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International legal framework for the prevention of vessel-source marine pollution: a study of the Straits of Malacca and Singapore

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ABSTRACT

The Straits of Melaka and Singapore is among the world busiest shipping lane, making the Straits among the main arteries of global trade and commerce. Due to its status as important shipping lane, the Straits accommodate an unlimited volume of shipping traffic. High in shipping activities have increased the risks of vessel-source marine pollution to occur. The impact of the pollution shouldn?t be neglected as it resulted in serious damage to marine environment respectively, thus measures to regulate it is urgently needed. There are growing concerns among the littoral States of the Straits over protecting and preserving the marine environment from vessel-source marine pollution. The littoral States have ratified the Law of the Sea and the IMO conventions to protect the marine environment. The objectives of this article is to address the issues particularly those regarding vessel-source marine pollution in the Straits of Malacca and Singapore and way to regulate them by focussing on the international legal framework for prevention of vessel-source pollution. This paper concludes that the governments of the littoral States are full of zip in legislating pollution prevention instruments with the aim of the Straits to be asserted as a safe waterway for navigation in the future.

1. Introduction.

The Straits of Malacca and Singapore are a historically important sea route to expedite international and local maritime trade since pre-colonial era. The Straits of Malacca and Singapore provides a shipping passage that essential for the growth of global economy (Lloyds List 2009).

It was also crucial from strategic perspectives (Qu & Meng 2012) as the Straits are a place where regional and long-distance maritime trading networks converge, linking Europe, the Mediterranean, eastern Africa, the Arabian Peninsula and the Indian subcontinent with key centers of trade in Thailand, Indo-china, insular South-east Asia, China, Korea and Japan (Borschberg 2010).

Figure 1: The map of the Straits of Malacca and Singapore.

Source: Modified from Google Earth, 2017.

Most of the vessels plying the Straits carrying 80% of the oil transported to Northeast Asia, as well as one third of the world's traded goods including Chinese manufactures and In-

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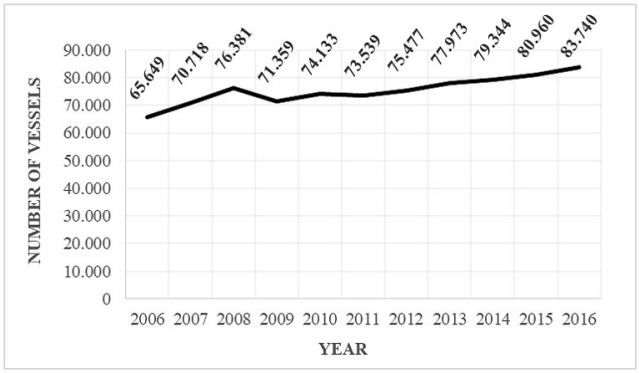
donesian coffee (Weng et al. 2012). Besides being used as international navigation, the Straits of Malacca and Singapore also served as domestic navigation. Large commercial vessels carrying oil and cargo share the waterways with fishing vessels and traditional small crafts. In recent years, it was reported that more than 200 vessels passed through the Straits each day, with approximate average of over 80,000 vessels traversed the Straits annually. This is based on the traffic statistics compiled by the Nippon Maritime Center using data from the Marine Department of Malaysia's STRAITREP system (Hand 2016). Figure 2 shows the number of vessels movement in the Strait of Melaka and Singapore.

Figure 2: Number of vessels movement in the Strait of Melaka and Singapore.



Source: Marine Department Malaysia, 2017.

Shipping is fundamentally risky activity which is synonyms with maritime accidents or casualties. Rapid in shipping activities taking place in the Straits of Malacca and Singapore have increased the chances of maritime accidents in the Straits thus causing vessel-source marine pollution in the Straits of Malacca and Singapore (Xiaolu 2011). Table 1 illustrated the number of marine accident that happened in the Straits of Melaka and Singapore from year 2010 until 2015.

