

**TRANSBOUNDARY POLLUTION FROM OFFSHORE
OIL AND GAS ACTIVITIES IN THE SEAS OF
SOUTHEAST ASIA**

Youna Lyons

Senior Research Fellow, Centre for International Law

R. Warner and S. Marsden (eds.), *Transboundary Environmental Governance in Inland, Coastal and Marine Areas*, (Farnham, Ashgate, forthcoming 2012) [unedited version].

Not for Citation Without the Express Consent of the Author

The seas of Southeast Asia, which include the South China Sea (SCS), the Gulf of Thailand, the Indonesian Sea and the Sulu-Celebes Sea,¹ host 1390 offshore platforms for hydrocarbon production. While this represents more than double the number of platforms in the North Sea², they are spread over the many meanders in the seas of Southeast Asia. However, these seas are semi-enclosed and shared among several coastal States, increasing the risk that initially domestic pollution events would transform into transboundary pollution. Another type of potential transboundary maritime pollution is one that would arise from offshore activities taking place in an area subject to maritime boundary disputes between two or more States. Many current and prospective offshore oil and gas activities in the SCS are in this situation.

This chapter focuses on the environmental governance framework available to manage transboundary pollution from offshore oil and gas activities at international and regional levels. It reviews the location and extent of potential transboundary pollution risk before discussing the application of the United Nations Convention on the Law of the Sea (UNCLOS)³, the applicability of international shipping and conservation treaties, and the impact of the fragmentation in the legal and institutional regional policy framework. The emphasis is on international and regional relevant law and institutional organization flowing from relevant international and regional instruments rather than on customary international law.⁴

The pollution risks focused on are oil spills, drilling wastes, platform abandonment and invasive species through biofouling.

¹ These four seas correspond to four Large Marine Ecosystems (LME) of Southeast Asia, the boundaries of which are based on four linked ecological criteria: bathymetry, hydrography, productivity and trophic relationships. The map of the 64 LMEs of the world is the result of a collaborative effort led within the Regional Seas' program of the United Nations Environmental Program involving the United States National Oceanographic and Atmospheric Administration and other UN agencies <http://www.lme.noaa.gov/index.php?option=com_content&view=article&id=178&Itemid=62>.

Unlike the other seas, the Indonesian Sea is primarily composed of Indonesia's archipelagic waters.

² Located in the North of Europe, the North Sea is a hydrocarbon rich semi-enclosed sea. It opens on to the Atlantic Ocean in the North and is surrounded by Norway, Denmark, Germany, the Netherlands, Belgium, France and the United Kingdom (from east to west).

³ *United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994) <<http://cil.nus.edu.sg/1982/1982-united-nations-convention-on-the-law-of-the-sea/>>. To date UNCLOS has been ratified by all coastal States in the SCS but for Cambodia who only signed (see below table 1).

⁴ In particular, the applicability and relevance of the precautionary principle to offshore pollution in Southeast Asia is not discussed due to the difficulties in establishing a clear and agreed content for the precautionary principle in the context.

I – LOCATION AND EXTENT OF TRANSBOUNDARY POLLUTION RISKS

A Offshore oil and gas activities in the seas of Southeast Asia

1 The Seas of Southeast Asia

Among the four seas of Southeast Asia,⁵ the SCS and the Indonesian Sea are the largest and the densest in offshore oil and gas activities. However, the latter comprises only ocean areas under Indonesian jurisdiction. Furthermore, the Indonesian Sea is connected to the Sulu Celebes Sea and the SCS through narrow straits, making transboundary pollution less likely. This chapter thus focuses primarily on transboundary pollution in the SCS and the western area of the Celebes Sea where prospective offshore activities are on-going despite competing maritime claims from Indonesia and Malaysia.

Physical geography defines the SCS as a semi-enclosed sea, as it is separated from other surrounding seas by shallow straits. UNCLOS gives the same definition from a legal perspective.⁶ The Sulu-Celebes Sea is also a semi-enclosed sea.

When considering the environmental impact of offshore oil and gas activities in the seas of Southeast Asia, it is informative to compare them to other sea basins that are subject to high hydrocarbon activities. With surface area of more than double that of the Gulf of Mexico (itself double the North Sea),⁷ they hold under half of the 4000 platforms located in the Gulf of Mexico, while the North Sea contains less than 550 platforms. The Gulf of Mexico is thus where the presence of offshore platforms is the densest. However, unlike the Gulf of Mexico, the seas of Southeast Asia are still generally considered as holding promising and underexploited hydrocarbon basins.⁸

⁵ The South China Sea is a semi-enclosed sea surrounded by China, the Philippines, Malaysia, Brunei Darussalam, Indonesia, Vietnam, Cambodia and Thailand. Although it is ecologically a distinct large marine ecosystem, the Gulf of Thailand is often included in the reference made to the SCS. The Sulu-Celebes Sea is also a large marine ecosystem composed of two linked sub-seas, the Sulu Sea (north), bordered mostly by the Philippines, except the west corner along Sabah (Malaysia), and the Celebes Sea bordered by Indonesia, Malaysia and the Philippines.

⁶ Both criteria set out in UNCLOS, art 122 are met for the SCS as it is a sea 'surrounded by two or more States and connected to another sea or the ocean by a narrow outlet or consisting entirely or primarily of the territorial seas and exclusive economic zones of two or more coastal States.'

⁷ The SCS alone covers 3.6million km². Wu Shicun and Hong Nong, *The Energy Security of China and Oil and Gas Exploitation in the South China Sea*, Myron H Nordquist, in John Norton Moore, Kuen-Chen Fu (eds), *Recent Developments in the Law of the Sea and China* (Martinus Nijhoff Publishers, Koninklijke Brill NV, 2005) 149.

⁸ It is noted that ideas on the size of the hydrocarbons reservoirs in the SCS vary. Wu Shicun and Hong Nong reported that, according to decades of research, there are 13 large and medium sediment basins in the SCS containing over 172 millions barrels of oil and 10 trillion cubic metres of natural gas (*Ibid*). Recent press articles from China report a much higher quantity of 366.5 billion barrels of oil and 20 trillion cubic metres of gas: Zou Lee, 'Oil bonanza in South China Sea', *Global Times* (online), 19 April 2011, <<http://special.globaltimes.cn/2011-04/645909.html>>.

When considering the profile of the offshore activities in the SCS, the bathymetry of the basin is also informative.⁹ More than half of the SCS is a shallow basin located over the Sunda Shelf with a depth not exceeding 100m. The rest is a deep basin with a maximum depth of 5000m¹⁰. This geographical characteristic explains that most of the now obsolete platforms are located in less than 100m of water, even occasionally more than 100nm from the coast. It is also the reason why deep-water drilling can only occur in a limited number of places.

2 Oil and gas activities offshore: an overview

Oil and gas production plays a critical role in Southeast Asia's economic and social development. While all coastal States of the SCS have some oil and gas production, the proportion of offshore production varies. It is estimated that today there are a minimum of 1350¹¹ platforms in the SCS and adjacent seas. Indonesia has by far the greatest number of platforms, followed by Malaysia and Thailand. Together, these 3 countries have 74% of offshore installations in the SCS, and this rises to 86% with Brunei. However, they are not all positioned in places where transboundary pollution is likely. Indonesia has for instance a large number of platforms located within its archipelagic waters in locations where pollution incidents can only affect its own coastlines. This chapter focuses primarily on oil and gas activities which may lead to transboundary environmental damage. Such activities can be divided into two categories: (i) activities located close enough to the maritime boundary with another coastal State; and (ii) activities located in areas subject to overlapping maritime claims.

In the SCS, the current risk of transboundary pollution from offshore oil and gas platforms is generally confined to boundaries between contiguous coastal States rather than the continental shelf boundary between opposite states.¹² Developments in deeper basins located on the outskirts of continental shelves under national jurisdiction are a more recent occurrence. Although the number of offshore oil and gas installations in areas subject to overlapping claims remains limited, the risk of

⁹ See below map 2.

¹⁰ See NOAA website on Large Marine Ecosystems <<http://www.emecs.or.jp/guidebook/eng/pdf/18southchina.pdf>>.

¹¹ 1288 of these are fixed to the seabed, generally small and light (compared to installations in the Gulf of Mexico or the North Sea) and positioned in shallow waters (50% appear to be located in less than 50 metres and close to 75% in 75metres or less). It is noted that the number of platforms will vary according to data availability, the classification adopted (e.g. whether several platforms connected together are counted as one or several and/or whether they are counted by reference to their mode of attachment or mooring to the seafloor), and the date of assessment (temporary installations or new installations). Brian Twomey, 'Study Assesses Asia-Pacific Offshore Decommissioning Costs' (2010) 15 March, *Oil and Gas Journal* 51-55; OPL *World Offshore Field Development Guide Database*, Vol 2: Asia, India, Australasia & Far East, 2010.

¹² As oil and gas activities extend further offshore, the depth at which operations are taking place generally increases as does its complexity and difficulty. These are linked to water pressure, which increases with water depth and adds constraints and tensions on the building of offshore installations, their maintenance and their use.

occurrence and the potential magnitude of pollution may be increased by the absence of one responsible coastal State on these areas. Further, the risk of transboundary pollution will also increase as the need for energy triggers new developments despite unresolved disputes on maritime claims.

In the SCS and in the Sulu-Celebes Sea, another type of transboundary pollution may occur in areas that are subject to offshore oil and gas activities despite disputed territorial claims from several States. The largest area believed to hold large hydrocarbon reservoirs and under overlapping claims is the Spratly Archipelago. It covers an area of 410,000km², which is currently subject to overlapping claims of maritime boundaries from 6 coastal States: China, Taiwan, Philippines, Brunei Darussalam, Malaysia and Vietnam.

B Offshore activities close to maritime boundaries

Exploratory drilling and offshore production taking place in the vicinity of maritime boundaries between contiguous States are an obvious source of potential transboundary pollution which may be resolved through bilateral measures.¹³ In Southeast Asia, however, this concerns a substantial yet minor part of offshore developments along the maritime borders between Malaysia and Brunei, Malaysia and Indonesia and Vietnam and Malaysia south of the Gulf of Thailand. Pollution from many of the hydrocarbon fields currently in production close to maritime boundaries are likely to involve more than two States. Pollution from production sites in the Gulf of Thailand could for instance involve more than two coastal States due to the geographical characteristics of the respective borders.¹⁴ The same is true of pollution from hydrocarbon sites located Northeast of Sabah, where the Philippines coast can be affected as well as Indonesia and Malaysia.

Given the number of countries potentially involved, clear global and regional rules and regulations are thus necessary to establish a transnational regime aimed at preventing pollution from offshore oil and gas activities and if pollution does occur to mitigate the impact on the marine environment and ensure compensation for the victims of prejudice suffered and to remediate the environment. Worth noting are specific rules which already exist for the development of hydrocarbon resources in areas subject to joint-development agreements. The Gulf of Thailand is an area where such regimes have been agreed and apply to small areas under joint-development.¹⁵

¹³ The Montara incident in the Timor Sea is an example of pollution from a drilling rig, which is being resolved on a bilateral basis between Indonesia and Australia. For an overview of the Montara oil spill, refer Australian Government, *Department of Sustainability, Environment, Water, Population and Communities* <<http://www.environment.gov.au/coasts/oilspill.html>>.

¹⁴ A common feature of oil and gas activities in the Gulf of Thailand and in Brunei is that offshore installations are in less than 90 metres of water.

¹⁵ Malaysia has for instance signed two joint-development agreements in the Gulf of Thailand, one with Thailand and the other one with Vietnam. Refer below Part III B (1) for further details on these.

