities of outside users.<sup>128</sup> These users might be required to carry out contingency planning and to develop a capacity to respond to contingencies as a condition of their use of the Straits. An attempt, however, to condition use of the Straits on developing and implementing contingency plans is perhaps contrary to the existing principles of unimpeded passage under the transit passage regime.<sup>129</sup> Further, enforcement of such a requirement necessarily must proceed via direct action against vessels which do not comply.

## INSTITUTIONAL ISSUES AND OPTIONS

*The Straits states should review their environmental laws and update their rules and regulations to implement the relevant provisions of the Law of the Sea Convention.*

This action would provide necessary stimulus to harmonize the laws of the three states. It would ground the common position of the littoral states in international law should a dispute arise with the users, and could lead to improved pollution control from all sources. This action also

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127. *Id.* at 114.

128. *Id.* at 115.

129. *Id.*

would benefit the users in the sense that discrepancies in the interpretation of various provisions in the Convention by different nations would be reduced. Foreign users would know the rules.

On the other hand, given that the littoral states may have other priorities relating to their general economic development, there is a real question of timing, i.e., how soon such laws and regulations could be put in place and enforced in each country. Once these regionally accepted laws are established, pressure may build from environmental groups and international organizations for increased effective enforcement. Uniform standards would limit flexibility in approach commensurate with different priorities, stages of economic development, and carrying capacities of different sections of the environment.

Singapore might view such a development favorably because Singapore has only a small area of responsibility. Also, uniform standards would limit the actions of the other littoral states and make their actions more predictable, creating a stable regime for vessel traffic of benefit to Singapore. Singapore, however, as the major flag and port state, would have more requests to take action against vessels on the basis of complaints received from its neighbors. Also, Singapore could lose the business engendered by substandard vessels which would, by the upgraded standards, be prohibited from the Straits.

Indonesia would benefit most from fees received for pilotage and other services rendered because most laden tankers travel more in waters under Indonesian jurisdiction (Figure 3). Indonesia, however, would have a large area to police. Moreover, Indonesia generally prefers to allow the private companies to assume responsibility, in accordance with best company practice. Also, Indonesia would have to upgrade its own fleet at great expense to meet the standards.

Malaysia would favor the pollution control improvement in its "front yard."<sup>130</sup> Substandard Indonesian fleets would be forced to upgrade, and Malaysian trade with Indonesia would improve because such vessels would no longer be prohibited from Malaysian ports. Malaysia could also impose fees for its port services. On the other hand, Malaysia may have to bear capital costs for facilities such as slop and sludge reception and treatment at its major port, if these facilities were not centralized among the states. Malaysia would have the second largest area to control, and would be constrained from enacting rules stricter than international standards. Japan, as the major external user for through traffic, should favor such a development. Diversity and uncertainty would be reduced, because the rules could not exceed international standards.

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130. Jaafar, *supra* note 64, at 216.

*The Straits states could harmonize their practices and reconcile their pollution control regulations for major common pollutants.*

Harmonization of pollution control practices and regulations could ultimately benefit all states. The states would be required to reexamine the rationale for their laws and to develop new ones or modernize and streamline those which are outdated and dissonant. Any differential in foreign investment resulting from diversity in environmental legislation could be reduced as could any attendant conflict. Similarly, harmonization could avoid conflict due to one country's pollution damaging resources shared by all three. Harmonization could eliminate the question of which must control its pollution first, and could strengthen the legal position of each state *vis a vis* external users.

On the other hand, the countries are at different developmental stages and, therefore, presumably have different environmental protection priorities and capabilities for enforcement. Furthermore, uniform laws and standards preclude a differential approach within the country. The uniformity could create disharmony between marine and land area environmental laws.

Singapore probably would support harmonization of pollution control practices and regulations. Singapore has the strictest effluent standards of the three.<sup>131</sup> Although Singapore would benefit, through increased tourism and enriched fisheries, from a cleaner environment in the Straits, it probably would not want to pay to control pollution from sources not indigenous to Singapore, other than tanker traffic.

Malaysia might favor the arrangements because its "front yard" could be cleaner as a result. It may be determined, however, that Malaysian industry, agriculture, and mining contribute most of the land-based pollutants and that further pollution control may economically constrain these industries. Further, Malaysia might have to introduce and/or upgrade a few standards to match those of Singapore. Malaysia's choice of emphasis on pollutants and geographic areas of control could thus be limited. Correlation of land and marine environmental laws also would be necessary.

Indonesia probably would not favor this approach because its laws are the fewest and its standards the weakest of the three states. In effect, its priorities, its Dutch-based legal system, and its regulations would be strongly influenced by its economically better-off, British-influenced neighbors. Further, Indonesia has the largest area of responsibility and the most pollutants most difficult to control, such as siltation from extensive logging. Most importantly, Indonesia has the only oil and gas

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131. Logging, offshore oil and gas exploration/exploitation and tin mining.



production in the Straits. Because oil and gas are the mainstay of the economy, Indonesia may believe that its development should not be hampered in any way.