Table 1: Number of marine accident in the Straits of Melaka and Singapore.

Year	Number of Accidents
2010	74
2011	88
2012	60
2013	45
2014	35
2015	29

Source: Marine Department Malaysia, 2017.

Marine pollution caused by shipping associated activities has been identified as one of the environmental problems plaguing the Straits in recent times. The problems, particularly accidental or operational discharge of pollutants is a serious issue involving the Straits of Malacca and Singapore as it may disrupt the marine environment of the Straits.Hence, it demand serious consideration to overcome these hazards. Oil spills and discharge of wastes and hazardous materials are typical with shipping activities, either through operational or accidental discharges (Chuan, 1982; Khalid & Basiron, 2008; Rusli, 2012). Consequently, if this is not curtailed, the continuous deterioration could pose serious threats to the marine environment in the Straits of Malacca and Singapore. The objectives of this article is to address the issues particularly those regarding vessel-source marine pollution in the Straits of Malacca and Singapore and way to regulate them by focussing on the international legal framework for prevention of vessel-source pollution.

2. Vessel-Source Marine Pollution Issues.

The word 'pollution' means 'the introduction of harmful substances or products into the environment' and with specifically linked to the oceans, it called marine pollution. Marine pollution is commonly defined as the human di¬rect or indirect introduction of matter or energy causing or liable to cause lethal consequences onto the living conditions of the marine environment and underwater flora and fauna. Marine pollution originates from the ordinary operation of a vessel is believed to account more pollution than accidental. In terms of safety of navigation, the increase in the number of ships proportional with the tendency of occurrences of maritime accidents. Maritime accidents began to occur in the Straits of Malacca and Singapore as early as the 1920s (Buang, 2006; Rusli, 2012). The high density of shipping activities taken place in the Straits, doubled with the presence of navigational hazards that influenced the safety of navigation in the Straits of Malacca and Singapore pose challenge and threat to seafarers in their voyage through the Strait. To date, there are over hundred cases of marine casualties and incidents reported in the Straits of Melaka and Singapore since 1970 (IMO, 2016) and part of it are listed in Table 2.

From the information above, it shown the numerous vessel-source marine pollution incidents either operational or accidental happened in the Straits of Malacca and Singapore. It indicates the seriousness of pollution level and as the consequences, it may develops huge impact to marine ecosystems either directly or indirectly. In addition, this phenomenon will also likely challenge the current maritime business activities in the Strait and therefore, in order to tackle down the oil pollution issue in the Strait, international instrument for the protection of marine environment have been introduced.

3. International Legal Framework.

Marine pollution issue has become a critical matter that draw world wide's concern as any occurrence related to it may spawn great deleterious effect towards living being on the globe Protection and preservation of marine environment has become one the most important ecological issues of modern time (Khee & Jin 2006). And thus, marine environmental protection has

been eminent in recent times and has received much attention in recent years.

Table 2: Marine accidents in the Straits of Melaka and Singapore.