C Offshore activities in disputed areas

Many exploratory drilling or production sites are located within China's nine-dashed line¹⁶ and the oil and gas industry is accustomed to disturbances in their prospecting or development. However, three areas have been the subject of more public controversies: the first two in the Spratly Archipelago¹⁷ (the Reed Bank and the Western part of the Spratly Archipelago, off the coast of Vietnam) and the third one in the south part of the Sipadan and Ligitan islands, south of the Sulu Celebes Sea. They also have in common their proximity to coral reefs, fishing grounds and areas of high biodiversity. It must also be noted that while the Reed Bank and west of the Spratly Archipelago are two current 'hot spots' of offshore oil and gas activities creating contests between the claimants to parts or all of the Spratly Archipelago, eight of the 13 sedimentary basins expected to hold promising reservoirs of oil and gas¹⁸ are located in the Spratly Islands Archipelago. New 'hotspots' may therefore develop in the future given Vietnam and the Philippine's choice to continue granting oil and gas concessions and seismic surveys being carried out in the area.

1 The Reed Bank

Surveys carried out in the eastern part of the Spratly Archipelago revealed that the Reed Bank might be very rich in natural gas reserves. The Sampaguita gas field claimed by the Philippines as a result of this is expected to hold more than the Malampaya gas field, located to the southwest of it.¹⁹ Despite an incident with China in March 2011 where exploratory drilling initiated by the Philippines was interrupted by two Chinese vessels threatening to ram the drilling ship,²⁰ the Philippines recently reiterated its intention to develop the Sampaguita gas reserves, which created further diplomatic incidents with China.²¹ While the operator in charge of the development of the concession is expected to follow the rules and standards provided for in Philippines law on environmental law, monitoring of compliance and enforcement is

¹⁶ For the history of the infamous nine-dashed boundary claim by China, refer Robert Beckman, 'China, UNCLOS and the South China Sea' (2011) *Asian Society of International Law Third Biennale Conference*, Beijing, China 27-28 August 2011, 11 [32] <<http://cil.nus.edu.sg/wp/wp-content/uploads/2009/09/AsianSIL-Beckman-China-UNCLOS-and-the-South-China-Sea-26-July-2011.pdf>>.

¹⁷ The Spratly Archipelago is an area of 410,000km², which is currently subject to overlapping claims of maritime boundaries from 6 coastal States: China, Taiwan, Philippines, Brunei Darussalam, Malaysia and Vietnam.

¹⁸ Wu and Hong, above n 6 [148].

¹⁹ Edison Investment Research, *Outlook Forum Energy* (online) 14 April 2010, <<http://www.forumenergyplc.com/DocumentLibrary/ForumOutlook140410.pdf>>.

²⁰ Ian Storey, 'China and the Philippines: implications of the Reed Bank incident', *Institute of Southeast Asia China Brief* 11(8), 6 May 2011 <<http://web1.iseas.edu.sg/?p=3512>>.

²¹ On 2 March 2011, the Philippines sent two military observation planes in response to reports of harassment from Chinese patrol boats, which allegedly threatened to ram the Research Vessel M/V Venture if it continued seismic survey in the Reed Bank area. See for instance on this, Dow Jones Newswire, 'China Warns Against South China Sea Oil Exploration', *Rigzone* (online), Thursday 24 March 2011 <http://www.rigzone.com/news/article.asp?a_id=105427>; BBC Mobile, 'Philippines halts tests after China patrol challenge', *News, Asia-Pacific* (online), 8 March 2011 <<http://www.bbc.co.uk/news/world-asia-pacific-12672889>>.

also unlikely for several reasons. First the area is more than 100nm away from the Philippines archipelagic baselines; second the security issues created by the tensions between China and the Philippines may distract from the importance of respecting environmental standards; and thirdly, the Philippines' government may prefer to not send an enforcement vessel which may be misconstrued by China, the other main claimant to this part of the Spratly Archipelago.

2 West SCS, off Vietnam

In 1992, China granted the Wan'an Bei 21 block (a.k.a. WAB 21) off Vietnam to Crestone Energy Corporation, a US oil and gas company. The difficulties this created with Vietnam led Crestone Energy Corporation to forgo its right to this block. It was replaced by Harvest Natural Resources in 1996. Vietnam's position is that the WAB 21 block, which is located within 200nm of its baseline, is located on its continental shelf and thus under its jurisdiction. Based on this, Vietnam has also granted concessions on and around WAB 21. Talisman Energy is jointly exploring blocks 133 and 134 with its partner Petrovietnam²² while Exxon Mobil has been granted the 3 blocks located east of these, which include the most part of WAB 21. While Talisman is currently proceeding with exploratory drilling with Petrovietnam, Harvest Natural Resources²³ appears to be waiting for some solution to the dispute between China and Vietnam prior to proceeding.²⁴ Exxon's position is unknown at this stage. Different corporations adopt different positions on these boundary disputes and the degree of risk they are prepared to undertake varies. A common trait of offshore oil and gas activities in areas subject to overlapping concessions by two claimant States is that companies engaged in developing resources under a concession granted by a coastal State are expected to comply with the national environmental rules and standards of that coastal State and the treaties ratified by that State.

3 Sulu-Celebes Sea

In 2002, the International Court of Justice (ICJ) determined that the Sipadan and Ligitan islands (South of Sabah) are under Malaysian sovereignty.²⁵ While this decision did not solve the disputed overlapping claims of Indonesia and Malaysia to the Ambalat block located south of these islands, it pushed the Malaysian boundary southward, prompted Indonesia to review its baselines and in that way strengthened Malaysia's overlapping claim to the Ambalat. The presence of oil in the Ambalat area

²² Talisman Energy, *Investor Open House, May 2010 – Southeast Asia Operations* <http://www.talisman-energy.com/upload/oh_presentation/19/02/southeast_asia_operations.pdf> or Talisman Energy, *Annual Information Form for the year ended December 31, 2010, February 28, 2011* <http://www.talisman-energy.com/upload/editor/File/Annual_Information_Form.PDF>

²³ See website of Harvest Natural Resources <<http://www.harvestnr.com/operations/china.html>>.

²⁴ Daniel Ten Kate, 'South China Sea oil rush risks clashes as U.S. bolsters Vietnam', (27 May 2011), *Bloomberg Businessweek* <<http://www.globalsecurity.org/org/news/2011/110527-south-china-sea.htm>>.

²⁵ *Indonesia v Malaysia (Judgement)* (International Court of Justice, Judgement of 17 December 2002, on I.C.J. Reports 2002 625 the sovereignty over Pulau Ligitan and Pulau Sipadan <<http://www.icj-cij.org/docket/index.php?p1=3&k=df&case=102&code=inma&p3=4>>.

has led to minor military clashes in 2009 between Indonesia and Malaysia. The countries have since tried to settle the dispute and agreed on joint military exercises in order to avoid clashes. However, the disputed claims to this area remain unresolved.²⁶ Indonesia's intentions to start exploratory drillings in this area nevertheless remain unchanged.²⁷

D *The compounded impacts from conflicting uses of the seas of Southeast Asia*

The oil and gas industry's investigation of the unexploited hydrocarbon reservoirs in the seabed of the Southeast Asian seas is set against a backdrop of multiple uses of these seas, abundant marine resources and a sensitive marine environment. These seas they host among the most biodiverse ecosystems of the world, one third of the world's maritime trade in volume, half of the world's supertanker traffic²⁸, and more than 40% of the world's total fish catch²⁹. The latter relies on productive coral reefs (almost half globally)³⁰, mangrove areas (37% of the world's) and seagrass (72% of the world's)³¹ which are very vulnerable to oil spills as well as to many disturbances to the water flow, such as diversion of water, dredging or drainage.³² This rich biodiversity also attracts a growing coastal tourism, which, paradoxically, is itself the source of environmental degradation and generally losses in ecosystem services. Coastal and marine resources are reported to be responsible for 40% of the GDP of

²⁶ Ali Nur Yasin and Sorta Tobing, 'Ambalat's huge oil and gas reserves', (2 June 2009) *Tempo* interactive <<http://www.tempo.co.id/hg/nasional/2009/06/02/brk.20090602-179380.uk.html>>.

²⁷ Reuters, 'Indonesia says Japan's inpx wins Babar Selaru oil/gas block', (21 September 2011), *Jakarta Globe* <<http://www.thejakartaglobe.com/business/minister-stands-firm-on-keeping-eni-in-ambalat/311791>>.

²⁸ 80% of the crude oil supplies for Japan, South Korea and Taiwan flow through the SCS from the Middle East, Africa and other coastal States of the SCS. (D.G.Wienczek, 'Energy issues in the South China Sea Region', *Cooperative monitoring in the South China Sea*, (2002) ed. JC Baker and DG Wienczek). 90% of the world's trade is estimated to be carried on ship (Opening session welcome address H.E. Mr Raymond Lim S.K. Minister for Transport and second minister for foreign affairs, Singapore, transcribed on the website of the Marine Port Authorities of Singapore <http://www.mpa.gov.sg/sites/global_navigation/news_center/speeches/speeches_detail.page?filename=sp040907g.xml>). Furthermore, the forecast increase in import of oil and gas (fuelled by development) implies substantially increased tanker traffic in the future. This is due to the fact that the promising reserves held in the South China Sea cannot be put into production early enough to meet the energy demand from development because of the development time required and the unresolved maritime disputes.

²⁹ *FAO (Food and Agriculture Organization of the United Nations) 'Review of the state of the world marine capture fisheries management: Pacific Ocean' (2007) FAO fisheries technical paper T488/1.*

³⁰ C.R. Wilkinson, 'Status of coral reefs of the world : 2008, *Australian Institute of Marine Science*', (2008), Townsville.

³¹ For a map of coral, seagrass and mangrove biodiversity showing the SCS's relatively high biodiversity, refer to <<http://maps.grida.no/go/graphic/distribution-of-coral-mangrove-and-seagrass-diversity>>.

³² The productivity of the mangroves system depends on a dynamic balance among water flows, sedimentation, erosion and species composition. See *IUCN, Oil and gas exploration and production in mangroves areas* (1993) Gland, Switzerland and Cambridge, UK <<http://www.ogp.org.uk/pubs/184.pdf>>.

the less developed economies of the region.³³ Furthermore, these conflicting uses and competing values lead to a race for resources and unsustainable practices such as overfishing, destructive fishing, oil spills and pollution from offshore exploitation to name but a few. Finally, climate change is yet another stressor projected to compound the pressures on natural resources and the environment³⁴, especially with respect to coral reefs and mangroves.³⁵

ASEAN's energy demand is expected to nearly double by 2020 (compared to 2005) and more than triple by 2030.³⁶ These figures, which do not include China's increase in energy demand although it is now the second energy consumer in the world, a major importer and an important stakeholder in the seas of Southeast Asia, demonstrate the unique opportunity created by the oil and gas resources in the seas of Southeast Asia and the inevitable pressure to scale up production.

However, given the value of the ecosystems surrounding these oil and gas reserves and the intensity of anthropogenic stressors to which they are already subject, the sustainable exploitation of oil and gas resources would need to take into account the combined impact of oil and gas production with environmental stressors from other sources. To some extent, this could be achieved through the implementation of the many relevant international treaties.