*The Straits states could agree to ratify or accede to major international conventions of environmental relevance dealing with shipping and with dumping.*

Advantages would include uniformity, strengthening the states' claims to compensation if damaged, and to the availability of the international machinery, the necessary upgrading of their own laws, and a resultant cleaner environment. Disadvantages include the preclusion of independent action, including the prohibition of standards stricter than international standards; the cost and process of the increased enforcement and research; and the perceptual surrender of authority to IMO to approve the various implementations. Positive positions of the littoral and user countries on this possibility likely will be influenced by the same factors mentioned in relation to harmonization of environmental practices and regulations.

*The Straits states could develop a joint contingency plan for the Malacca Strait.*

It remains unlikely that effective contingency operations can be mounted for the Straits because of 1) an insufficiency of personnel and equipment, 2) the usual administrative difficulties which are compounded by the necessity for close cooperation, and 3) a lack of adequate financial support. High magnitude contingencies in the Straits are almost always the result of activities of outside users.<sup>132</sup> Establishment of a regional governmental scheme to coordinate all contingency efforts could ensure that the responses of external and resident private parties are not in conflict with the response of the regional states themselves. Also, declaring that users, either governmental or private, have an obligation to develop a contingency capacity in cooperation with the regional states could stimulate increased financial assistance of technical support for such measures both by governments and industrial associations.

Thus, such a declaration would enhance coordination and preparation for transnational spills, make more resources available for response, and strengthen and serve as a focal point for assistance. This action could reduce confusion and conflict engendered by immigration and customs laws if men and material must be moved across borders to combat a transnational spill. Conflicts resulting from spills in one country's sector moving into or damaging resources in another country's sector may be

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132. Finn, *supra* note 51, at 115.

reduced, and the environment would be cleaner. Some countries, however, may not want to maintain equipment and trained personnel at the level required by the contingency plan. Sovereignty concerns and suspicion may arise when the marine police or navies of the countries are involved in the cleanup.

Singapore could derive more business from support facilities and equipment sales. Japan and Singapore together might feel that if there is prompt cleanup, there will be less likelihood that Malaysia and Indonesia will be stimulated to enact further regulations which may inhibit traffic in the Straits. Japan could be liable for fewer costs for cleanup after a spill by one of its flag or owned tankers.

On the other hand, Singapore may feel that it would be more efficient to deal by itself with spills in its or adjacent waters; accidents are more probable in Indonesian waters; and, in any case, the industry should bear the cost of contingency plans. Malaysia may share this view, but could also consider the benefit derived from covering Indonesian offshore oil and gas exploration/exploitation in the contingency plan. Indonesia may not favor such a scheme because its monetary priorities are on development. Indonesia may believe that the private sector should be responsible for contingency plans. Indonesia does have the largest area of responsibility, however, and could thus benefit from the input of its neighbors.

*The Straits states could establish a Compensation Fund and its operating principles.*

The coastal states have established a Revolving Fund, wholly contributed by Japan,<sup>133</sup> amounting to 400 million yen. The Fund will be used to meet the initial expenditures urgently required when an oil spill involving Japanese tankers occurs. The interest on the Fund is used to pay its administrative and operational costs.<sup>134</sup>

In view of the limitations or shortcomings inherent in this and other established funds such as FUND/CLC/CRISTAL, and TOVALOP, the three Straits states may consider establishing a regional compensation fund. The advantages of such a joint fund are that a larger multinational fund could draw more matching contributions from external users; the operating principles could be designed more sympathetic to ecological damage not covered by conventional funds; and conflict could be avoided by sorting out the allocation of contributions beforehand and once only.

Singapore in particular, however, might view such a scheme uneconomic and unnecessary because of the existing international funds. The

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133. The ratio is 75% public to 25% private financing. The Indonesian Observer (Feb. 25, 1979).

134. A Revolving Fund Committee consisting of a representative from each of the three States administers the fund; the committee is situated in Indonesia until 1986.

fund might appear inefficient because of potential management, allocation of contributions, and compensation conflicts. Independent action might be preferred.

### *Allocation of Contributions for Contingency Plans and Compensation Fund*

If the coastal states must raise the funds, possible bases for allocation for costs and responsibilities include: 1) risk; 2) geography; 3) economic position; and 4) benefits derived from the Straits. Whereas allocation of costs for the contingency plan might place more emphasis on risk, country contributions to the compensation fund could place more emphasis on geography, i.e., the value of resources at risk. Any criteria acceptable to all three states likely will be a hybrid. Here the criteria are examined separately.