Year		Type of accident
1972	Japanese super tanker, Showa Maru, ran aground off Pulau Sebarok.	Grounding
1975	Liberian-registered tanker, Stolt Advance, ran aground about 4 km southeast of St John's Island	Grounding
1976	Collisions occurred in the Strait of Melaka. The first between Diego Silang and Vysotsk and the second, a few minutes later, between Diego Silang and Brazilian Faith.	Collision
1987	Thai-registered crude-oil tanker Orapin Global collided with Cyprus-registered tanker Evoikos, about 5 km south of the Singapore Port Limit	Collision
1992	A container ship Ocean Blessing collided with the hijacked tanker Nagasaki Spirit occurred in the northern part of the Melaka Straits. As a result of the collision, about 12,000 tonnes of Nagasaki Spirit's cargo were released into the sea and caught fire.	Collision
1997	Panama-registered vessel, Natuna Sea, ran aground off Batu Berhanti Beacon, just 8 km from Sentosa	Grounding
2000	Malaysian-registered tanker, MT Bunga Kelana 3 and St Vincents, collided with Grenadines-registered bulk carrier, MV Waily, about 13 km from Changi's shore.	Collision
2010	Liberia-flagged containership, Hammonia Thracium and the Panama-flagged chemical tanker, Zoey, collided off Sebarok Island.	Collision
2014	Hong Kong-flagged chemical tanker, Lime Galaxy and China-flagged container ship, Feihe, collided around 2.7 km south of Jurong Island.	Collision
2014	Panama-flagged container ship, NYK Thermis and Singapore registered barge, AZ Fuzhou, collided about 4 km south of Marina South.	Collision
2015	Libyan-registered oil tanker, Alyarmouk collided with a Singapore-registered bulk carrier, Sinar Kapuas about 11 nm north-east of Pedra Branca.	Collision
2015	Cayman Islands-registered chemical tanker, Stolt Commitment and Thorco Cloud, the Antigua and Barbuda-flagged freighter, collided about 11 km north-west of Batam.	Collision
2016	The Panama-flagged Very Large Crude Carrier (VLCC), Dream II and containership, MSC Alexandra collided about 3 km South-East of Sebarok Island	Collision
2017	The guided-missile destroyer USS John S. McCain collided with the merchant vessel, Alnic MC at the east of Straits of Melaka and Singapore.	Collision

Source: Authors.

The Torrey Canyon tragedy in 1967 was known as the world's most disastrous oil spill (Portman 2016) and first major marine oil pollution incident. The Torrey Canyon ran aground while entering the English Channel and has spilled its entire cargo of 120,000 tons of crude oil into the sea (Mensah 2007). This resulted in the biggest oil pollution incident ever documented up to that time. Although the OILPOL 1954 had been ratified, at that time pollution control was still a minor concern for IMO. The incident raised questions about measures then in place to prevent oil pollution from ships and the world was only beginning to wake up only after the incident. First, IMO called an extraordinary session of its Council, which drew up a plan of action on technical and legal aspects of the Torrey Canyon incident. In 1969, therefore, the OILPOL 1954 was again amended for the second time and adopted by the 6th Assembly of the Intergovernmental Maritime Consultative Organization on 21 October 1969 (Resolution A. 175 (Vl)) (IMO 2016). The IMO Assembly decided to convene an international conference to adopt a completely new convention, which would incorporate the regulations contained in OILPOL 1954 (as amended) (Attard et.al 2016). The Sub-Committee on Oil Pollution was renamed the Sub-Committee on Marine Pollution, to broaden its scope, and this became the Marine Environment Protection Committee (MEPC). MEPC play the same role as the Maritime Safety Committee, with a brief to deal with all matters relating to marine pollution. Meanwhile, in 1971, IMO adopted further amendments to OILPOL 1954 to afford additional protection to the Great Barrier Reef of Australia and also to limit the size of tanks on oil tankers, thereby minimizing the amount of oil which could escape in the event of a collision or stranding (Tan 2016). Finally, an international Conference in 1973 adopted the International Convention for the Prevention of Pollution from Ships (MARPOL). While it was recognized that accidental pollution was spectacular, the Conference considered that operational pollution was still the bigger threat. As a result, the 1973 Convention incorporated much of OILPOL 1954 and its amendments into Annex I, covering oil.