II A FRAGMENTED INTERNATIONAL FRAMEWORK FOR ENVIRONMENTAL IMPACTS FROM SEABED ACTIVITIES

A UNCLOS sets general rules and standards for activities from seabed activities and their environmental impact

The UNCLOS grants exclusive sovereign rights to coastal States for the purpose of exploring and exploiting their natural resources of their continental shelves³⁷, namely non-living and sedentary living resources.³⁸ The continental shelf extends to 200nm from the coastal State's territorial sea baseline or a maximum of 350 nm from the coastal States territorial sea baseline or 100nm from the 2500 metres isobath in cases where the physical continental shelf extends beyond 200nm.³⁹ As for the territorial

³³ UNEP/COBSEA, *State of the marine environment report for the East Asian Seas* 2009 (2010) Chou Loke Ming and COBSEA Secretariat (Eds), Bangkok.

³⁴ IPCC 'Climate Change 2007: Synthesis report' (2007) Cambridge University Press, Cambridge, UK.

³⁵ IPCC 'Asia. Climate change 2007: Impacts, adaptation and vulnerability' (2007) [10.1.2.] Cambridge University Press, Cambridge, UK. Of note are the repercussions for fisheries from loss of coral reefs and mangroves.

³⁶ ASEAN 'The 2nd ASEAN Energy Demand Outlook' (March 2009) <<http://www.energycommunity.org/documents/SecondASEANEnergyOutlook.pdf>>.

³⁷ UNCLOS, art 77 (1).

³⁸ UNCLOS, art 77 (4).

³⁹ UNCLOS, art 76 (5).

sea, it may be viewed as an extension of a coastal State's land territory extending to a maximum limit of 12nm from the coastal States' baseline.⁴⁰

With respect to pollution of the marine environment, UNCLOS creates an overarching and general obligation on coastal States to protect and preserve the marine environment.⁴¹ More specifically in the context of pollution from seabed activities, coastal States have an obligation to adopt national laws and take measures to prevent, reduce and control pollution of the marine environment arising from or in connection with seabed activities subject to their jurisdiction⁴² and from dumping⁴³ within their jurisdiction.⁴⁴ UNCLOS provides that these national laws and measures adopted to prevent, reduce and control pollution shall be no less effective than the 'global rules and standards' on dumping by pollution⁴⁵ and not less effective than 'international rules, standards and recommended practices and procedures'⁴⁶ on pollution from seabed activities. The wording seems to place on parties to UNCLOS an obligation to adopt rules and standards in other conventions to which they might not and need not be a party. The difficulty, however, is that such a reading of UNCLOS' provisions which implies that the parties are deemed to have incorporated future instruments by reference, might be considered as an unacceptable intrusion on the sovereignty of states.⁴⁷ On the other hand, any other construction would deprive the provision of any '*effet utile*' or effectiveness.⁴⁸ Furthermore, the reference to 'global rules and standards' and 'international rules, standards and recommended practices and procedures' depending on pollution sources creates confusion in the determination of the international instruments concerned.

⁴⁰ UNCLOS, arts 2(1) and 24.

⁴¹ UNCLOS, art 192.

⁴² UNCLOS, art. 208. This provision on legislative authority falls within the obligation to protect the marine environment, including pollution from installations and devices used in exploration or exploitation of the natural resources of the seabed and subsoil, provided for in UNCLOS art 194(3)(c).

⁴³ The term 'dumping' includes any deliberate disposal of waste or other matter from a vessel, platform or other man-made structure at sea, as well as disposal of vessel, platform or other man-made structure at sea themselves. However, disposals that are incidental to or derived from the normal operation of the vessel (or platform, or other man-made structure) or amount to an intentional placement rather than a disposal do not constitute 'dumping' (UNCLOS art 1-1(1)(a)).

⁴⁴ Enforcement powers are granted to coastal States for pollution of the marine environment occurring in their territorial sea, exclusive economic zone or on the continental shelf from seabed activities (UNCLOS, art 208) and by dumping (UNCLOS, art 210). These assume that the violation to be sanctioned has been implemented into the national laws of coastal States.

⁴⁵ UNCLOS, art 210(6).

⁴⁶ UNCLOS, art 208(3) for pollution from seabed activities.

⁴⁷ Alan Boyle 'Marine pollution under the Law of the Sea Convention' (1985) 79 *American Journal of International Law* 356 (pro) and C.G.Timagenis, *The International Control of Marine Pollution*, (Oceana Publications, 1979).

⁴⁸ The fundamental principle of *effet utile* is that a treaty interpreter is not free to adopt a meaning that would reduce parts of a treaty to redundancy or inutility. This principle is implied in the *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980), arts 31 and 32.

Many non-binding guidelines relevant to offshore activities have been adopted by the International Maritime Organisation (IMO)⁴⁹. Although they are not binding on their own standing⁵⁰, it may be argued that they are setting a minimum mandatory standard by virtue of application of articles 208 and 210 of UNCLOS.⁵¹ The legal strength of the standards set in the 1996 Protocol to the London Convention are subject to the same question. Can they be considered as establishing a global rule or, better, a global standard although it has only been ratified by a small number of countries? Or would the 1972 London Convention⁵² be preferred based on the fact that it is widely ratified? Can the standards set by either of them be mandatory on non-signatories by virtue of UNCLOS? This is of particular relevance in the context of pollution from offshore oil and gas in Southeast Asia where neither the London convention nor the 1996 London Protocol⁵³ are widely ratified.

The UNCLOS' provisions on pollution from dumping and seabed activities are in contrast to the UNCLOS provisions on pollution from vessels where coastal States have no obligation to implement nationally global rules and standards unless they have ratified the respective treaties.⁵⁴ With respect to pollution from vessels, flag States (not coastal States) have the primary legislative and enforcement powers.⁵⁵ This difference in coastal States' obligations with respect to pollution from vessels and from dumping and seabed activities is the source of additional uncertainty with respect to the regime of pollution from offshore oil and gas activities particularly where shipping treaties contain provisions designed to control pollution from seabed activities. The wording of article 208 UNCLOS must be noted here, as it is not limited to pollution arising from seabed activities⁵⁶ but it includes in its scope pollution 'arising from or in connexion with' seabed activities. One circumstance which comes to mind where it is unclear which of (i) article 208 (pollution from seabed activities),

⁴⁹ Of direct relevance to pollution from offshore hydrocarbon activities are the International Maritime Organization 1989 Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone, (IMO Resolution A.672 (16), adopted on 19 October 1989). The IMO has adopted many other circulars, resolutions, guidelines and standards applicable to offshore activities, especially with Floating Production Storage and Offloading Unit or Vessel (FPSO) and Floating and Storage Units (FSU), some of which are indirectly relevant to offshore pollution, especially those relating to safety of navigation through safety zones and routing measures, construction rules or decommissioning.

⁵⁰ This is the IMO's own approach. Refer 'Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization, Study by the Secretariat of the International Maritime Organization' LEG/MISC.6, 10 September 2008 <<http://www.imo.org/ourwork/legal/documents/6.pdf>>.

⁵¹ See Alan Boyle above n 47, 536.

⁵² *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, opened for signature 29 November 1972, 1046 UNTS 120, (entered into force 30 August 1975).

⁵³ *1996 Protocol to the 1972 London Convention on Prevention of Marine Pollution by Dumping of Wastes and other Matter*, opened for signature 7 November 1996, 2006 ATS 11, (entered into force 24 March 2006).

⁵⁴ UNCLOS, arts 211(4) and (5).

⁵⁵ UNCLOS, art 211(2).

⁵⁶ An earlier version of this provision was so limited (M. Nordquist (editor-in-chief) *United Nations Convention of the Law of the Sea 1982, a Commentary*, (Center for Ocean Law and Policy, University of Virginia, Martinus Nijhoff Publishers) vol IV [208.7].

(ii) article 210 (pollution from dumping); or, (iii) article 211 (pollution from vessel) of UNCLOS should apply is where an international shipping treaty contains provisions relating also to pollution from seabed activities. This observation is of particular relevance in the context of the seas of Southeast Asia where all shipping pollution treaties have not been widely ratified but they include aspects of offshore oil and gas activities in their scope. Where an IMO shipping treaty containing provisions relating to pollution from seabed activities has been widely ratified globally but not in Southeast Asia,⁵⁷ a strict construction of UNCLOS would impose national implementation insofar as it relates to pollution from seabed activities by virtue of article 208 of UNCLOS.

B IMO's treaties applicable to offshore oil and gas activities

The only international treaties and guidelines specifically applicable to offshore oil and gas activities have been adopted or negotiated through the International Maritime Organisation (IMO). Although the core mandate of this UN specialised agency is to promote shipping safety and to protect the marine environment from international shipping activities⁵⁸, offshore oil and gas activities have fallen within the scope of its responsibility in so far as the activities involve ships and/or interfere with shipping safety (as do installations, structures and platforms). Many shipping treaties and guidelines also apply to offshore installations where the definition of 'ship' includes offshore platform or parts thereof such as Mobile Drilling Units (MODU), Floating, Storage and Offloading Unit or Vessel (FSO) or Floating Production Storage and Offloading Unit or Vessel (FPSO) or Floating and Storage Unit (FSU). The general view of the IMO appears to be that while it will continue to contribute to the regulation of offshore activities, as it has done to date, the pollution directly arising from exploration and exploitation of the seabed is deemed to fall outside its mandate.⁵⁹ Furthermore, as the focus of the IMO lies with shipping, national delegations generally comprise shipping regulators and rarely include representatives of national oil and gas regulatory bodies. This situation would need to be addressed if the IMO were to embrace a more comprehensive regulatory role with respect to seabed activities and implement article 208 of UNCLOS.⁶⁰

This situation results in a fragmented international legal regime for offshore oil and gas activities based on a confusing set of rules derived from many different instruments. Furthermore, the scope of application of each set of rules is dependent on

⁵⁷ For instance, the 1972 London Convention with regard to decommissioning of offshore platforms. Refer discussion in Part II F.

⁵⁸ *Convention on the International Maritime Organisation*, opened for signature 6 March 1948, 9 UST 621 (entered into force 17 March 1958) and *Charter of the United Nations*, opened for signature 26 June 1945, ATS 1 (entered into force 24 October 1945) art 57.

⁵⁹ IMO, above n 49.

⁶⁰ Alan Spackman, 'Environmental standards for offshore drilling', *Touch Oil and Gas* (online), 2003 <<http://www.touchoilandgas.com/environmental-standards-offshore-drilling-a101-1.html>>.

definitions such as whether the given installation or part thereof is a permanent installation or a disconnectable installation or whether it is self-propelled or non-propelled. The IMO has acknowledged this difficulty and sought to clarify some issues in its 2010 Guidance for the application of safety, security and environmental protection provisions to FPSOs and FSUs where it insists on the importance of distinguishing non-disconnectable FPSOs and FSUs (designed to be permanently moored) as opposed to disconnectable ones, and self-propelled craft as opposed to non-propelled craft while operating in location.⁶¹ These key criteria determine the sovereign rights and obligations that a coastal State has over given offshore installations located on its continental shelf and the legal regime which is applicable.

Transboundary pollution from underwater pipelines (used primarily for the transport of gas from offshore installations) is another existing pollution risk in the SCS. As the production of natural gas is growing in the SCS, so too does the pipeline network, which already covers several 1000kms.⁶² However, there is no international nor regional framework determining rights and obligations in relation to environmental standards to be met in the laying and maintenance of pipelines. Conversely, deepwater drilling is currently limited in the seas of Southeast Asia. However, it is a developing activity with higher environmental risks and no international or regional environmental safeguards exist other than industry standards.⁶³

C Oil spills from offshore oil and gas activities

This section investigates the applicability of shipping treaties on oil pollution to oil spills from offshore oil and gas activities prior to transfer and transportation for export.