#### *1) Risk*

Risk allocation could include, first, a breakdown between risk of spills from oil exploration/exploitation and that from tankers. Risk from tankers could further be assigned among external flag, transiting tankers and local flag, or traffic. Further consideration could be given to factors influencing tanker safety and extent of any spill: age, tonnage of oil carried, draft, and frequency of use.

On this basis, Indonesia may have to pay a larger share because of its older, more substandard fleet and because it is the only country in the Straits with present oil exploration/exploitation. Singapore also may have to pay proportionately more because more of the vessels using the Straits bear its flag or call at its port.

#### *2) Geography*

Allocation on the basis of geographic factors could include consideration of coastline length, area of Straits under a country's jurisdiction, relative hazard in each country's area, and the value of resource at risk including livelihoods likely to be adversely affected. Singapore obviously would pay less than its neighbors if coastline length or area of jurisdiction were the criterion. If relative hazard in each country's jurisdictional area were the criterion, Singapore would pay more.<sup>135</sup> If resources at risk or people affected were the criteria, Malaysia would pay more to clean up its "front yard" than would Indonesia with its rural Sumatran coastline. Tiny Singapore would pay the least.

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135. Finn, *supra* note 51, at 18 (Figure 2.5).

### 3) *Economic Position*

The United Nations often bases its suggested contributions to its various operations on economic position such as Gross National Product per capita. On this sole basis, Singapore clearly would be obligated to pay most. Indonesia would contribute the least.<sup>136</sup>

### 4) *Benefits Derived*

Some countries benefit more from polluting uses of the Straits than others. For example, much of Singapore's economy is based on the refining of oil imported and exported on ships using the Straits. Singapore also relies on ship repair and construction, as well as logistics supply for the oil industry. Malaysia obtains considerable free benefit by allowing land-based pollutants from its west peninsular coast industry, agriculture, and mining to freely enter the Straits, avoiding the cost of pollution control. All three states remove fish from the Straits, and Malaysia and Singapore derive some tourism/recreation benefits as well. Although considerable land-derived pollutants enter the Straits from Indonesia, Indonesia probably would have to pay less than the others on the basis of derived benefits.

### 5) *The three states could develop a common methodology for assessing impacts.*

The methodology could include baseline surveys and resource, risk, and damage assessments at pre- and post project development stages as well as accident impact. Such investigations could be planned and/or coordinated internationally but implemented on a national basis. Navigational aids also could be maintained and funded on a regional basis as suggested by the Convention.<sup>137</sup>

### 6) *The three states could cooperate in the monitoring, surveillance, and enforcement (MSE) of the Traffic Separation Scheme (TSS).*

The existing lanes and traffic cut across national jurisdictional zones.<sup>138</sup> The interest drawn on the established Revolving Fund could be used to finance the MSE of the TSS. The methods and procedures could be coordinated among the littoral states. The actual MSE, however, could be implemented on a national basis. If funds are not sufficient for MSE implementation, allocation of costs could become an issue. Alternatively,

136. GNP/Capita is: Singapore, \$4,340; Malaysia, \$1,560; Indonesia, \$450. CENTRAL INTELLIGENCE AGENCY, THE WORLD FACTBOOK (1982).

137. UNITED NATIONS, *supra* note 1 at art. 43.

138. See Figures 2 and 3.

the Straits states might wish to solidify contributions from user-states, including extra-regional flag states. Such allocation might be made on the basis of the location of relative risk. Singapore might oppose cost allocation on the basis that the locus of most risk, and of past accidents, is in waters under Singapore's jurisdiction.<sup>139</sup>

### CONCLUSION

While Malaysia continues to be concerned about navigation and pollution in the Straits, Indonesia remains concerned with the security aspects of its archipelagic claim, and Singapore with the big power balance and free transit. Geography and stage of development also influence their respective positions. Clearly, the disparate perspectives of the Straits states militate against joint action for the sole purpose of environmental protection. Other sectoral uses of the Straits, however, may also require management, including fishing, hydrocarbon exploration/exploitation, security, and transport.<sup>140</sup>

Perhaps a package arrangement, involving intersectoral trade-offs between the three, would provide an opportunity for enhanced order in the multi-national, multipurpose use of this constricted and crowded waterway. A first step might be the formation of a tripartite, multi-ministerial level task force to review the conflicts in and between all use sectors in the Straits and to make recommendations to the three governments for further action. Eventually, the three states might form an organization to manage the activities and uses of the Straits (a Malacca and Singapore Straits Management Authority—MASSMA). The organization might take various forms: existing organizations, a regional organ, a joint commission, or a joint authority. Indeed, this range of organizational types could be considered as an evolutionary sequence.