Up to the 1970s, there was still no international legal framework regarding vessel-source pollution of the marine environment did exist (Godlund & Nilsson 2015). With the increase of shipping activities and associated therewith numerous marine pollution specifically oil, there was a necessity to establish an international regime governing protection and prevention of pollution to the marine environment (Godlund & Nilsson 2015). It was essentially the Torrey Canyon incident that kick-started the chain of events that eventually led to the adoption of MARPOL 73/78 as well as a host of Conventions in the field of liability and compensation. Then MARPOL 73/78 came into force with the resolution to prevent the marine environment by ships from operational or accidental causes. The LOSC as further convention reinforces the role of the IMO and the conventions which it created. In general, the establishment of international legal instruments governing vessel-source marine pollution comprise of two forms. First, the convention based on the ocean activities (like fishing, mining, and navigation) and second, the convention that have a specific focus engaging shipping activities. LOSC provides the basic legal framework for protecting the oceans while the convention on the control of pollution from vessels fall directly under International Maritime Organization (IMO). The IMO is a specialised agency of the United Nations. IMO or previously named as the Intergovernmental maritime consultative organization, was established in Geneva in 1948 (Chircop 2016). The IMO shoulder the responsibility for setting standards in the safety and security of shipping and marine environment protection at the global level covering from navigation to protection of the environment against pollution

In terms of international law, the basic legal framework dealing with vessel- source pollution attributed to shipping activi-

ties has been disclosed in Part XII of the LOSC. Principally, Part XII provides the main core provisions and jurisdictional legal framework for the protection of marine environment in terms general obligation of flag, coastal and port States. This is a broad jurisdictional framework within which the specific regulations for prevention of marine pollution can be created (Khee & Jin 2006). Furthermore, Part XII establishes a number of obligations associated with environmental impact of international shipping (Marsden 2016) as well as provisions dealing with international cooperation, technical assistance, and environmental monitoring. General obligations of Part XII are disclosed in Section 1, Article 192 and 194 of the LOSC (Johansson & Donner 2014) in which the section permitted that States have the obligation to protect and preserve the marine environment. Whilst, Article 193 of the LOSC stipulates that States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment. States required to impose the measures against to prevent, reduce and control all sources of pollution as per outline in Article 194 (3) of the LOSC. The measures taken pursuant to this Part shall deal with all sources of pollution of the marine environment. These measures shall include, inter alia, those designed to minimise to the fullest possible extent:

1. the release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, from or through the atmosphere or by dumping;

2. pollution from vessels, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, preventing intentional and unintentional discharges, and regulating the design, construction, equipment, operation and manning of vessels;

3. pollution from installations and devices used in exploration or exploitation of the natural resources of the seabed and subsoil, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, and regulating the design, construction, equipment, operation and manning of such installations or devices;

4. pollution from other installations and devices operating in the marine environment, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, and regulating the design, construction, equipment, operation and manning of such installations or devices.

Generally, coastal states suffered most from marine pollution adverse effect, therefore the States have the greatest interest in preventing it. Article 220 of the LOSC refers to the enforcement jurisdiction of coastal states generally and some of its paragraphs relate specifically to vessel-source pollution, while others relate to both shipping standards and vessel-source pollution. Article 233 of the LOSC mentioned the safeguards with respect to straits used for international navigation. The article reads that if a foreign ship has committed a violation of the laws and regulations referred to in article 42, paragraph 1(a) and (b), causing or threatening major damage to the marine environment of the straits, the States bordering the straits may take appropriate enforcement measures and if so shall respect mutatis mutandis the provisions of this section.

The direct control of the Straits of Malacca and Singapore is shared between Malaysia, Indonesia and. Indonesia, Malaysia and Singapore, as littoral states to the Straits of Malacca and Singapore have the right to enforce any law within their territorial seas. The littoral states have ratified various number of International instruments on safety, security and environmental protection to ensure the Straits of Malacca and Singapore is secure and safe for shipping. The three States have ratified LOSC (Table 3) and thus, the States have the obligation to protect and preserve the marine environment.

Table 3: Date of succession and ratifications of the LOSC by the littoral States.

	Succession to signature	Ratification
Indonesia	10 Dec 1982	3 Feb 1986
Malaysia	10 Dec 1982	14 Oct 1996
Singapore	10 Dec 1982	17 Nov 1994

Source: Authors.