1 Preventative measures

⁶¹ IMO, Marine Environment Protection Committee and Maritime Safety Committee, MSC-MEPC.2/Circ.9, 25 May 2010.

⁶² Youna Lyons, 'Offshore oil and gas in the SCS and the protection of the marine environment – Part 1 A review of the context and profile of offshore activities (2011) 25[5.2.3] 28[5.3.5] <http://cil.nus.edu.sg/wp/wp-content/uploads/2010/10/OOG_SCS-YounaLyons-Part1.pdf>.

⁶³ Deepwater drilling is currently located mostly off China's southern coast around the hydrocarbon fields of the Pearl River Delta (off Hong Kong, some fields average 1500 metres depth). However, based on the number of planned developments of deepwater fields and specialised press coverage, deepwater drilling is due to increase rapidly in the coming five years. In addition to China's deepwater fields, the SCS today holds 26 deepwater fields (over 500 meter depth) granted for exploration and development, where production has started in the last eight years or is due to start within the coming two to five years (as at 2010). With two new deepwater fields in production since 2003 (West Seno is 976 metres), Indonesia has another 11 deepwater fields (two of which are 600 metres deep, nine are more than 800 metres deep or more) forecast to come into production in the coming five years. Malaysia's 12 current deepwater fields are located off Sabah. Two are in development and production (respectively Gumusut-Kakap, 1000 metres and Kikeh, 1342 metres), the other nine are 1000 metres deep to 1465 metres on average (except one, 800 metres) and development is planned within the coming five years. The Philippines' Malampaya gas field is also located at 800 to 1200 metres water depth. Finally, blocks CA1 and CA2 located off Brunei and jointly managed under a joint commercial arrangement between Brunei and Malaysia are 1000 to 2720 metres deep.

Oil discharge from ships is regulated by numerous international treaties and technical publications.

Annex I to the 1973 International Convention for the Prevention of Pollution from Ships as amended by the Protocol of 1978 (MARPOL 73/78) which applies to pollution by oil contains special requirements for fixed or floating platforms including drilling rigs, FPSOs used for the offshore production and storage of oil, and floating storage units FSUs used for the offshore storage of produced oil.⁶⁴

When they are engaged in the exploration, exploitation and associated offshore processing of sea-bed mineral resources and other platforms, such offshore installations must comply with requirements applicable to ships of 400 gross tonnage and above other than oil tankers. Other requirements include maintaining a record of all operations involving oil or oily mixture discharges, and complying with the prohibition on discharge into the sea of oil or oily mixtures except when the oil content of the discharge without dilution does not exceed 15 parts per million.⁶⁵

The MARPOL Convention Annex I has been unanimously ratified in Southeast Asia and thus binds all coastal States in the region in respect of its provisions applicable to offshore installations.

2 Oil spill response

This section focuses on oil spills directly occurring from an offshore installation and in the course of export from the installation.

The only international convention specifically addressing liability for offshore exploration and exploitation for hydrocarbons is the 1976 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration and Exploitation of

⁶⁴ MARPOL operates through six technical annexes, each addressing a different kind of pollution. Annex I regulates pollution by oil (Revised Annex I adopted by resolution MEPC.117(52) on 15 October 2004). Annex II regulates pollution by noxious substances in bulk; Annex III pollution by harmful substances in packaged form; Annex IV pollution by sewage from ships; Annex V pollution by garbage from ships and Annex VI prevention of air pollution from ships <http://treaties.un.org/doc/Publication/UNTS/Volume_1340/volume-1340-I-22484-English.pdf>. All the annexes and amendments are also available <<http://cil.nus.edu.sg/1978/1973-international-convention-for-the-prevention-of-pollution-from-ships-as-amended-by-the-protocol-of-1978-marpol-7378/>>. It must be noted that annexes only apply to pollution from offshore oil and gas activities if there is a special provision to that effect in the annex, because the general convention excludes as a matter of general principle 'the release of harmful substances directly arising from the exploration, exploitation and associated off-shore processing of seabed minerals resources' from the definition of 'discharge' under the Convention.

⁶⁵ Revised Annex I *ibid*; Guidelines for the Application of the Revised MARPOL Annex I requirements to Floating Production, Storage and Offloading Facilities (FPSOs) and Floating Storage Units (FSUs), IMO, Marine Environment Protection Committee, Resolution MEPC.139(53), adopted 22 July 2005. See also Paragraphs 6.13 and 6.14 of IMO, Marine Environment Protection Committee, MEPC 59/24 (July 2009) on the interpretation of the requirements of MARPOL Annex I Regulation 15 as regards discharge of oil and oily waste from fixed and floating platforms.

Sea Bed Mineral Resources (CLEE Convention)⁶⁶ which has never entered into force. One of the difficulties faced was the lack of a competent international organisation to host the convention and act as secretariat.

Despite the lack of a comprehensive international treaty on pollution from seabed activities. Pollution incidents from offshore platforms, either nationally or in co-operation with other countries fall within the scope of the 1990 International Convention on Oil Pollution Preparedness, Response and Cooperation (the OPRC Convention), which entered into force in 1995.⁶⁷ Under this convention, operators of offshore units (either floating or fixed) located within the jurisdiction of states Parties must have an oil pollution emergency plan or similar arrangements which must be coordinated with national systems in order to respond promptly and effectively to oil pollution incidents.⁶⁸ Similarly, ships flying the flag of a state Party must carry a shipboard oil pollution emergency plan.⁶⁹ The OPRC Convention also requires that specific tools be developed and equipment be used, including oil spill combating equipment, training programmes and exercises, detailed plans and communication capabilities as well as a mechanism or arrangement to coordinate the response to an oil pollution incident.⁷⁰ To date, Malaysia, the Philippines, Singapore and Thailand have ratified the OPRC Convention. However, Vietnam and Cambodia, which are not parties to the OPRC Convention, have signed a Joint Statement on Partnership in Oil Spill Preparedness and Response in the Gulf of Thailand with Thailand in January 2006.⁷¹ At regional level, an MOU has also been signed between the ASEAN countries on 24 January 1994 for the creation of OSRAP (oil spill response action plan).⁷²

3 Responsibilities in oil spill

Ship-owners at the time of an incident (including the registered owner, bareboat charterer, manager and operator of the ship) are liable for pollution damage according to the 2001 International Convention on Civil Liability for Bunker Oil Pollution Damage (2001 Bunker Convention)⁷³ which entered into force in 2008, and has been

⁶⁶ The initial signatories were the Netherlands, Norway, Sweden, the United Kingdom, Germany, and Ireland <<http://sedac.ciesin.org/entri/register/reg-092.rrr.html>>.

⁶⁷ *International Convention on Oil Pollution Preparedness, Response and Co-operation*, opened for signature 30 November 1990 1891 UNTS 51 (entered into force 13 May 1995) (OPRC) <<http://cil.nus.edu.sg/1990/1990-international-convention-on-oil-pollution-preparedness-response-and-co-operation/>> (last accessed on 29 July 2011).

⁶⁸ OPRC, art 3.1(c).

⁶⁹ OPRC, art 3(1)(b).

⁷⁰ *Ibid* arts 6(1) and (2).

⁷¹ P.Charlebois et al, 'Steering the Course Towards Safer Shipping and Cleaner Seas' (2010) 16 *Tropical Coasts* 8.

⁷² See below Part III A [3].

⁷³ *International Convention on Civil Liability for Bunker Oil Pollution Damage* opened for signature 23 March 2001 UKTS No. 8 (2005)(entered into force 21 November 2008) (2001 Bunker Convention) <http://cil.nus.edu.sg/rp/il/pdf/2001_International_Convention_on_Civil_Liability_for_Bunker_Oil_Pollution_Damage-pdf.pdf>.

ratified by China, Malaysia, Singapore and Vietnam to date⁷⁴ (table 1 below). This Convention is applicable to pollution from parts of offshore installations, which can be considered to be a ship under the Convention. Given the definition of bunker oil as ‘hydrocarbon mineral oil, including lubricating oil, used or intended to be used for the operation or propulsion of the ship, and any residues of such oil’, it includes crude oil.⁷⁵ The pollution incident must involve bunker oil on board or originating from a ship⁷⁶, defined as any seagoing vessel or seaborne craft, of any type.⁷⁷ The 2001 Bunker Convention may thus apply to oil pollution from FSU, FPSO and drilling units and more generally to any floating platforms without distinction as to whether they are self-propelled or not, nor engaged in an international voyage. However, the 2001 Bunker Convention deals primarily with the principle of liability, and compensation for damage.⁷⁸ It does not envisage other remedies to address pollution nor duties on ship-owners to repair and mitigate. This is of particular concern in the context of transboundary pollution where a framework is necessary to ensure coordination and consistency between the respective domestic rules of the States involved. Furthermore, these conventions do not apply to oil pollution from fixed platforms. The Legal Committee of IMO has expressed its support for the inclusion of a new item in the Committee’s work programme to consider liability and compensation issues connected with transboundary pollution damage resulting from offshore oil exploration and exploitation activities. This may go some way toward resolving the currently patchy regime.⁷⁹

Only a few States have so far ratified the 2001 Bunker Convention. The question of the application of article 208 of UNCLOS to the standard set by this convention thus arises. If the view is taken that article 208 must be applied literally⁸⁰, provisions which relate to pollution connected to seabed activities should be implemented into the national legislation of coastal States insofar as they qualify as ‘international rules, standards and recommended practices and procedures’.⁸¹ The same would be true for the implementation of relevant provisions the OPRC Convention in the legislation of coastal States which may not have ratified them.⁸² To this extent, these conventions would be considered as setting minimum requirements under UNCLOS, with respect to pollution connected to seabed activities.

⁷⁴ See below table 1

⁷⁵ *2001 Bunker Convention*, art 1(5).

⁷⁶ *Ibid* arts 3 and 4.

⁷⁷ *Ibid* art 1(1).

⁷⁸ The 2001 Bunker Convention also contains important provisions on compulsory insurance and financial security certificate and liability limitation.

⁷⁹ IMO Legal Committee, 97th Session, 15-19 November 2010, ‘IMO Legal Committee supports follow-up to deep-water Horizon and Montara’ <<http://www.imo.org/MediaCentre/MeetingSummaries/Legal/Pages/LEG-97th-Session.aspx>>.

⁸⁰ Refer above Part II A for the discussion on the application of *UNCLOS* art 208.

⁸¹ For a full discussion on this topic, please refer to Part II E. above.

⁸² For instance Brunei Darussalam, Cambodia, Indonesia, the Philippines and Vietnam (refer below table 1).

D Drilling wastes

1 Drilling muds and other liquid wastes

Drilling wastes include drilling fluids or muds, drill cuttings and produced water, the disposal of which vary depending on environmental standards being complied with. Drilling muds (which assist in removing cuttings from the hole and cool the drill bit) get mixed with rock and sediment fragments to form the drill cuttings. Following treatment of the drill cuttings on site to separate as much of the muds as possible, used muds and drill cuttings are generally treated differently as the toxicity of the latter (per volume) is decreased. Production water consists primarily of relatively warm water from oil and gas reservoirs containing dissolved and dispersed oils and has a varying chemistry depending on the site. Drilling fluids can also contaminate these waters.⁸³ The legal framework available for the disposal of drill cuttings is reviewed in the following section.

Drilling fluids can be oil or water based. Non-oily components of drilling fluids include produced water and offshore processing drainage and displacement water. MARPOL Annex II, which addresses pollution by noxious liquid substances, would be applicable to these fluids. However, this Annex does not include specific provisions allowing for its application to offshore oil and gas operations. This means that discharges occurring directly from offshore platforms do not fall within the scope of Annex II. Nonetheless, the transport and handling of hazardous and noxious liquid substances in bulk on offshore support vessels fall within the scope of this Annex.⁸⁴ If noxious substances other than oil and oily mixtures are handed over from the oil or gas rig to an offshore vessel for disposal, the prohibitions included in Annex II are applicable.