ASEAN has relevant committees and groups already formally established, recognized, and supported politically and financially by the ASEAN member countries.<sup>141</sup> These groups have an administrative structure, experience, and a system of international communication. Their use could avoid new organizational stress with its delicate questions of management responsibility.

The coastal states, however, view the problems of the Malacca/Sin-

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139. Finn, *supra* note 51, at 18 (Figure 2.5).

140. Jaafar, *supra* note 64.

141. ASEAN has committees on Trade and Communication (COTAC); Science and Technology (COST); Food, Agriculture and Forestry (COFAF); and Energy and Minerals (COIME); and under COTAC, the Expert Group on Marine Pollution, under COST, the Expert Group on the Environment, under COFAF, the Expert Group on Fisheries, and under COIME, the ASEAN Council on Petroleum. All these bodies could include an element of the management of the Malacca/Singapore Straits in their deliberations and activities.

gapore Straits as their responsibilities, not those of ASEAN. Further, these ASEAN committees and groups are not integrated and can only recommend action to the national governments. Their terms of reference and members include all of ASEAN and thus Malacca/Singapore Straits matters would have to compete with other regional matters for attention and resources. Further, under the ASEAN format, there is no international technical support for these bodies which are mainly comprised of politicians or administrators.

Other options among existing organizations are the Council on Safety of Navigation and Control of Marine Pollution in the Straits of Malacca/Singapore, formed in 1971, or the Tripartite Committee.<sup>142</sup> The Tripartite Committee has been used successfully in the past by the three countries to negotiate with Japan on Straits safety and to provide technical support for these negotiations.<sup>143</sup> These organizations have been relatively inactive but could be reactivated. They do exist on paper and, unlike the ASEAN bodies, focus specifically on the Straits. Additionally, the organizations encompass only the three littoral countries. They deal, however, solely with tanker shipping and were initially formed with a political objective in mind, not specifically to manage all activities in the Straits.

A regional organ could be structured similar to the United Nations, i.e., it would have a governing council of policymakers and a secretariat for technical support. The secretariat might be divided sectorally into shipping,<sup>144</sup> fisheries, non-living resources, pollution/environment, and security. Management of the environment of the Straits could be the common theme. The organization would centralize policy and provide some stability and predictability to management of use of the Straits. It also could have links with other international organizations. Its recommendations, however, similar to those of the UN, would not be binding on its members. Individual governments would approve policies affecting them. Additionally, there also would be issues of budget, cost, and its allocation.

A joint commission would be given a legal mandate by the three governments to research and recommend options for action. The commission would be more independent than a regional organ, having its own arbitration machinery to settle differences. The commission would include representatives of the general citizenry and industry as well as government. Technical support would be *ad hoc*. The individual governments would set the agenda for the body. Governments probably would

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142. Finn, *supra* note 51, at 76.

143. *Id.* at 77.

144. This division might include the existing Council and the Tripartite Committee.

be reluctant, however, to surrender their control over the process and pace of policy recommendations affecting their interests.

The most idealistic option would be a joint authority modelled after the existing Thai-Malaysia Joint Development Authority.<sup>145</sup> It would have a ministerial rank, intergovernmental, policymaking assembly, and an executive branch with five organs: environment, shipping, fisheries, non-living resources, and security. The decisions or findings of the assembly would be binding upon the member governments. Indeed, formation of such a Ministerial Council was discussed at Tripartite meetings, but has not materialized.<sup>146</sup>

How would the joint authority work in practice? For example, development of hydrocarbon resources in the Straits could interfere with other activities such as fisheries and shipping. Such development might eventually either be constrained by protests of neighbors, or engender use and user conflict, thus reducing the total benefits of the Straits available to all three states. Therefore, the country with jurisdiction over the hydrocarbon resources would pay the authority to manage their development, enhancing conflict avoidance. Of course, for this system to work, governments must yield management control over activities in the Straits. Also, the joint authority, without checks and balances, could become very powerful, even more powerful than the individual states. On the other hand, because the authority would combine the political power of the three states, it would be a formidable negotiator with extraregional users of the Straits. Additionally, the states would draw, without the responsibility of management, both the short and long term extra revenues and other benefits of orderly development and conflict management.

Certainly the activation of such an authority would require enormous political will and advance subsidies. The need would have to be obvious and urgent. Because it is not so perceived, and political and economic priorities of the coastal states are disparate and presently focused inward, away from the Straits, further steps toward joint management await a more compelling and auspicious climate.

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145. Harun, *The Malaysian Philosophy of Joint Development in SOUTH CHINA SEA; HYDROCARBON POTENTIAL AND JOINT DEVELOPMENT* (M. VALENCIA ED.).

146. Personal communication with M. Thilagadurai, Director of Maritime Division, Ministry of Transport, Malaysia (1984).