Under Article 211 of the LOSC, paragraph 4 and 5, the littoral states is given the right to adopt laws and regulations in relation to territorial sea in order to prevent pollution from foreign vessels plying the waterway. Moreover, the provision also lays down general obligations to establish international rules regarding vessel- source pollution through the IMO. For the purpose of enforcement, the littoral states may adopt laws and regulations for the prevention, reduction and control of pollution from vessels. Once a vessel is voluntarily within a port or at an offshore terminal of a coastal state, that state may launch actions in respect of any desecration to its laws and regulations. The extent of these actions that can be commenced by a coastal state absolutely depends on the seriousness of the violation and the degree of damage to the marine environment if possible. In case of unlawful pollution like dumping or intentional discharge of pollutants within the area of jurisdiction of a coastal state, Article 218 of LOSC provides for co-ordination and co-operation between the coastal state and port state. The principal responsibility of the coastal state is to ensure that the ships safely navigate and transit throughout its water passage that open for international shipping (Burke & Deleo 1983) as well as to facilitate the greatest navigational assistances to prevent any accidents that may result in marine environmental pollution.

IMO play a big role in developing a legal regulatory framework for shipping in which has been recognised by all maritime countries. The development of international legal regime under IMO with the goal of regulating and preventing vessel-source pollution occurred in the early 20th century which is described in the establishment of number of Conventions (Karim 2015). The IMO conventions fall into three main categories; maritime safety, prevention of marine pollution, and liability and compensation. Based on IMO (2016), MARPOL 73/78 is the most important convention covering prevention of vessel-source marine pollution from operational or accidental causes. MARPOL

73/78 is the optimum IMO Convention for the solution to the problem of vessel-source pollution in the ocean. The convention was prepared in 1973 and modified in 1978 with the addition of the 1978 Protocol to facilitate the convention to enter into force. It covers the prevention of pollution of environment by ships from both operational and accidental causes. Besides, MARPOL 73/78 is a victory because since it entered into force, it has contributed to a significant reduction of oil pollution that previously rampant in the ocean. The level of ratification and enforcement of MARPOL 73/78 is the most successful compared to other Conventions and it was accepted by almost all the maritime countries in the world. MARPOL 73/78 provides an effective enforcement mechanism and the Articles of the Convention mainly deals with jurisdiction, powers of enforcement, and inspection by States in the prevention of pollution attributed to shipping activities. MARPOL 73/78 does not define the term 'pollution' as such, nevertheless, the Convention incorporating the elements of pollution in the definition of discharge (Zeeniya 2013). MARPOL 73/78 is divided into six annexes which deal with aspects of operational pollution. The annexes is the established discharge standards for groups of pollutants like oil, chemicals, tanks and containers, sewage, and garbage respectively. MARPOL 73/78 has 6 Annexes. The ratification of Annex I and II is compulsory while Annex III, IV, V and VI is optional (Jin 1997). The Special Areas under the MARPOL 73/78 is the adoption of special mandatory methods to provide a higher level of protection on the specific sea areas in which for technical reasons relating to their oceanographical and ecological condition and to their sea traffic.

IMO has achieved a lot of success in preventing and reducing marine pollution by introducing new regulations, guidelines and procedures necessary to deal with any given situation arising from shipping activities. Apart of MARPOL 73/78, there are other conventions which also help to prevent marine pollution from vessel like International Convention for the Safety of Life at Sea 1974 (SOLAS), International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW), International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFSC), 2001, International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990, International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWMC), Protocol on Preparedness, Response and Cooperation to pollution, Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol). In addition, there are a number of other conventions dealing with facilitation, tonnage measurement, unlawful acts against shipping and salvage. The littoral states of the Straits of Malacca and Singapore are also parties to several IMO Conventions. The littoral States to the Straits of Malacca and Singapore have ratified the related IMO conventions on safety of navigation and marine environment protection (Table 4).