The 2000 Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (HNS 2000) to the 1990 OPRC Convention provides for similar rules to those applicable to oil spills.⁸⁵ However, to date, it has only been ratified by China and Singapore.

Pollution from produced water currently falls outside the scope of existing international instruments. In contrast, drilling fluids can fall within the scope of

⁸³ Sandra Kloff and Clive Wicks, *Environmental management of offshore oil development and maritime oil transport*, A background document for stakeholders of the West African Marine Eco Region (October 2004) <http://cmsdata.iucn.org/downloads/offshore_oil_eng.pdf>; Jonathan Wills 'Muddied Waters: A Survey of Offshore Oilfield Drilling Wastes and Disposal Techniques to Reduce the Ecological Impact of Sea Dumping' 25th May 2000 *Ekologicheskaya Vahkta Sakhalina (Sakhalin Environment Watch)* <<http://www.alaskaforum.org/other/muddiedwaters.pdf>>.

⁸⁴ IMO Assembly Resolution A.673(16) adopted 19 October 1989, as amended by the Resolutions of the Maritime Safety Committee MSC 184(79) and MSC.236.

⁸⁵ Refer Part II C (2).

MARPOL depending on the composition of the fluids and within the scope of HNS 2000 in the event of the spill of drilling fluids.

2 Disposal of drill cuttings

Drill cuttings are generally disposed in large piles located in the vicinity of the platforms if not just under. The environmental impact of drill cutting piles in Southeast Asia is not well understood at this point though some scientific publications⁸⁶ and the recent *ad hoc* Drilling Fluids and Cuttings Management Asia Forum held in Bangkok on 22-24 February 2011⁸⁷ demonstrate a growing attention to these issues and a regional awareness that some regional standard practice would be desirable.

MARPOL Annex V on pollution by garbage specifically applies to the disposal of garbage from fixed or floating platforms engaged in the exploration, exploitation and associated offshore processing of seabed minerals. Given the wide scope of the definition of garbage, it might include drill cuttings as well all other solid waste gathered during construction and operations. Disposal is forbidden within 500m of the platforms.

E Aquatic invasive species through ballast water and biofouling

Marine ecosystems surrounding offshore platforms and installations are particularly exposed to invasive species due to the volume of shipping traffic they attract to load or unload people, material or other cargo. Ballast movements surrounding offshore installations can be similar to that of a busy port, depending on the size of the operations. Biofouling is also recognised as a major pathway for the transfer of species from one location to another.⁸⁸ Furthermore, they can be located in the proximity of remote, sensitive, biodiverse and/or commercially important marine systems, although the magnitude of the potential impact will vary according to the local condition (including physical and biological oceanography).

⁸⁶ Hock Lye Koh and Su Yean 'Simulation of Drill Cuttings Dispersion and Deposition in the South China Sea' 2011 *Proceedings of the International MultiConference of Engineers and Computer Scientists, IMECS 2011, Hong Kong, 16 – 18 March 2011* <http://www.iaeng.org/publication/IMECS2011/IMECS2011_pp1501-1506.pdf>.

⁸⁷ This event brought together representatives of Thailand, Indonesia, the Philippines and Vietnam. They discussed updates in regulations and the possibility of creating a regional standard for effluent guidelines governing drilling fluids and cuttings management. Refer <<http://www.prtoday.com/news/84916/>> or <<http://www.free-press-release.com/news-top-asian-drilling-regulators-converge-in-bangkok-1297068614.html>>.

⁸⁸ Biofouling is biological growth on man-made structures in the aquatic environment.

Ratification of the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments⁸⁹ is not widespread in Southeast Asia, but as it is a relatively recent convention which has not yet entered into force, it is too early to take any view on the position adopted by respective coastal States in that respect. Although this convention is not in force, the oil and gas industry has prepared guidelines for the prevention, containment and management of aquatic invasive species (AIS) in onshore and offshore projects and operations.⁹⁰ They include a list of species that are identified as potentially particularly invasive and set out pathways for travel of AIS within oil and gas activities. Of note is also the approval of the IMO biofouling guidelines at the MEPC 62nd session in July 2011.⁹¹

F Platform decommissioning⁹²

The need for platform decommissioning is of great relevance in the SCS given that (i) 50% of the platforms are over 20 years old; (ii) 80% are in 75m of water or less; and (iii) 78% weigh 40,000 tons or less.⁹³ Yet, there has to date been very few decommissionings of offshore platforms in this region.

Increasing international concern in the last 20 years over the issue of offshore abandonment of oil and gas installations and facilities prompted the IMO to adopt Guidelines and Standards for the removal of offshore installations and structures on the continental shelf and in the exclusive economic zone in 1989⁹⁴, before UNCLOS came into force in 1994. These IMO guidelines reflect Article 60 of UNCLOS which prescribes that any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation and that removal shall take into account fishing, protection of the marine environment and the rights and duties of other States.

While reiterating the obligation to remove platforms, the guidelines define conditions in which non-removal or partial removal can be acceptable. However, as a rule, installations of less than 4000 tons⁹⁵ have to be removed if either they are in less than

⁸⁹ 2004 *International Convention for the Control of Management of Ships' Ballast Water and Sediments*, opened for signature 13 February 2004 IMO Doc BMW/CONF/36 (not yet in force) <<http://cil.nus.edu.sg/2004/2004-international-convention-for-the-control-and-management-of-ships-ballast-water-and-sediments/>>.

⁹⁰ IPIECA/OGP, *Alien invasive species and the oil and gas industry - Guidance for prevention and management*, 2010 Report Number 436 <<http://www.ogp.org.uk/pubs/436.pdf>>.

⁹¹ 2011 IMO guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (Res. MEPC 207(62)).

⁹² For a detailed review of the topic, see Morakinyo Adedayo Ayoade 'Disused offshore installations and pipelines: towards sustainable decommissioning' (2002) Kluwer Law International, London, UK.

⁹³ Youna Lyons (2011) above n 62 (7-10).

⁹⁴ IMO Assembly Resolution A.672(16), adopted 19 October 1989 <<http://cil.nus.edu.sg/1989/1989-guidelines-and-standards-for-the-removal-of-offshore-installations-and-structures-on-the-continental-shelf-and-in-the-exclusive-economic-zone-imo-resolution-a-672-16-adopted-on-19-october-1989/>>.

⁹⁵ Excluding the deck and superstructure.

75m of water or are in less than 100m and have been emplaced after 1 January 1998.⁹⁶ Installations or structures which may interfere with navigation through straits or routes used for international navigation (even through territorial or archipelagic waters) must also be removed. Partial or total removal requires a ‘case-by-case evaluation’, i.e. an assessment of impact including an environmental impact assessment as well as a weighing of cost and feasibility. Standards are also set⁹⁷; in relation to effects on the marine environment, the guidelines specify that the assessment must be based on scientific evidence taking into account the effect on water quality, geological and hydrographic characteristics, the presence of endangered or threatened species, existing habitat types, local fishery resources, and the potential for pollution or contamination of the site by residual products from, or deterioration of, the offshore installation structure. An official authorisation from the coastal State is necessary to maintain an installation on the seabed and monitoring afterwards of accumulation and deterioration of material left on the seabed. These guidelines and standards are sometimes criticised for allowing partial removal only in cases of extreme cost or unacceptable risk. It should also be noted that the coastal State must ensure that legal title to installations and structures which have not been entirely removed is unambiguous and that responsibility for maintenance and the financial ability to pay future damages are clearly established.

The issue of offshore abandonment of oil and gas platforms also prompted the Parties to the 1972 London Convention⁹⁸ to adopt:

- (i) the new 1996 Protocol⁹⁹, which explicitly includes within its scope, ‘abandonment or toppling at site of platforms or other man-made structures at sea, for the purpose of deliberate disposal’¹⁰⁰, and which adopts a precautionary approach, and the polluter pays principle¹⁰¹;
- (ii) general guidelines for the assessment of wastes or other matter that may be considered for dumping, which include guidelines for waste prevention audit, consideration of waste management options and dump-site selection and are

⁹⁶ Unless the entire removal is not technically feasible or would involve extreme cost, or an unacceptable risk to personnel or the marine environment (IMO Resolution A.672(16), art 3.5, *ibid*).

⁹⁷ This analysis must include potential effects on the safety of subsurface navigation or other uses of the sea, the rate of deterioration of the material and future effects on the marine environment, the potential effect on the marine environment, the risk that the material will shift from its position, the costs, feasibility and risk of injury associated with removal, and the determination of a new use or other reasonable justification for allowing the installation to remain on the seabed.

⁹⁸ The 1972 London Convention is the *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter*, opened for signature 29 November 1972, 1046 UNTS 120 (entered into force 30 August 1975). It regulates dumping, i.e. the deliberate disposal at sea of wastes and other material of any kind, which includes any deliberate waste at sea from offshore oil and gas installations (art III 1.(a)(i)) but not if they are a by-product of the exploration, exploitation and associated processing of seabed mineral resources (art III 1.(c)). Thus it only regulates the dumping of oil and gas platforms that are no longer in operation.

⁹⁹ For more on this topic refer Zhiguo Gao ‘Environmental Regulation of Oil and Gas’ (Kluwer Law International Ltd, 1998).

¹⁰⁰ 1996 Protocol, art 1(4.1)(4) above n 53.

¹⁰¹ 1996 Protocol arts 3.1 and 3.2 above n 53.

applicable to the disposal of offshore oil and gas installations or platforms¹⁰²; and,

(iii) specific guidelines for assessment of platforms or other man-made structures at sea¹⁰³. These latter guidelines are also part of a series of specific guidelines.

However, the London Convention has, in the SCS, only been ratified by the Philippines and China and the 1996 Protocol only by the latter.¹⁰⁴

G Conservation treaties relevant to oil and gas activities

While they do not directly apply to oil and gas activities, conservation treaties, many of which have been widely ratified by the coastal States of Southeast Asia¹⁰⁵ may set goals which are relevant to the planning for offshore oil and gas activities. Adequate planning will ensure that offshore oil and gas developments do not compromise the wise use of wetlands of international importance as directed by the 1971 Ramsar Convention on Wetlands of International Importance¹⁰⁶, nor the migratory routes of species protected under the 1979 Convention on the Conservation of Migratory Species of Wild Animals,¹⁰⁷ or areas of marine biodiversity protected under the 1992 Convention on Biological Diversity.¹⁰⁸

The risk of conflict with conservation treaties is of particular relevance when very large offshore concession blocks are granted by coastal States. In the SCS, they range between 4,000 and 10,000 km².¹⁰⁹ The largest blocks are often located on the outer limits of the continental shelf.¹¹⁰

III – TRANSBOUNDARY ENVIRONMENTAL GOVERNANCE AT REGIONAL LEVEL

¹⁰² Adopted at the 22nd Consultative Meeting of the Contracting Parties to the London Convention in 2000.

¹⁰³ Adopted at the 23rd Consultative Meeting of the Contracting Parties to the London Convention in 2001.

¹⁰⁴ For a discussion on the applicability of the London Convention to coastal States which have not ratified, refer above Part II (E).

¹⁰⁵ Refer below table of ratification (table 1).