Table 4: IMO Conventions Ratified by Malaysia, Singapore and Indonesia.

Name of Convention	Malaysia	Singapore	Indonesia
MARPOL 73/78	Ratified	Ratified	Ratified
SOLAS	Ratified	Ratified	Ratified
STCW	Ratified	Ratified	Ratified
AFSC	Ratified	Ratified	Ratified
OPRC	Ratified	Ratified	-
BWMC	Ratified	-	-
OPRC-HNS Protocol	Ratified	Ratified	-

Source: IMO, 2016.

With the adoption and ratification of the IMO conventions by the government of the littoral States to the Straits of Malacca and Singapore, it illustrates that the States has shown their commitment to protect the marine environment of the Straits. In addition, we could see that the law and regulation applicable to the environmental management in the Straits of Malacca and Singapore are up to international standards.

4. Protection Measures.

The Straits of Malacca and Singapore are national asset to the Straits states, Indonesia, Malaysia and Singapore and thus the states have to take the initiative the safety in navigation to protect and preserve the marine environment of the Straits (Dahalan et. al 2013). The Straits of Malacca and Singapore is one of the world's most important shipping lanes for international navigation. With that, high shipping activities has taken place in the Straits. The increase of shipping traffic through the Straits of Malacca and Singapore each year, this situation would eventually create complex situations for the littoral states. Recognising the importance of the Straits, their geographical constraints, and concerned by the hazards that can lead to maritime accident like collision, the littoral states have taken several measure to safeguard the safety and security of the Straits. Several managerial and navigational solutions have been implemented in the Straits of Malacca and Singapore over the past 30 years to enhance safety in navigation (Sulaiman, Saharuddin & Wan Nik, 2013) in the meantime to protect marine pollution from ships. Under article 41 of LOSC, the States bordering straits with respect to safety of navigation may designate sea lanes and prescribe traffic separation schemes (TSS). Article 41 of LOSC provide that;

1. In conformity with this Part, States bordering straits may designate sea lanes and prescribe traffic separation schemes for navigation in straits where necessary to promote the safe passage of ships.

2. Such States may, when circumstances require, and after giving due publicity thereto, substitute other sea lanes or traffic separation schemes for any sea lanes or traffic separation schemes previously designated or prescribed by them.

3. Such sea lanes and traffic separation schemes shall conform to generally accept international regulations.

4. Before designating or substituting sea lanes or prescribing or substituting traffic separation schemes, States bordering straits shall refer proposals to the competent international organization with a view to their adoption. The organization may adopt only such sea lanes and traffic separation schemes as may be agreed with the States bordering the straits, after which the States may designate, prescribe or substitute them.

5. In respect of a strait where sea lanes or traffic separation schemes through the waters of two or more States bordering the strait are being proposed, the States concerned shall cooperate in formulating proposals in consultation with the competent international organization.

6. States bordering straits shall clearly indicate all sea lanes and traffic separation schemes designated or prescribed by them on charts to which due publicity shall be given.

7. Ships in transit passage shall respect applicable sea lanes and traffic separation schemes established in accordance with this article.

The IMO has adopted TSS in the Straits of Malacca and Singapore for safety of navigation was brought into force on 1 May 1981. The TSS was established with a total distance of 250 nm, from Permatang Sedepa (One Fathom Bank) up to the area of Horsburgh Lighthouse at the entrance of the South China Sea. With the enactment of traffic lanes separation, it has demonstrates an effective means of controlling maritime casualties in the Straits (Compton et. al 2013). Less than 10 years later, Singapore has established a radar-based tracking system known as the Vessel Traffic Information System (VTIS) with the purpose to monitor the shipping traffic in the Strait of Singapore. The comprehensive radar and computer-based VTIS covering the TSS in the Strait of Singapore and has been in operation since October. However, only parts of the Straits of Malacca are covered by the Singapore Vessel Traffic Information System (VTIS) and by the Indonesian Customs Coastal Radar System (Chuan & Cleary 2005). Hence, it can be pointed out that the enhancement of the safety of navigation is undeniably important to protect the marine environment protection in the Straits of Malacca and Singapore.

Concluding Remark.

The Straits of Malacca and Singapore are also not spared from being exposed to a serious marine pollution. By evaluating the cases of the pollution in the Straits, it clearly showed that shipping activities are the major causes of pollution in the marine environment. Accidental and operational discharges of hazardous substances from ships have caused serious and extensive damage not only to marine ecosystem, indeed the pollution also give the impact to human being as well. The existing marine pollution issues in the Straits of Malacca and Singapore hence demand serious consideration. From above discussion, it can be seen that there are growing concerns among the littoral states of the Straits of Malacca and Singapore over protecting and preserving the marine environment from vessel-source marine pollution. The governments of the littoral states are active in enacting legal instruments for marine pollution prevention in response to various pollution incidents due to escalated shipping activities in the oceans. LOSC together with IMO Conventions are two fundamental instruments to deal with pollution attributed to shipping. MARPOL 73/78 is the most comprehensive international convention that governs prevention of vessel-source pollution. Extensive effort by the littoral states is barely needed to improve maritime safety in the Straits of Malacca and Singapore so that the Straits of Malacca and Singapore can be asserted as a safe and pollution-free waterway for international navigation in the future.

References

Attard, D. et al., 2016. The IMLI Manual on International Maritime Law: Volume III: Marine Environmental Law and Maritime Security Law, Oxford University Press.

Basiron, M.. & Hooi, T.., 2007. The Environmental Impact of Increased Vessel Traffic in the Straits of Malacca and Singapore. MIMA Bulletin.

Borschberg, P., 2010. The Singapore and Melaka Straits: Violence, Security and Diplomacy in the 17th Century, NUS Press.

Buang, A., 2006. Selat Melaka 1992-2006: Iktibar beberapa aspek permasalahan dalam mengurus kesejahteraan sumber sekitaran serantau. Malaysian Journal of Society and Space, pp.58–71.

Burke, K.M. & Deleo, D.A., 1983. Innocent Passage and Transit Passage in the United Nations Convention on the Law of the Sea Law of the Sea. Yale Journal of International Law, 9(2).

Chircop, A., 2016. The Shipping Industry, IMO and the Law of the Sea. , (January).

Chuan, G.K., 1982. Environmental Impact of Economic Development in Peninsular Malaysia: A Review. Applied Geography, 2(1).

Chuan, G.K. & Cleary, M., 2005. Environment and Development in the Straits of Malacca, Routledge.

Compton, P. et al., 2013. Environmental Management in Practice: Compartments, Stressors and Sectors Second., Routledge.

Corbett, J.J. & Winebrake, J., 2008. The Impacts of Globalisation on International Maritime Transport Activity. Energy and Environmental Research Associates, the United States, (November), p.31.

Dahalan, W.S.A.W. et al., 2013. E-Navigation in the Straits of Malacca and Singapore. International Journal of Computer Theory and Engineering, 5(3), pp.388–390.

Godlund, J. & Nilsson, A., 2015. Are the Current International Regulations Sufficient Enough To Combat Marine Pollution (Focus on Oil Pollution) Caused By Shipping Activities? Environmental Law in an International Context Course, (May).

Hand, M., 2016. Malacca Strait transits grow 2% to record in 2015. Seatrade Maritime News. Available at: http://www.seatrade-maritime.com [Accessed August 3, 2016].

IMO, 2016. International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978

relating thereto (MARPOL). Available at: http://www.imo.org/-TCD/contents.asp?doc_id=678&topic_id=258 [Accessed August 4, 2016].

International Chamber of Shipping, 2016. Shipping and World Trade. Shipping Facts. Available at: http://www.ics-shipping.org/shipping-facts/shipping-and-world-trade [Accessed September 20, 2016].