¹⁰⁶ 1971 *Convention on Wetlands of International Importance, especially as Waterfowl Habitat* (the Ramsar Convention), opened for signature 2 February 1971, 14583 UNTS 996 (entered into force 21 December 1975) <http://www.ramsar.org/cda/en/ramsar-documents-texts/main/ramsar/1-31-38_4000_0>.

¹⁰⁷ 1979 *Convention on the Conservation of Migratory Species of Wild Animals* (the CMS Convention), opened for signature 23 June 1979, 1459 UNTS 362 (entered into force on 1 November 1983) <<http://www.cms.int/documents/index.htm>>

¹⁰⁸ 1992 *Convention on Biological Diversity* (CBD), opened for signature 5 June 1992, 1760 UNTS 79 (entered into force 23 December 1993) <<http://www.cbd.int/convention/text/>>

¹⁰⁹ Some are smaller. The rationale behind the map of concession blocks drawn by each coastal State has not been investigated.

¹¹⁰ The surface area of the concession blocks is based on Map Vietnam General, Global Exploration and Production Service by HIS (May 2008) Ref. VN08E1GEN, and South China Sea Map 803425AI (G02257) 1-10.

A Regional governance in Southeast Asia: the ASEAN way

UNCLOS requires States bordering enclosed or semi-enclosed seas to cooperate with each other when exercising their rights and performing their duties under the Convention.¹¹¹ The duty to cooperate includes an obligation to coordinate the management, conservation, exploration and exploitation of the living resources of the sea and the implementation of the rights and duties of States with respect to the protection and preservation of the marine environment.

With respect to pollution from seabed activities, coastal States must endeavour to harmonize their policies at the appropriate regional level¹¹² and establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the environment from these activities¹¹³. Many coastal States have entered into regional agreements establishing rules, standards and procedures for the protection of the marine environment, to supplement rules established at international level.¹¹⁴ The Mediterranean Region is often presented as providing the leading model of regional seas agreements. It is the oldest and most frequently revised convention¹¹⁵ of this type supplemented by an extensive range of protocols specific to an issue or the implementation of a particular convention. Of note in the context of pollution from seabed activities is the 14 October 1994 Protocol for the Protection of the Mediterranean Seas against Pollution resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its subsoil.¹¹⁶

Although the coastal States of the seas of South East Asia (or South Asian seas) have not entered into such a binding regional agreement, they have, in numerous occasions, stressed the importance and necessity of sustainably managing their marine

¹¹¹ UNCLOS art 123.

¹¹² UNCLOS art 208(4).

¹¹³ UNCLOS art 208(5).

¹¹⁴ The UNEP Regional Seas Programme, initiated in 1974, assumes that the seas of the world include 13 regional seas: Mediterranean Sea, Baltic Sea, Black Sea, Red Sea and Gulf of Aden, West and Central African Sea, East African Seas, Caribbean Region, South Asian seas, East Asian Seas, South Pacific, South East Pacific and North West Pacific Oceans.

¹¹⁵ The 1976 *Convention for the Protection of the Mediterranean Sea against Pollution* (1976 Barcelona Convention) now replaced by the 1995 *Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean* opened for signature 10 June 1995 UNEP (OCA)/MED IG.6/7 (entered into force 9 July 1994) aims to protect the marine environment of the region from pollution. Other examples of conventions include the 1992 Convention for the Protection of the Marine Environment of the North Atlantic (OSPAR Convention), the 1978 Regional Convention for Cooperation of the Protection of the Marine Environment from Pollution (a.k.a. 1978 Kuwait Convention) and the 1989 Kuwait Protocol. For more details on these, refer for example Zhiguo Gao, 'Environmental regulation of the oil and gas industries, (2000) *Journal for the Centre for Energy, Petroleum and Mineral Law and Policy*, 2(11) <<http://www.dundee.ac.uk/cepmlp/journal/html/vol2/article2-11.html> >; M.Kashubsky (2006) Marine pollution from the offshore oil and gas industry: review of major conventions and Russian law (Part I) (2006) *Maritime Studies* 151, 1-11.

¹¹⁶ The Protocol was opened for signature on 14 October 1994, and came into force 24 March 2011 <http://195.97.36.231/dbases/webdocs/BCP/ProtocolOffshore94_eng.pdf>.

environment.¹¹⁷ Recently, the 2004 ASEAN Vientiane Action Programme¹¹⁸, the 2007 ASEAN Singapore Declaration on Environmental Sustainability¹¹⁹ as well as the Roadmap for an ASEAN Community 2009-2015¹²⁰ emphasised the need for coordination in the management and protection of the marine environment. More specialised, the ASEAN Cooperation Plan on Transboundary Pollution includes shipborn pollution in his scope but not offshore activities. The emphasis is on setting the basis for regional cooperation through the implementation of the 1994 OSRAP¹²¹, the ratification of the MARPOL conventions, the promotion of reception facilities for oil wastes and capacity building.¹²² However, no coordination mechanisms nor entities are created or designated to fulfil this mission.¹²³ The OSPAR plan is supported by ASEAN-OSPAR project funded by the Ministry of Transport of Japan and started in 1993. It focuses on the improvement of the capability of the ASEAN countries to deal with oil spill incidents and includes the purchase of equipment and materials for combating oil spills.¹²⁴

The absence of a regional framework and/or of institutional mechanisms for regional coordination for marine environmental protection in Southeast Asia may be attributed to a lack of institutional and political maturity or as an expression of the ‘ASEAN way’. Consistently with the interpretation adopted in other fields, the ‘ASEAN’ Way’ would translate to a preference for cooperative mechanisms following issue specific declarations.¹²⁵ From this perspective, the recent transformation of the Partnerships in

¹¹⁷ The 1994 Strategic Plan of Action on the Environment (1994-1998) was signed by the ASEAN Environment Ministers. It was designed to implement Agenda 21 in the ASEAN’s member States <<http://www.aseansec.org/8950.htm>>. It includes the development of a framework for the integrated management of regional coastal zones as part of a strategy to promote the protection and management of coastal zones and marine resources. Milestones on this path included three agreements between the Environment Ministers of ASEAN in 2002 for a first set of criteria for National Marine Protected Areas, refer ‘ASEAN Criteria for National Marine Protected Area’ <<http://www.aseansec.org/cme/ASEAN%20Criteria%20for%20National%20MPAs.pdf>>, for marine water quality for aquatic life and human health protection refer ‘Marine Water Criteria for the ASEAN Region’ <<http://www.aseansec.org/cme/Marine%20Water%20Quality%20Criteria%20for%20the%20ASEAN%20Region.pdf>> and for marine heritage areas ‘ASEAN Criteria for Marine Heritage Areas’ <<http://www.aseansec.org/cme/ASEAN%20Criteria%20for%20Marine%20Heritage%20Areas.pdf>>.

¹¹⁸ Refer <<http://cil.nus.edu.sg/2004/2004-vientiane-action-programme-2004-2010-signed-on-29-november-2004-in-vientiane-laos-by-the-heads-of-state-government-vap/>>.

¹¹⁹ Refer <<http://www.aseansec.org/21060.htm>>.

¹²⁰ Refer <<http://www.aseansec.org/publications/RoadmapASEANCommunity.pdf>>.

¹²¹ Refer above Part II C (20) [3].

¹²² Refer <<http://www.aseansec.org/8938.thm>> It is noted that the implementation of this plan is placed under the purview of the ministries of environment who, as a general rule, have little impact on decisions from the shipping industry.

¹²³ The ASEAN-OSPAR project can be compared with the Northwest Pacific Action Plan (NOWPAP) which binds China, Korea, Japan and Russia. It is an example of development of agreed guidelines (for instance in the use of dispersants in case of an oil spill) and cooperation mechanisms without a binding treaty. Refer <http://dinrac.nowpap.org/about_NOWPAP.php>.

¹²⁴ Refer <<http://www.nmc.sg/asean-ospar.html>>.

¹²⁵ On this topic, refer Koh Kheng-Lian and Nicholas A. Robinson, ‘Strengthening sustainable development in regional intergovernmental governance: Lessons from the ASEAN’ (2002) *Singapore journal of international and comparative law* 6, 640-682.

Environmental Management for the Seas of East Asia (PEMSEA)¹²⁶ into a self-sustained regional mechanism makes it the natural champion to develop such regional policy, in collaboration with other relevant institutions, be they international or regional, private or public, depending on the issues being considered.¹²⁷ However, it is noted that the member States of PEMSEA include the coastal States of the East Asian Sea, China, the Democratic People's Republic of Korea, Japan, Korea, in addition to most States of Southeast Asia. Furthermore, the states of Brunei Darussalam, Malaysia and Thailand, without which no successful marine environmental policy can be concluded, are not members yet.

B A fragmented regional governance framework

The governance of the seas of Southeast Asia is, at this stage, characterized by an array of decentralized bilateral or multilateral treaties, agreements, declaration and programmes of varying scope organised around a diversity of international and regional bodies or initiatives.

1 Bilateral and multilateral agreements on hydrocarbon resources

There are currently a large and diverse number of development agreements or arrangements between coastal States or national oil and gas companies aimed at exploring and/or producing hydrocarbon resources in areas subject to disputed maritime claims or the development of oil or gas fields straddling an agreed boundary.¹²⁸ They range from short agreements, geographically bound and limited in use and time (such as joint seismic surveying subject to a specified duration and area¹²⁹), to ambitious agreements including boundary setting and joint-development of the resources under set rules.¹³⁰ Until now, arrangements have been signed on a

¹²⁶ The 11 signatories are Cambodia, China, the Democratic People's Republic of Korea, Indonesia, Japan, Lao, the Philippines, Korea, Singapore, Timor-Leste and Vietnam. The SDS-SEA defines steps to be taken towards the goals of key international agreements and action plans related to coasts, islands and oceans, including with respect of subregional mechanisms to combat transboundary environmental threats such as pollution from offshore platforms < <http://pemsea.org/pdf-documents/sds-sea/SDSSEA-Full.pdf>> [64].

¹²⁷ The 2009 Manila Declaration on Strengthening the Implementation of Integrated Coastal management for Sustainable Development and Climate Change Adaptation in the Seas of East Asia Region also call PEMSEA, as the regional mechanism for the implementation of the Sustainable Development Strategy for the Seas of East-Asia (SDS-SEA), to undertake the development of the Implementation Plan for the SDS-SEA in 2010. The Manila Declaration was signed on 26 November 2009 <http://pemsea.org/eascongress/section-support-files/manila_declaration.pdf>. The Declaration follows the signed 2003 Putrajaya Declaration of Regional Cooperation for the Sustainable Development of the Seas of East Asia and the Manado Ocean Declaration reportedly adopted by acclamation on 14 May 2009.

¹²⁸ The conclusion of provisional Joint Development Agreements of mineral resources located in areas subject to overlapping claims is encouraged by *UNCLOS* art 74(3) pending a boundary agreement.

¹²⁹ Three years tripartite Agreement for Joint Marine Seismic Undertaking (JMSU) signed on 14 March 2005 between CNOOC, PNOOC and Petrovietnam. Refer to Youna Lyons above n 62, Part 1 (4.3) 20 [3].

¹³⁰ The 2000 Agreements in the Gulf of Tonkin are an example of an agreement on boundary as well as joint-management of the resources, with respect to living resources. Agreements entered into between

bilateral and occasionally tripartite basis. This has resulted in a patchwork of agreements throughout the SCS with varied rules and geographic scope and a disparity in the activities covered by the agreements. Some of these agreements designate the law applicable to the area being developed, which would include rules relating to pollution from these activities, but not necessarily enforcement mechanisms, especially in the case of transboundary pollution. Such choice of law clauses may allow for direct recourse against the enterprise causing the damage, provided that such a mechanism is embedded in the domestic law designated in the clause. Furthermore, these agreements cover a relatively small part of the overall disputed area, and thus a small proportion of hydrocarbon reservoirs under development.