Jaswar, Rashidi, M. & Maimun, a., 2013. Effect of oil spill pollution in Malacca Strait to marine ecosystem. Proceedings of the 7th International Conference on Renewable Energy Sources, pp.373–377.

Jin, A.T.K., 1997. the Regulation of Vessel-Source Marine Pollution?: Reconciling the Maritime and Coastal State Interests. Singapore Journal of International and Comparative Law, 1(8165), pp.355–381.

Johansson, T. & Donner, P., 2014. Books on Google Play The Shipping Industry, Ocean Governance and Environmental Law in the Paradigm Shift: In Search of a Pragmatic Balance for the Arctic, Springer.

Karim, M.S., 2015. Prevention of pollution of the marine environment from vessels. Springer International Publishing, pp.67–83.

Khalid, N. & Basiron, M.N., 2008. Securing Energy Transportation in the Straits of Malacca. In S. C.-S. and M. M. Aldo Chircop, ed. Ocean Yearbook 22. Martinus Nijhoff, pp. 521–523.

Khee, J. & Jin, T.A., 2006. Vessel-Source Marine Pollution, UK: Cambridge University Press.

Lloyds List, 2009. Shipping and the environment. Available at: www.lloydslist.com/ipi/futureofshipping/index.jsp.

Marine Department Malaysia, 2016. Cooperation Forum. Cooperative Mechanism Component. Available at: www.cm-soms.com/?p=component-info&id=2 [Accessed July 5, 2017].

Marsden, S., 2016. Transboundary Environmental Governance: Inland, Coastal and Marine Perspectives, Routledge.

Mensah, T.A., 2007. Prevention of Marine Pollution: The Contribution of IMO. In Pollution of the Sea — Prevention and Compensation. Springer, pp. 41–61.

MPA, 2016. Safety of navigation in the Singapore Strait. Available at: http://www.mpa.gov.sg [Accessed August 3, 2016].

Portman, M.E., 2016. Environmental Planning for Oceans and Coasts: Methods, Tools, and Technologies, Springer.

Qu, X. & Meng, Q., 2012. Development and applications of a simulation model for vessels in the Singapore Straits. Expert Systems with Applications, 39(9), pp.8430–8438.

Qu, X., Meng, Q. & Suyi, L., 2011. Ship collision risk assessment for the Singapore Strait. Accident Analysis and Prevention, 43(6), pp.2030–2036.

Rusli, M., 2012. Navigational Hazards in International Maritime Chokepoints: A Study of the Straits of Malacca and Singapore. Journal of International Studies, 8(January 2006), pp.93–112.

Rusli, M.H.B.M., 2012. Balancing shipping and the protection of the marine environment of straits used for international navigation?: a study of the straits of Malacca and Singapore. University of Wollongong.

Sulaiman, O.O., Saharuddin, A.. & Wan Nik, W.B., 2013. Marine Technology and Sustainable Development: Green Innovations Olanrewaju & O. Sulaiman, eds., IGI Global.

Tan, P. Van, 2016. Vietnam Law on Marine Environment Protection and the Implementation of Marpol Convention 73 / 78 in Current Period. , 46, pp.67–73.

Webler, T. & Lord, F., 2010. Planning for the human dimensions of oil spills and spill response. Environmental Management, 45(4), pp.723–738.

Weng, J., Meng, Q. & Qu, X., 2012. Vessel Collision Frequency Estimation in the Singapore Strait. The Journal of Navigation, 65, pp.207–221.

Xiaolu, Y., 2011. The International Legal Framework for Prevention of Vessel-source Pollution and Its Implementation in Chinese Legislation. Lund University.

Zeeniya, A., 2013. Legal Analysis Of International Conventions For The Prevention Of Vessel-Source Marine Pollution: A Maldivian Perspective. International Maritime Law Institute.