In the Gulf of Thailand, Malaysia has signed two JDAs with Thailand and Vietnam respectively.¹³¹ The most ambitious and legally complex of the two JDAs is the first one¹³², the instruments of ratifications of which were exchanged on 30 May 1990. It creates a Joint Authority¹³³ and its scope extends beyond hydrocarbon exploration and exploitation to recognize the rights of both States with respect to fishing, navigation, hydrographic and oceanographic surveys and to the prevention of pollution in the overlapping area.¹³⁴ The cumulative application of national laws in the agreed 'Joint Development Area' provided for in the agreement could technically also apply to pollution and create an obligation of conservation attached to the rights dealt with in the agreement. In contrast the 1992 Malaysia-Vietnam agreement, which deals with a smaller overlapping area (the 'Defined Area'), is limited to joint exploration for and development of hydrocarbons. It also employs a different and arguably more pragmatic and flexible management model in which national oil and gas companies are the primary actors.¹³⁵ Petronas¹³⁶ and Petrovietnam¹³⁷ agreed on the application of the laws of Malaysia to the Defined Area for petroleum operations. Malaysian law

national oil companies appear to be particularly popular for the flexibility they offer. However, their wording and modalities are generally not available for public scrutiny.

¹³¹ Tara Davenport 'Joint Development in Asia: Lessons for Sustainable Peace in the South China Sea' 2011 *Asian Journal of Comparative Law* 11 (Personal copy from the author).

¹³² It stems from a Memorandum of Understanding (MoU) agreed between Malaysia and Thailand in 1972, which is valid for 50 years or indefinitely if no agreement is reached on boundaries. The first agreement, signed in 1972, was only a partial agreement as the countries could not agree on the application of delimitation rules over the islet of Ko Los, a Thai islet standing 1.5 metres high above sea level and supporting no economic life of its own. Refer Nguyen Hong Thao 'Joint Development in the Gulf of Thailand' 1999 (Autumn), *IBRU Boundary and Security Bulletin* 79-88 <http://www.dur.ac.uk/resources/ibru/publications/full/bsb7-3_thao.pdf>.

¹³³ The chairmanship of the Authority alternates between the two countries every two years.

¹³⁴ Nguyen Hong Thao, above n 111

¹³⁵ In a commercial arrangement signed in 1993, Petronas and Petrovietnam (with agreement of the respective governments) established a Coordination Committee composed of eight members, with an equal number of nominees appointed by each company, responsible for decisions for the management of the Defined Area.

¹³⁶ The national oil company of Malaysia.

¹³⁷ The national oil company of Vietnam.

thus applies to the determination of obligations and liabilities relating to the environmental impact of oil and gas activities in the Defined Area.¹³⁸

In the Gulf of Tonkin (or Gulf of Beibu) the agreements on Maritime Boundary Delimitation and on Fisheries Resources signed by China and Vietnam in 2000¹³⁹ set the basis for the 2005 Framework Agreement on Oil and Gas Cooperation between China National Offshore Oil Corp (CNOOC) and Petro Vietnam but contain no provision on hydrocarbon resources or pollution from such activities, or any choice of law clause.¹⁴⁰

In the Southern SCS, following the signature of a Tripartite Cooperation Agreement in November 2000, Petrovietnam, Petronas and Pertamina¹⁴¹ entered into several production sharing contracts in disputed areas as well as in undisputed areas between the respective coastal States.¹⁴² These successful collaborations are said to be paving the way for a new era of intra ASEAN knowledge and information sharing designed to upgrade skills and expertise.¹⁴³ However, there is no indication that these agreements, which all concern areas covering waters under the jurisdiction of two or more States, contain provisions relating to environmental damage from such activities.

The common element in the Joint Development Arrangements referred to above is that they are temporary solutions which allow for oil and gas extraction to be undertaken despite overlapping claims to the continental shelf.¹⁴⁴ Sustainable exploration and extraction and management of pollution of the seabed from oil and

¹³⁸ The first exploitation under the MoU occurred in July 1997 in the Bunga Kekwa field. While the 1990 agreement between Malaysia and Thailand is generally viewed as an especially successful example of a comprehensive joint-development agreement, the speed of implementation of the 1992 MoU between Malaysia and Vietnam deserves particular attention. Unlike the 1979 MoU, it has been very quickly implemented. The behind the scenes involvement of Petronas and Petrovietnam in the 1992 MoU may explain this dynamism in implementation as well as the 2000 tripartite arrangement (extending this relationship to Pertamina) reviewed below. As with the MoU between Malaysia and Thailand, sharing of all costs, expenses, liabilities and benefits from petroleum operations are key principles.

¹³⁹ Zou Keyuan 'Cooperative Development of Oil and Gas Resources in the South China Sea' in Sam Batement and Ralf Emmers (eds) *Security and International Politics in the South China Sea: Towards a Cooperative Management Regime* (Routledge, 2009).

¹⁴⁰ Zou Keyuan 'The Sino-Vietnamese agreement on maritime boundary delimitation in the Gulf of Tonkin' (2005) 36(1) *Ocean Development and International Law* 13-24.

¹⁴¹ The national oil company of Indonesia.

¹⁴² The first contract was concluded in 2001 over Blocks 10 and 11.1 located off Vietnam. Another contract was entered into in 2003 over block SK305 off Sarawak, refer Robert Piepul 'Petrovietnam, Petronas, Pertamina to explore two blocks off Vietnam' 9 January 2001 *PennEnergy* <<http://www.pennenergy.com/index/petroleum/display/131688/articles/oil-gas-journal/exploration-development/petrovietnam-petronas-pertamina-to-explore-two-blocks-off-viet-nam.html>> and <http://rigzone.com/news/article.asp?a_id=7027>.

¹⁴³ For more recent news coverage refer <<http://www.ethiopianreview.com/news/48192>>.

¹⁴⁴ Note that this comment concerns primarily the agreements between Malaysia and Thailand, Malaysia and Vietnam and Brunei and Malaysia. It does not apply to agreements reached over areas stretching over delimited boundaries, namely the agreement between China and Vietnam for the Gulf of Tonkin.

gas activities are not built into the agreements nor implied. Compared with the US, Europe or the Persian Gulf, exploitation of hydrocarbon in the SCS is at an earlier stage of development, both from an industry and a regulatory perspective. While Malaysia's petroleum legislation, developed over years is today regarded as one of the most sophisticated in the region, the national legislation of some other coastal States remains rudimentary and the subject of on-going developments.¹⁴⁵

2 Regional and sub-regional programmes

The seas of Southeast Asia have been the subject of a large diversity of independent marine conservation initiatives at regional and sub-regional level that are often focused on a specific habitat (mangroves or coral reefs) within a given geographical area or on whole ecosystems.¹⁴⁶ However, pollution from oil and gas activities does not appear to be integrated in these programs, except at a very local scale, in the Sulu-Sulawesi Sea.¹⁴⁷ The South China Sea, where most of the risks of transboundary pollution from offshore oil and gas activities is located falls outside the geographic scope of many of these on-going marine environmental programmes.¹⁴⁸

Of note is the ASEAN Council on Petroleum (ASCOPE)¹⁴⁹, the mission statement of which includes the promotion of collaboration and mutual assistance in the development of petroleum resources in the region through joint endeavours and facilitating exchange of information. The national oil company or public agency in charge of supervising oil and gas activities represents their country within ASCOPE. Current projects include the crafting of regional decommissioning guidelines tailored to the ASCOPE countries with full concurrence and mutual approval by the relevant

¹⁴⁵ Eleodoro Mayorga Alba (study managed by) 'Environmental Governance in Oil-producing Developing Countries - Findings from a Survey of 32 Countries' 2010 (June) 17 *Extractive Industries for Development Series, World Bank* (available online) <http://siteresources.worldbank.org/EXTOGMC/Resources/336929-1266963339030/eifd17_environmental_governance.pdf>.

¹⁴⁶ Anna Tengberg, 'Overview of Regional Transboundary Initiatives, Projects and Programmes for the Seas of East Asia: Status and Funding Opportunities' (Paper presented at the United Nations Development Programme, EAS Congress, Manila, 23 – 27 November 2009).

¹⁴⁷ The Sulu-Sulawesi Seascape Project is a cooperative project including NGO, public and private partners that includes environmental impacts from offshore oil and gas activities within its geographic scope. Launched in 2005 by Conservation International to protect critical species and habitats in the marine biodiversity conservation corridors of Verde Passage, Cagayan Ridge, Balabac Strait and the Tri-National Sea Turtle Corridor, it involves partnerships with major stakeholders including oil and gas companies in Indonesia, Malaysia and the Philippines. Evangeline F.B. Micalat and Romeo B Trono 'One vision, One Plan, Common Resources, Joint Management Conserving the Sulu-Sulawesi Sea' (2008) 15(1) *Tropical Coasts* 4-10.

¹⁴⁸ For a review of programs in place, refer John W McManus, Kwang-Tsao Shao, Szu-Yin Lin, 'Towards Establishing a Spratly Islands International Marine Peace Park: Ecological Importance and Supportive Activities with an Emphasis on the Role of Taiwan' (2010) 41(3) *Ocean Development and International Law* 270-280; Aldo Chircop 'Regional Cooperation in Marine Environmental Protection in the South China Sea: A Reflection on New Directions for Marine Conservation' (2010) 41(4) *Ocean Development and International Law* 334-356.

¹⁴⁹ It was established on 15 October 1975 by the then Member States of the ASEAN and joined in 2006 by all the other members.

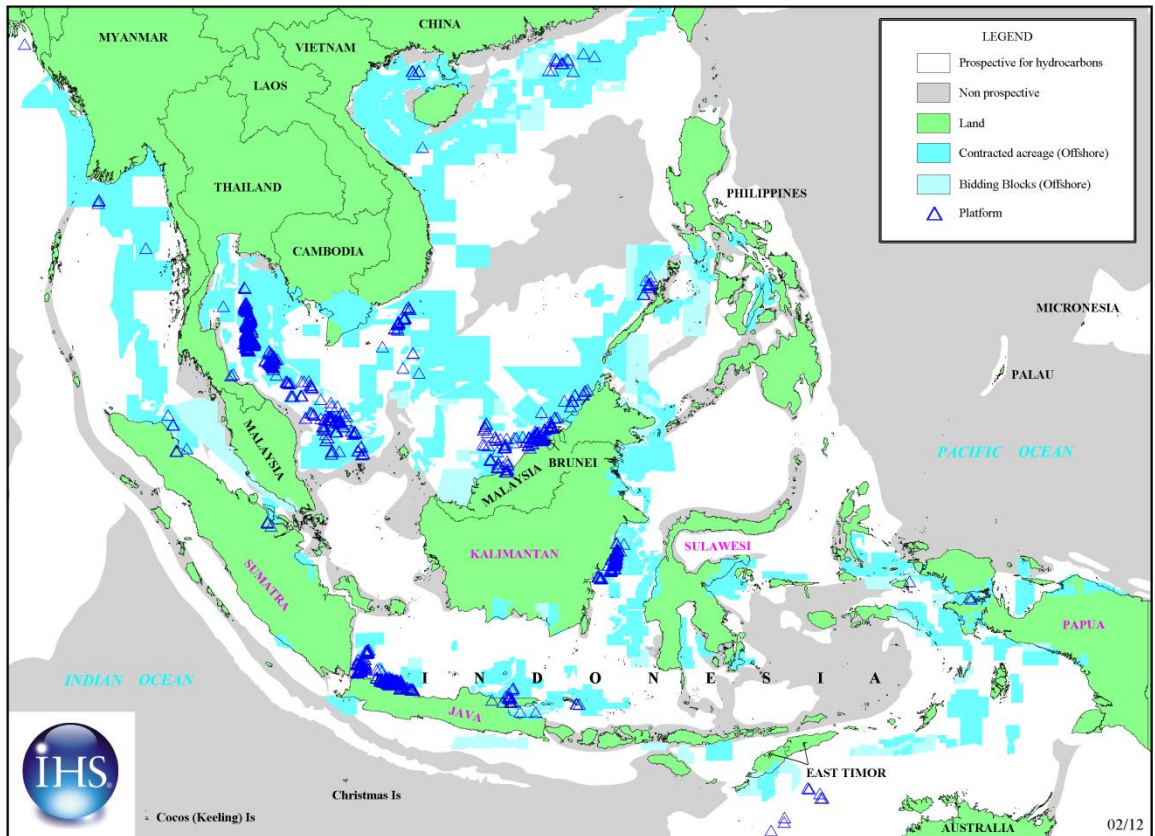
national oil companies in accordance with international laws and regulations and complying with the national legislations of each member country.¹⁵⁰ This could potentially set the basis for the regional framework necessary to manage transboundary pollution from decommissioning of offshore installations.

IV CONCLUSION

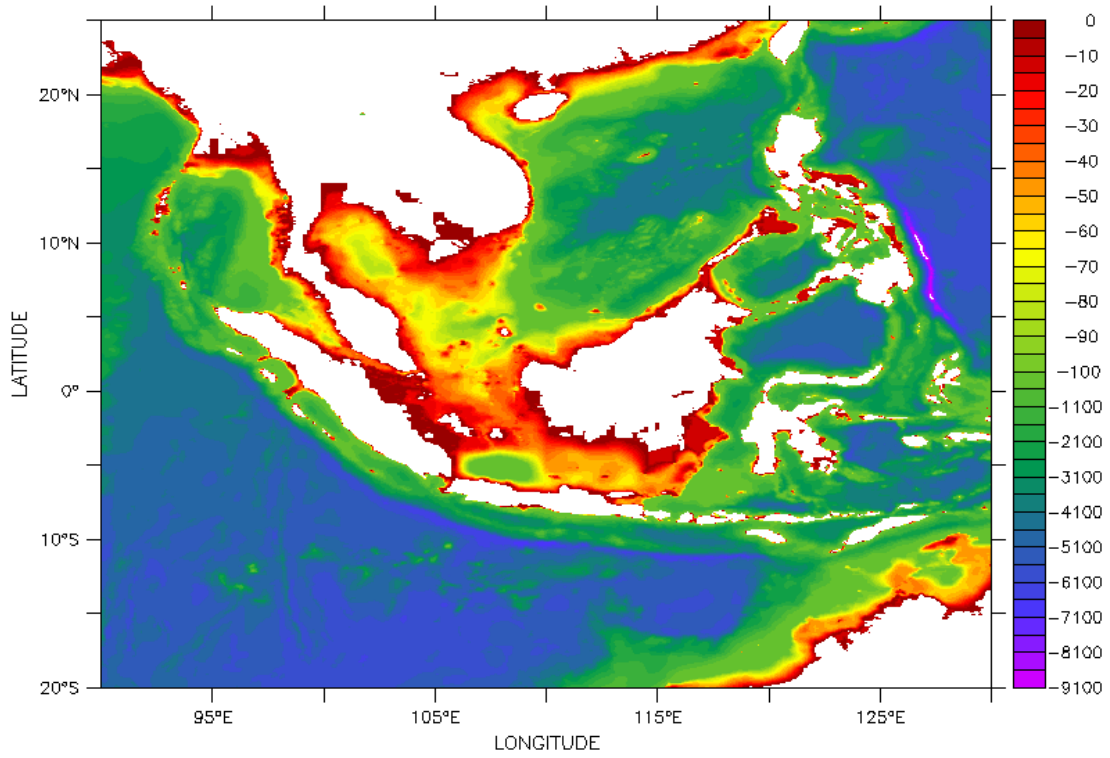
This chapter reviews the risk of different types of transboundary pollution from offshore oil and gas activities in the seas of Southeast Asia and the fragmentation and gaps in the governance framework in place to manage them, both at international and regional levels. However, it also emphasizes that despite some gaps and inconsistencies (linked to the legal regimes of different types of offshore platforms), some international treaties set rules and guidance applicable to different types of pollution from these offshore activities. Where such treaties have been ratified, the issue lies rather in the consistency in interpretation, compliance and enforcement. Marine ecologists and international organizations involved in marine environmental management in the region call for better coordination between programs in the region and many argue that a binding treaty is needed for this, as has been done in other regional seas. However, the ASEAN way might prefer a more empirical and cooperative approach where transnational and specialized groups agree on guidelines for the region. To be successful, this method would require sufficient coordination among such groups. However, the proposal made in this chapter is that the priority should go towards the implementation of ratified treaties, ratification of treaties which have not yet been ratified, and regional coordination to that end, rather than towards the drafting of a new treaty for the region. With regard to the management of pollution from offshore oil and gas activities, the outcome of ASCOPE's endeavour to set decommissioning guidelines for the region will help identify the best path forward.

This chapter also emphasizes the particular challenges created by the competing and increasing uses of the seas of Southeast Asia. The environmental rules adopted with respect to each use must take into account the combined impact from all of them.

¹⁵⁰ ASCOPE website <<http://ascope.org/>>.



Map 1 – Offshore oil and gas activities in the SCS (Courtesy of IHS)



Map 2 – Bathymetry of the Seas of Southeast Asia (based on Etopos 5 Database, courtesy of TMSI, National University of Singapore)

Table 1 – Status of ratification by the coastal States of the seas of Southeast Asia of the international treaties relevant to offshore oil and gas activities

**International treaties relevant to offshore oil and gas activities and the protection of the marine environment:
Status of Ratification by coastal States of the SCS (5)**

International Treaties		Adoption/Ratification/Accession (1)									Legend:
		Brunei Darussalam	Cambodia	China(7)	Indonesia	Malaysia	Philippines	Singapore	Thailand	Viet Nam	
UNCLOS	United Nations Convention on the Law of the Sea 1982 (UNCLOS) and Agreement on Part XI	1996	signed in 1983	1997	1986	1996	1984	1994	2011	1994	(1) according to the information available as at March 2011
Safety	Convention on the International Regulation for Preventing Collision at Sea, 1972 (as amended in 1981, 1987, 1989, 1993, 2001, 2007)	1987	1994	1980	1979	1980	1987	1977	1979	1990	(2) N.A. stands for Not Applicable
	International Convention for the Safety Of life at Sea, 1974, 1978 Protocol, 1988 Protocol	1986/1986/N	1994/1994/2001	1982/1982/1995	1981	1983	1981	1981	1984	1990	(3) N. stands for No Adoption/Ratification/Accession
Oil only	International Convention for the Prevention of Pollution from Ships 73/78 and Annex I (MARPOL)	1986	1994	1983	1986	1997	2001	1990	2007	1991	(4) Y. stands for Adoption/Ratification/Accession
	International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (OPRC)	N	N	1998	N	1997	signed in 1995	1999	2000	N	(5) This table does not include all IMO Convention relating to safety at sea
	International Convention on Civil Liability for Oil Pollution Damage (CLC) 1969, 1976 Protocol, 1984 Protocol, 1992 Protocol and 2000 Amendments	1976/1976/1992/1992	1969/1976/1992/1992	1999/1999/1999/1999	1969/1992/1992/1992	1992/1992/1992/1992	1992/1992/1992/1992	1976/1976/1992/1992	N	1992/1992/1992/1992	(6) d. stands for denounced
	International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage Protocol 1992 (IOPC-FUND)	1992	1992	1999 (HK only)	N	1992	1992	1992	N	N	(7) The change of Hong Kong's status in 1997 has translated in the denunciation of several treaties and, often, later re-accession following China's policy.
	International Convention on Civil Liability for Bunker Oil Pollution Damage 2001 (Bunkers Convention)	N	N	2008	N	2008	N	2006	N	2010	(8) Not Yet in Force
Solid and liquid waste	1976 Convention on the Limitation of Liability for Maritime Claims and 1996 Protocol (1996 LLMC)	N	N	1997	N	N	N	2005	N	N	
	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 and 1996 Protocol (London Convention)	N	N	1985/2006	N	N	1973	N	N	N	
	International Convention for the Prevention of Pollution from Ships 73/78 and Annexes II to V (MARPOL)	Annex II			Annex II				Annex II	Annex II	
	Nairobi International Convention on the removal of Wrecks 2007(Nairobi WRC) NYF(8)	No Annex III to V	Annex II-V	Annex II-V	No Annex III to V	Annex II-V	Annex II-V	Annex II-V	No Annex III to V	No Annex III to V	
Toxic substances	Hong Kong International Convention for the safe and environmentally sound recycling of ships 2009 (SRC) - NYF(8)	N	N	N	N	N	N	N	N	N	
	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal 1989 and Amendment 1995 (not yet into force)	2002	2001/N	1991/2001	1993/2005	1993/2001	1993/N	1996/N	1997/N	1995/N	
	Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances 2000 (HNS 2000), 2010 Protocol	N	N	2009/N	N	N	N	2003/N	N	N	
Air pollut.	International Convention on the Control of Harmful Anti-fouling Systems on Ships 2001(AFS)	N	N	2011	N	2010	N	2009	N	N	
	International Convention for the Prevention of Pollution from Ships 73/78 and Annexes VI (MARPOL)	N	N	2006	N	2010	N	2000	N	N	
Inv. Species	Montreal Protocol on Substances that Deplete the Ozone Layer 1987 (Montreal Protocol) under the 1985 Vienna Convention for the Protection of the Ozone Layer	1993	2001	1989	1992	1989	1991	1989	1989	1994	
	International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 (BWM) - NYF(8)	N	N	N	N	2010	N	N	N	N	

Conservation	Convention on Wetlands of International Importance 1971 (Ramsar Convention), Paris Protocol (1982), Regina Amendment (1987)	N	1999	1992	1992	1994/1995/N	1994/1994/N	N	1998/1998/N	1988/1989/N
	Convention concerning the World Cultural and Natural Heritage 1972 (World Heritage Convention)	N	1991	1985	1989	1988	1985	N	1987	1987
	Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973 (CITES), Bonn Amendment (1979) and Gaborone Amendment (1983)	1990	1997	1981/1997/1988	1978/1987/N	1977/N/N	1981/1981/1988	1986/1986/N	1983	1994
	Convention on the Conservation of Migratory Species of Wild Animals 1979 (CMS), Agreement on the conservation of albatrosses and petrels 2001, MoU on the conservation of marine turtles 2001, MoU on the conservation of dugongs 2007, MoU on the conservation of migratory sharks 2010	N/N.A./N/N.A./N	N/N.A./2002/N/N	N/N/N/N/N	N/N/2005/N/N	N/N.A./N/N/N	1994/N.A./2001/2010/2010	N/N.A./N/N/N	N/N.A./2004/N/N	N/N.A./2001/N/N
	Convention on Biological Diversity 1992	2008	1995	1992	1994	1994	1993	1995	2004	1994
	Convention on the Protection of the Underwater Cultural Heritage 2001	N	2006	N	N	N	N	N	N	N

IMO Status

<http://www.imo.org/About/Conventions/StatusOfConventions/Documents/Status-2011.pdf>